



**Xcalibur**

# **Ion Trap Series**

## **Preinstallation Requirements Guide**

1R12045-00PI Revision A April 2014

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Ion Trap series refers to ITQ and PolarisQ instruments. DSQ series refers to all DSQ and DSQ II instruments.

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# Ion Trap Series Installation Request Form

Dear User:

After you review the ITQ Preinstallation Guide, you need to print and complete this form. Once items 1-13 are completed, sign and date the form and mail it to your local Thermo Fisher Scientific sales/service office. The address and fax number for all of our offices are listed on the following pages.

- 1. All items in "Entrance Requirements" on page 2 are met.
- 2. All items in "Workbench & Space Requirements" on page 3 are met.
- 3. All items in "Lighting Requirements" on page 5 are met.
- 4. All items in "Power Requirements" on page 5 are met.
- 5. All items in "Gas Equipment Requirements" on page 11 are met.
- 6. All items in "Solvent Requirements" on page 14 are met.
- 7. All items in "Environmental Requirements" on page 15 are met.
- 8. I have read and understood the information contained in "Telephone Requirements" on page 17 and "Receiving Instructions" on page 17.
- 9. I have read and understood the information contained in "What Happens Next?" on page 18.
- 10. All relevant safety regulations are met.
- 11. The principal operator is available during the installation / certification period.
- 12. No more than three-calendar months have elapsed since the GC/MS arrived.
- 13. I have read and agree to the End User License Agreements for any software purchased with my system.

Signature: \_\_\_\_\_

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 against the engineer's time if the installation requirements are not met on the date of the installation.

**Print your name, company name, and company address clearly below:**

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/](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., 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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## Contents



## 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.

## Regulatory Compliance

Thermo Fisher Scientific performs complete testing and evaluation of its products to ensure full compliance with applicable domestic and international regulations. When the system is delivered to you, it meets all pertinent electromagnetic compatibility (EMC) and safety standards as described in the next section or sections by product name.

Changes that you make to your system may void compliance with one or more of these EMC and safety standards. Changes to your system include replacing a part or adding components, options, or peripherals not specifically authorized and qualified by Thermo Fisher Scientific. To ensure continued compliance with EMC and safety standards, replacement parts and additional components, options, and peripherals must be ordered from Thermo Fisher Scientific or one of its authorized representatives.

### EMC Directive 89/336/EEC

EMC compliance has been evaluated by Professional Testing.

- Polaris Q, ITQ, and Ion Trap Series standards: EMC EN 61326-1:2006. Safety IEC 61010-1:2001, IEC 61010-2-081:2001
- DSQ II standards: EMC EN 61326-1:1997 + A1:1998 + A2:2001. Safety EN 61010-1:2001
- Direct Probe Controller (DPC) standards: EMC EN 55011:1991 + EN 50082-1:1992. Safety EN 61010-1:1994
- ISQ standards: EMC EN 61326-1:2006. Safety IEC 61010-1:2001

### Low Voltage Safety Compliance

This device complies with Low Voltage Directive 2006/95/EC and harmonized standard EN 61010-1:2001.

## 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 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

Your instrument is designed to work in a controlled electromagnetic environment. Do not use radio frequency transmitters, such as mobile phones, in close proximity to the instrument.

For manufacturing location, see the label on the instrument.

## WEEE Compliance

This product is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2002/96/EC. 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 2002/96/EC 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 (2002/96/EC) des Déchets d'Équipements Électriques et Électroniques (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](http://www.thermoscientific.com/rohsweee).

## Preface

This guide contains preinstallation requirements that must be in compliance before your instrument can be installed.

At the time you purchased your system, your sales representative should have left you this preinstallation guide to help you prepare your laboratory for the arrival and installation of your system.

Some information refers to the USA exclusively. Assurances and specifications might differ in other locations. Specific details are available from your regional Thermo Scientific Technical Support office. If you have questions, contact the Thermo Scientific Customer Service office assigned to your area.

### Contents

- [About Your System](#)
- [Power Ratings](#)
- [Related Documentation](#)
- [System Requirements](#)
- [Safety and Special Notices](#)
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## About Your System

Thermo Fisher Scientific systems provide the highest caliber gas chromatography/mass spectrometry (GC/MS) instrumentation available on today's market.

GC/MS represents a combination of two powerful analytical techniques: GC, which acts as a separation technique and MS, which acts as a detection technique. Complex mixtures of individual compounds can be injected into the GC, either manually or through the use of an optional autosampler, and then separated for presentation to the MS. The MS will then generate a mass spectrum of the GC eluent and its components, which can be used for qualitative identification as well as accurate and precise quantification of the individual compounds present in the sample.

**IMPORTANT** Thermo Fisher Scientific systems are designed to optimize both the separation and detection capabilities of GC/MS techniques and combine them in a synergistic fashion to provide high performance analytical capabilities for both research and routine applications. More information on the use of this system can be found in related documentation sources and through the provided contact information.



**WARNING** Thermo Fisher Scientific systems operate safely and reliably under carefully controlled environmental conditions. If the equipment is used in manner not specified by the manufacturer, the protections provided by the equipment may be impaired. If you maintain a system outside the specifications listed in this guide, failures of many types, including personal injury or death, may 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 Ratings

### *Mass Spectrometer (MS)*

- 120 V ac +6/-10%, 50/60 Hz, 15 A max
- 230 V ac ±10%, 50/60 Hz, 10 A max

### *Gas Chromatograph (GC)*

- 120 V ac +6/-10%, 50/60 Hz, 16 A max
- 230 V ac ±10%, 50/60 Hz, 16 A max

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

## Related Documentation

In addition to this guide, Thermo Scientific provides the following documents for the Ion Trap Series mass spectrometer. These documents are also available on a “Print-By-Request” basis.

*Ion Trap Series Preinstallation Requirements Guide* PN 1R120425-00PI

*Ion Trap Series User Guide* PN 120425-USER

*Ion Trap Series Hardware Manual* PN 120425-00HW

*Instrument Help* is available from within the software.

### ❖ **To view product manuals**

Open the desktop folder labeled **Manuals**.

### ❖ **To open Help**

- From the Ion Trap Series window, choose **Help > Ion Trap Series Help**.
- If available for a specific window or dialog box, click **Help** or press the F1 key for information about setting parameters.

For more information, visit [www.thermo.com](http://www.thermo.com).

## System Requirements

Your Ion Trap Series data system must meet the following minimum requirements.

System	Requirements
Hardware	<ul style="list-style-type: none"><li>• 2.4 GHz processor with 4 GB RAM</li><li>• DVD/CD-ROM drive</li><li>• Resolution display 1280 × 1024 (XGA)</li><li>• 250 GB hard drive</li><li>• NTFS format</li></ul>
Software	<ul style="list-style-type: none"><li>• Microsoft™ Windows™ 7 SP1 Operating System (32-bit or 64-bit)</li><li>• Thermo Scientific™ Xcalibur™ Foundation<sup>2</sup></li><li>• Thermo Scientific™ TraceFinder™<sup>2</sup></li></ul>

<sup>1</sup>Check release notes for compatibility with Ion Trap Series instrument control software.  
<sup>2</sup>Check release notes for compatibility with Thermo Foundation, Xcalibur, and Ion Trap Series instrument control software.

## Safety and Special Notices

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

Safety and special notices include the following:



**CAUTION** Highlights hazards to humans, property, or the environment. Each CAUTION notice is accompanied by an appropriate CAUTION symbol.

**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** Highlights information of general interest.

**Tip** Highlights 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 and/or instrument damage. Cautions and warnings are following by a descriptor. A **WARNING** is intended to prevent improper actions that *could* cause personal injury. A **CAUTION** is intended to prevent improper actions that *may* cause personal injury and/or instrument damage. The following safety symbols may be found on your instrument and/or in this guide.





**BURN HAZARD:** This symbol alerts you to the presence of a hot surface that *could* or *may* cause burn injuries.



**ELECTRICAL SHOCK HAZARD:** This symbol indicates that an electrical shock *could* or *may* occur.



**FIRE HAZARD:** This symbol indicates a risk of fire or flammability *could* or *may* occur.



**FLAMMABLE GAS HAZARD:** This symbol 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 *may* cause physical injury.



**GLOVES REQUIRED:** This symbol indicates that you must wear gloves when performing a task or physical injury *could* or *may* occur.



**HAND AND CHEMICAL HAZARD:** This symbol indicates that chemical damage or physical injury *could* or *may* occur.



**INSTRUMENT DAMAGE:** This symbol indicates that damage to the instrument or component *may* occur. This damage may not be covered under the standard warranty.



**LIFTING HAZARD:** This symbol indicates that a physical injury *could* or *may* occur if two or more people do not lift an object.



**MATERIAL AND EYE HAZARD:** This symbol indicates that eye damage *could* or *may* occur.



**RADIOACTIVE HAZARD:** This symbol indicates that exposure to radioactive material *could* or *may* occur.



**READ MANUAL:** This symbol 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 *may* put you at risk for a physical injury.



**TOXIC SUBSTANCES HAZARD:** This symbol indicates that exposure to a toxic substance could occur and that exposure *could* or *may* cause personal injury or death.



This is the general warning symbol that the ISO 3864-2 standard uses to prevent personal injury. This symbol precedes the **WARNING** safety alert word. 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. We use this symbol and another appropriate safety symbol to alert you to an imminent or potential hazard that *could cause personal injury*.

## Contacting Us

There are several ways to contact Thermo Fisher Scientific for the information you need.

### ❖ To contact Technical Support

Phone	800-532-4752
Fax	561-688-8736
E-mail	<a href="mailto:us.techsupport.analyze@thermofisher.com">us.techsupport.analyze@thermofisher.com</a>
Knowledge base	<a href="http://www.thermokb.com">www.thermokb.com</a>

### ❖ To contact Customer Service for ordering information

Phone	800-532-4752
Fax	561-688-8731
E-mail	<a href="mailto:us.customer-support.analyze@thermofisher.com">us.customer-support.analyze@thermofisher.com</a>
Web site	<a href="http://www.thermo.com/ms">www.thermo.com/ms</a>

### ❖ To get local contact information for sales or service

Go to [www.thermoscientific.com/wps/portal/ts/contactus](http://www.thermoscientific.com/wps/portal/ts/contactus).

### ❖ To suggest changes to documentation or to Help

- Fill out a reader survey online at [www.surveymonkey.com/s/PQM6P62](http://www.surveymonkey.com/s/PQM6P62).
- Send an e-mail message to the Technical Publications Editor at [techpubsaustin@thermofisher.com](mailto:techpubsaustin@thermofisher.com).

# Site Preparation

This chapter contains detailed specifications for preparing your site before having the Ion Trap Series system installed.

## Contents

- Entrance Requirements
- Workbench & Space Requirements
- Lighting Requirements
- Power Requirements
- Gas Equipment Requirements
- Solvent Requirements
- Environmental Requirements
- Telephone Requirements
- Receiving Instructions
- What Happens Next?

## Entrance Requirements

1. See if your delivery doors are at least 102 cm (40 in.) across.
2. Consider any additional room you might need for moving the boxes around corners, into elevators, or through doorways.

The MS, rotary-vane pump, and accessories are shipped in boxes with these approximate dimensions:

**Table 1.** Box Dimensions

Box	Length	Width	Height	Weight
MS, rotary-vane pump, and accessories	102 cm (40 in.)	102 cm (40 in.)	117 cm (46 in.)	147 kg (325 lbs) maximum
Data System (computer) Monitor	Modules such as the computer, monitor, gas chromatograph, and optional instruments are shipped in their own containers. Their dimensions and weights are less than those of the MS' container.			
TRACE GC Ultra	79 cm (31 in.)	79 cm (31 in.)	79 cm (31 in.)	73 kg (161 lbs)
AI/AS 3000 II	36 cm (14 in.)	51 cm (20 in.)	41 cm (16 in.)	15 kg (33 lbs) maximum
AI/AS 1310	36 cm (14 in.)	51 cm (20 in.)	36 cm (14 in.)	22 kg (49 lbs)
TriPlus	81 cm (32 in.)	140 cm (55 in.)	61 cm (24 in.)	54 kg (119 lbs) maximum
TriPlus RSH (with standard X-axis)	65 cm (26 in.)	100 cm (39 in.)	32 cm (13 in.)	55 kg (121 lbs) maximum
TriPlus RSH (with extended X-axis)	65 cm (26 in.)	105 cm (41 in.)	32 cm (13 in.)	60 kg (132 lbs)

## Workbench & Space Requirements

This section helps you prepare adequate space and weight required by the system components.

**Table 2.** Workbench and Space Requirements.

Instrument	Depth		Width		Height		Weight	
	cm	in.	cm	in.	cm	in.	kg	lbs
Ion Trap Series MS	68	27	38	15	44	17	45	98
TRACE GC Ultra	65	25.5	61	24	48	19	48	105
FOCUS GC	68	27	36	14	46	18	30	66
TRACE 1300	60	24	44	17	45	18	55	121
TRACE 1310	67	26	44	17	45	18	55	121
Rotary Vane Pump <sup>a,b</sup>	45	18	20	8	25	10	24	52
Computer <sup>b</sup>	44.5	17.5	16.5	6.5	42	16.5	12	27
Monitor <sup>b</sup>	43	17	40	16	42	16.5	14	30
Keyboard <sup>b</sup>	18	7	47	18	2.5	1	1	2
AI/AS 3000 Autosampler <sup>c</sup>	30	12	40	16	48	19	6	13
AS/AI 1310 Autosampler <sup>c</sup>	28	11	41	16	40	19	6	13
TriPlus Autosampler <sup>c</sup>	50	19.7	54	21.3	69	27	25	56
TriPlus RSH standard X axis <sup>c</sup>	80	32	99	39	74	29	25	55
TriPlus RSH extended X-axis <sup>c</sup>	80	32	135	53	74	29	27	60
Direct Sample Probe <sup>d</sup>	54	21	33	13	12	5	6	13

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

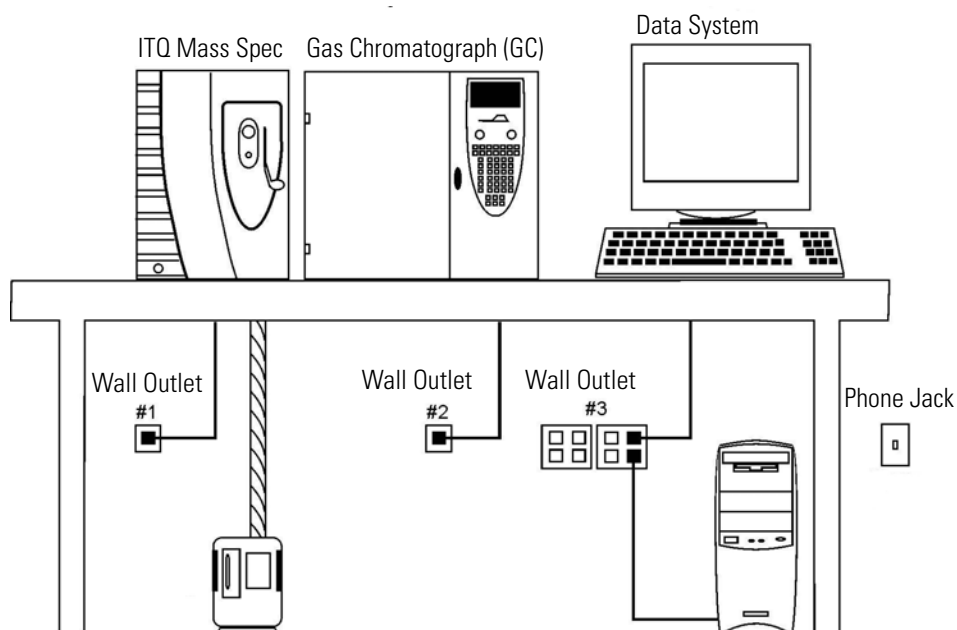
<sup>b</sup>Dimensions vary per manufacturer, therefore approximations are provided.

<sup>c</sup>Mounts on top of GC.

<sup>d</sup>Sits on top or to the side of the MS.

- Determine if you have at least 2 m (6 ft.) of workbench space for a standard Ion Trap Series system. This includes 98 cm (39 in.) for the MS and GC, 40 cm (16 in.) to the left of the MS for maintenance, and 47 cm (18 in.) for the monitor and keyboard.

**Figure 1.** Ion Trap Series System (Recommended Layout)



Weight on the Workbench = 119 kg (262 lbs). Workbench Length = 2m (6 ft).

- Supply a 1-in. i.d. hose to a fume hood or other suitable exhaust port. Consult local Environmental and Safety Regulations for instructions in exhausting fumes from your system.



**CAUTION INSTRUMENT DAMAGE.** The pump exhaust contains carrier gas, solvents, analytes, and a small amount of oil vapor, which are characteristic for these pumps to emit. For your safety, the exhaust must be vented outside the building. A 1-in. (25.4 mm) hose fitting is provided on the pump exhaust. You must provide a suitable hose to outside the building or a fume hood. Positive pressure exhausts are not suitable.

- Allow at least 30 cm (12 in.) of clearance behind the workbench. This space allows for proper air circulation, clearance of the gas lines, electrical connections, and horizontal movement of the TriPlus “Y” axis arm.
- Make sure you have least 92 cm (3 ft.) of clearance above the instrument. This allows room for optional accessories (such as autosamplers) and proper heat dissipation.
- Make sure your workbench supports at least 119 kg (262 lbs) for a standard Ion Trap Series system. Keep in mind additional instruments add to the total weight.
- Ensure that your work area is stable and free from vibration, because the Ion Trap Series system is a sensitive instrument. Be aware of vibrations caused by equipment located nearby. For example, place the rotary-vane pump on the floor, because it vibrates as it

operates. The rotary-vane pump should never be on the same workbench as the instruments.

## Lighting Requirements

1. Ensure that your work area is properly lit.
2. Use an overhead lamp to light your work area.

Use a small, high-intensity lamp when you clean the Ion Trap Series components.

## Power Requirements

The power quality supplied to your system is very important. It must be stable and within the minimum specifications listed in this section.

1. Test the power source quality in your laboratory to offset line voltage problems.

Improving power source quality is a complex task best handled by a company or consultant specializing in that field. Contact your regional Thermo Scientific Customer Service office for assistance in locating a power consultant. Having a poor quality power source degrades mass spectrometer system performance. Here are some examples of poor power source quality:

- Harmonic Distortion causes noise in the power supply lines and degrades instrument performance. Harmonic distortion is a high-frequency disturbance that may affect operation of your mass spectrometer. This disturbance appears as distortion of the fundamental sine wave. Total harmonic distortion should be less than 6%. For more information, see “[EMC Directive 89/336/EEC](#)” on [page ix](#). However, the power specifications for the mass spectrometer system are more exact than those of the IEC.
  - Sags are constant low line voltage, which cause the system to function erratically or not at all.
  - Slow changes are gradual, long-term changes in average root mean square (RMS) voltage level, with typical durations greater than 2 s.
  - Surges are constant high line voltage, which cause overheating and component failure. Sags and surges are slow changes in average root mean square (RMS) voltage level, with typical durations between 50 ms and 2 s.
  - Transients, even of a few microseconds duration cause electronic devices to fail or to degrade and significantly shorten their lives. Transients (or impulses) are brief voltage excursions of up to several thousand volts with durations less than 50 ms.
2. Use [Table 3](#) or [Table 4](#) to determine how many circuits and wall outlets you need. Keep in mind:

## 1 Site Preparation

### Power Requirements

- Power must be single phase
  - Wall outlets must have earth-ground hard-wired to the main panel
  - Included power cords are at least 2 m (6 ft.) long
- a. Look at your Customer Sales Order to determine if the instrument is 120 V or 230 V, because it cannot be reconfigured once your field service engineer arrives.
  - b. Contact your local Customer Service office to discuss power cord sets concerns.



**Table 3.** 120 Vac Requirements. 120 V ac +6/-10%, 50/60 Hz  $\pm$  2 Hz, Single-Phase < 6% Total Harmonic Distortion

<b>Instrument</b>	<b>Number of Circuits Required</b>	<b>Max. Current (A)</b>	<b>Max. Power (VA)</b>
Ion Trap Series <sup>1</sup> MS (including rotary-vane pump)	1	15	1800
TRACE GC Ultra <sup>1</sup> or FOCUS GC <sup>1</sup>	1	16 13.3	1920 1600
TRACE 1300/1310 GC <sup>1</sup>	1	16	2000
Computer <sup>2</sup>	Additional (as needed)	5	600
Monitor <sup>2</sup>	Additional (as needed)	2	240
AI/AS 1310 autosampler	Additional (as needed)	0.8	95
TriPlus Autosampler	Additional (as needed)	2	240
TriPlus RSH <sup>3</sup>	Additional (as needed)	3.2	200 with one power module  400 with two power modules
TriPlus 300 Headspace	Additional (as needed)	10.8	1300
Direct Sample Probe	Additional (as needed)	1.3	160

<sup>1</sup>This instrument must be on its own circuit.

<sup>2</sup>Power requirements vary by manufacturer.

<sup>3</sup>If using the temperature controlled door option, one additional circuit is needed.

**Table 4.** 230 Vac Requirements: 230 V ac  $\pm 10\%$ , 50/60 Hz  $\pm 2$  Hz, Single-Phase < 6% Total Harmonic Distortion

<b>Instrument</b>	<b>Number of Circuits Required</b>	<b>Max. Current (A)</b>	<b>Max. Power (VA)</b>
Ion Trap Series <sup>1</sup> MS (including rotary-vane pump)	1	7.8	1800
TRACE GC Ultra <sup>1</sup> or FOCUS GC	1	10 8	1920 1600
TRACE 1300/1310 GC <sup>1</sup>	1	10	2000
Computer <sup>2</sup>	Additional (as needed)	2.6	600
Monitor <sup>2</sup>	Additional (as needed)	1	240
AI/AS 1310 Autosampler	Additional (as needed)	0.4	95
TriPlus Autosampler	Additional (as needed)	1	240
TriPlus RSH <sup>3</sup>	Additional (as needed)	1.7	200 with one power module  400 with two power modules
TriPlus 300 Headspace	Additional (as needed)	5.7	1300
Direct Sample Probe	Additional (as needed)	0.7	160

<sup>1</sup>This instrument must be on its own circuit.

<sup>2</sup>Power requirements vary by manufacturer.











<sup>3</sup>If using the temperature controlled door option, one additional circuit is needed.

3. Make sure you have at least three (3) separate circuits. They should be within 2 m (6 ft.) of the instrument (see [Figure 1](#)).












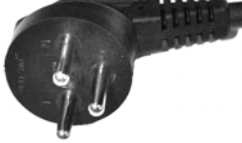




For example, use one circuit for the GC, one circuit for the mass spectrometer, and one circuit for the data system and any options. But, do not connect the GC and mass spectrometer to the same circuit. The extra outlets illustrated in [Figure 1](#) are for additional options.

4. Make sure that the instruments you plug in do not exceed the maximum circuits and current rating.
5. The Ion Trap Series MS comes with the required number and type of power cords for your region. [Table 5](#) will help you identify the correct power cord for your region and instrument. It also includes the Thermo Scientific part numbers to reorder. You may use any brand of power cord, as long as it is appropriate for your region.

**Table 5.** Power cord identification and ordering information by region. (Sheet 1 of 2)

Region	Thermo Scientific Part Number C13 (for PC, monitors, and autosamplers)	Thermo Scientific Part Number C19 (for GC and MS)
North American 120V		
North American 250V		
Japanese 125V		
Switzerland 250V		
Australian 250V		

**Table 5.** Power cord identification and ordering information by region. (Sheet 2 of 2)

Region	Thermo Scientific Part Number C13 (for PC, monitors, and autosamplers)	Thermo Scientific Part Number C19 (for GC and MS)
China 250V		
Europe-Schuko 250V		
United Kingdom 250V		
Danish 250V		
Italian 250V		
Israeli 250V		
Indian 250V		
Argentina 250V		

**Note** The 250V region power cords will work with the 230V circuits.

## Gas Equipment Requirements

Provide the gas supplies for your system far enough ahead of time to have them ready for your installation.

1. Obtain the correct carrier gas and regulator.

You must provide a supply of ultra-high purity helium for the GC carrier gas. A single full-size tank is adequate for the typical flow of 30-50 mL/min. Typical cylinders are about 23 cm (9 in.) wide by 140 cm (55 in.) tall and output >15,000 kPa (2200 psig). A cylinder with about 8 m<sup>3</sup> of helium will last about three (3) months. You must also provide a suitable dual-stage stainless steel diaphragm regulator with a 1/8-in. Swagelok-type connector.

**Table 6.** Carrier Gas Specifications

Gas Type	Purity	Outlet Pressure	Regulator	Connector
Helium	99.999% <sup>a</sup>	400-700 kPa (60-100 psig)	Dual stage brass regulator with SS diaphragm. Use PN 116636-0580 or equivalent.	CGA-580

<sup>a</sup>Ultra-high purity with less than 1.0 ppm each of water, oxygen, and total hydrocarbons and contained in one tank.

2. [Optional] If necessary, obtain the correct CI Reagent Gas.

If your instrument is equipped with the chemical ionization (CI) option, you must provide methane. Typical flow rates are only 1-3 mL/min, so smaller tanks such as 0.1 m<sup>3</sup> can be used depending on your expected usage. You must also provide a suitable regulator (dual-stage is preferred) with a 1/8-in. Swagelok type connector.

**Table 7.** CI Gas Specifications

Gas Type	Purity	Outlet Pressure	Regulator	Connector
Methane	99.99% high-purity	35-240 kPa (5-35 psig)	Dual stage brass regulator with SS diaphragm. Use PN 116636-0350 or equivalent	CGA-350
Isobutane	99.9% instrument grade	35-240 kPa (5-35 psig),	Consult gas supplier for specific regulator requirements	CGA-510
Ammonia	99.99%, anhydrous grade	35-240 kPa, (5-35 psig)	Consult gas supplier for specific regulator requirements	CGA-240



**CAUTION INSTRUMENT DAMAGE.** Do not exceed 240 kPa (35 psig) to the CI reagent gas flow module.

**Note** CI equipped systems use flammable gases, which must be suitably vented.

3. [Optional] Obtain the correct compressed air, if necessary.

Compressed air is required to cool the direct sample probe option. Refer to the Compressed air specifications in this table before installation. Usage depends on how often the direct sample probe option is used. We recommend a full-size tank like the size of the helium cylinder. You must provide a single or dual-stage regulator with a 1/8-in. Swagelok type connector.

**Table 8.** Compressed Air Specifications

Gas Type	Purity	Outlet Pressure	Regulator	Connector
Direct Sample Probes	90% <sup>a</sup>	550-700 kPa (80-100 psig)	Dual stage brass regulator with SS diaphragm. Use PN 116636-0590 or equivalent.	CGA-590

<sup>a</sup>Pure, particle and oil free, and contained in one tank.

4. [Optional] If necessary, obtain the correct cryogenic coolant.

If you have purchased a cryogenic cooling option for the GC and PTV injector, then you will need to provide a coolant supply like liquid nitrogen or liquid carbon dioxide. Be sure to specify to your coolant supplier the exact cryogenic cooling option your GC is configured for before you order cryogenic coolant.

Specific details for the TRACE GC Ultra is in the TRACE GC Ultra Site Preparation and Installation Manual. Contact Customer Support for an additional copy or go to Web address: <http://www.thermo.com> and type TRACE GC Ultra Manuals in the SEARCH box. This will link you to the latest release of TRACE GC Ultra gas requirements.

5. Check your gas lines if the tanks are not located within 2 m (6 ft.) of the instrument. Gas lines should be:
  - As close as possible to the bench where the mass spectrometer system will be installed
  - Copper or stainless steel for helium, methane, and isobutane
  - Free of oil
  - Free of moisture
  - Stainless steel for ammonia

6. Obtain the correct gas line filters.

Gas line filters decrease impurities and contaminants from entering your system. Water, oxygen, and total hydrocarbons should be less than 1 ppm in all cases to avoid high background noise and contaminating the mass spectrometer system. Otherwise, you can use appropriate gas filters to purify the gas. The ITQ is supplied with a gas line filter.

7. Store gas tanks and bottles properly.

Store gas tanks or lecture bottles where they cannot damage cables or gas lines. Also be sure they are secured in accordance with standard safety practices.

## Solvent Requirements

1. Determine the solvent specifications to maintain and clean your system.

**Table 9.** Solvent Specifications

<b>Solvent</b>	<b>Grade</b>
Acetone <sup>a</sup>	Reagent or HPLC Grade
Detergent	Alconox, Micro, or equivalent
Glycerol	Reagent Grade
Methanol	Reagent or HPLC Grade

<sup>a</sup>Do not use Acetone on components made from PEEK.

2. Store and handle these solvents in accordance with standard safety procedures.
3. Use laboratory grade detergents as specified. Common dishwashing detergents often leave residue from fragrance or lotion additives.



## Environmental Requirements

Ensure your laboratory meets the minimum environment requirements. Regulating your environment for temperature, humidity, particulate matter, and electrostatic discharge helps maintain system performance.

1. Ensure that your room temperature is 15-31 °C (59-88 °F).

The ideal operating temperature is 18-21 °C [64- 70 °F]. Electronic components generate heat while operating; the heat must dissipate into the surrounding air for the components to continue to operate. This is why it is important to maintain a consistent temperature and air flow around the system. Cooling a basic mass spectrometer system with air conditioning requires approximately 3,940 W (13,450 Btu hr<sup>-1</sup>) of capacity (see [Table 10](#)). The cost of air conditioning is more than offset by good sample throughput and reduced repair costs.

**Table 10.** Maximum Heat Output

	Instrument	Heat Output (in Btu hr <sup>-1</sup> )	Heat Output (in W)
Standard	Ion Trap Series MS	2390	700
	TRACE GC Ultra	8190	2400
	FOCUS GC	5500	1600
	Monitor	820	240
	Computer	2050	600
Options	AS 2000, AI/AS 3000 Autosampler	570	170
	TriPlus Autosampler	820	240
	Tekmar Velocity	2040	600
	Tekmar Aquatek	2570	750
	Tekmar Solatek	2460	720
	Direct Sample Probe	820	240
	Hewlett-Packard DeskJet printer/plotter	410	120
	Hewlett-Packard LaserJet printer	3200	940

2. Ensure that the relative humidity in your laboratory is between 40 and 80%, with no condensation.
  - a. If you operate your mass spectrometer system in low humidity, static electricity accumulates and discharges, which shortens the life-cycle of electronic components. In contrast, high humidity causes condensation and short circuits to occur.
  - b. Put a temperature and humidity monitor in your laboratory to ensure that temperature and humidity do not exceed 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  $\mu\text{m}$ ) per 28 L (1 cubic foot). Dust forms a layer on electronic components that reduces their heat dissipation, causing them to overheat. Dust, smoke and other particulate matter clogs air pathways, reducing air flow around your electronic components.

4. Ensure that your site is free of electrostatic discharge.

Electrostatic Discharge (ESD) damages the electronic components of your mass spectrometer system. Human beings cannot detect ESD until the potential is about 4000 V. Many electronic Components, however, are damaged by a discharge of electrostatic potential of as little as 100 V. ESD can damage sensitive components, resulting in premature failures.

## **ESD Precautions**

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

## Telephone Requirements

1. Check if your telephone is within 2 m (6 ft.) of your system.

This allows you to operate the system while talking on the phone with Thermo Scientific Technical Support, should the need arise. Thermo Scientific Technical Support staff are available by phone or fax to help you.

2. Call your Thermo Scientific Customer Service Representative for questions about parts, instruments, or service.

## Receiving Instructions

1. Complete the Preinstallation Checklist located at the front of your guide and forward it to the Customer Support office.
2. When the boxes arrive, determine if your instrument was shipped either Domestic or International, to determine shipping liabilities.

- Domestic Shipments

Instruments are shipped in one of two manners: Free On Board (FOB) Austin, TX, USA, or FOB destination.

The method of shipment determines who has responsibility for filing a claim against the carrier if the system is damaged in transit.

Most systems are shipped FOB Austin, TX, and in this instance any damages incurred in shipment are the responsibility of the purchaser and the carrier. If necessary, we will assist with filing claims and (billable) repairs. If the system is shipped FOB destination, we will file a claim against the carrier. However, we do not accept liability for damage if materials are received with obvious damage, and the damage is not recorded on the receiving documents.

- International Shipments

Instruments shipped outside of the USA are usually shipped Carriage and Insurance Paid (CIP) to Destination, unless otherwise specified. If the system is shipped CIP destination and damages occur during shipment, we will file a claim against the carrier. However, we do not accept liability for damage if materials are received with obvious damage, and the damage is not recorded on the receiving documents.

3. 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. By following these instructions, you can protect yourself and your company from any possible loss or liability.

Please inspect for obvious damage or evidence of rough handling, including triggering of the Shockwatch® or Tiltwatch™ labels when receiving material.

4. If you see external damage:
  - a. Do not refuse shipment. Instead, make a note of any damage on the receiving documents and leave the instruments in their original packaging.
  - b. Request inspection from the carrier within 15 days of delivery (3 days for international), and contact our Customer Service Representative to report the damage.
  - c. Move the cartons to a protected location, preferably the installation site.
  - d. Leave the boxes as complete as possible and do not unpack or open the boxes without our Field Service Engineer (FSE) present. Doing otherwise may void your warranty or order.

## What Happens Next?

Tell your Customer Service Representative that your instruments are ready to be installed.

If your site meets all items listed on the Preinstallation Checklist, then a standard mass spectrometer system takes about 48-hours for an engineer to install.

Your field service engineer will unpack and install your system. Next, the engineer will run tests to make sure the system is working according to factory specifications. Afterwards, the engineer will provide a brief demonstration on how to use your system and the software. Your field service engineer will perform the following:

1. Unpack and install your Ion Trap Series system including optional instruments.
2. Install a TR-5MS column in the GC and allow the MS to pump down overnight.
3. Run a series of tests the next day to verify the performance of the system.

The field service engineer performs the same series of injections that we do at the factory in your laboratory. For example, at the factory, your Ion Trap Series is put through a series of tests to qualify that it meets specifications before shipping.

- a. First, it is thoroughly checked for leaks in the vacuum systems.
- b. Next, it is put through a series of diagnostic checks to verify all of the electronics are functioning properly.
- c. Finally, it is attached to your GC and the complete system is tested.

4. Perform a series of injections with the test compound to verify the system meets signal and noise requirements.
5. Place the instrument methods on your hard-drive for each test and the data file generated on your PC for your review.

These methods are stored under \Xcalibur\Examples\Methods and the raw data files are stored under \Xcalibur\Data\Factory Test Data.

6. Verify that the system is in working order and meets the required Ion Mode Specifications.

## **1 Site Preparation**

What Happens Next?

## End User License Agreements

This appendix contains the end user license agreements (EULA) for TraceFinder 3.2 with Apache OpenOffice 4.0.1 with TraceFinder 3.2, and Microsoft Office Professional Plus 2013 with TraceFinder 3.2. Read the agreement and sign the designated area of the Preinstallation Survey.

### Contents

[End-User License Agreement–Apache OpenOffice 4.0.1 and TraceFinder 3.2](#)

[End-User License Agreement–Microsoft Office Professional Plus 2013 and TraceFinder 3.2](#)

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3. The Software and the Documentation are and shall remain the property of Thermo or an Information Partner as applicable and are protected by all applicable intellectual property, copyright, and patent laws, as well as international treaties and other contractual rights. The Software and Documentation are and shall remain the confidential and proprietary information of Thermo and Information Partners, and Customer shall not disclose the Software and Documentation to any third party or place such items in the public domain.
4. No title, ownership or interest in the Software or Documentation is transferred to Customer by this Agreement or by the payment of any fee.
5. Any rights not expressly granted herein to Customer are reserved to Thermo and Information Partners.

## C. WHAT CUSTOMER MAY DO

1. Use the Software only to perform the functions for which the Software was designed as set forth in the applicable Documentation and only in connection with Customer’s internal business, scientific and research purposes.

## D. WHAT CUSTOMER MAY NOT DO

1. Create derivative works of, decompile, reverse engineer or attempt to determine the source code of the Software.
2. Sell, distribute or commercially exploit the Software and Documentation without the prior written consent of Thermo.

3. Transfer, assign or sublicense the Software or Documentation without the prior written approval of Thermo; provided, however, that Customer may transfer the Software, upon written notification to Thermo, to an affiliate or successor in interest of Customer for such affiliate's or successor's use in accordance with the terms and conditions of this Agreement.

## **E. LIMITATION OF WARRANTIES AND LIABILITY**

1. The Software provided under this Agreement is a tool. Its successful use and operation is dependent on the skill of the operator, and it is not a substitute for skilled human judgment. It is possible to obtain erroneous results by giving inappropriate instructions to the Software.
2. THERMO AND ITS INFORMATION PARTNERS PROVIDE THE SOFTWARE AND DOCUMENTATION TO CUSTOMER ON AN "AS IS" BASIS AND MAKE NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WITH RESPECT TO THE SOFTWARE AND DOCUMENTATION, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. THERMO DISCLAIMS ALL WARRANTIES WITH RESPECT TO THIRD-PARTY PRODUCTS, INCLUDING SOFTWARE PROVIDED BY INFORMATION PARTNERS.
3. THERMO AND INFORMATION PARTNERS ASSUME NO RESPONSIBILITY FOR THE USE OF THE SOFTWARE AND DOCUMENTATION BY THE CUSTOMER OR ANY OTHER PARTY, AND THERMO AND INFORMATION PARTNERS SHALL NOT BE LIABLE FOR LOSS OF PROFITS, USE, BUSINESS, REVENUES, DATA, INFORMATION OR GOODWILL OR FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, PUNITIVE OR EXEMPLARY DAMAGES AS A RESULT OF SUCH USE, EVEN IF THERMO AND/OR INFORMATION PARTNERS ARE EXPRESSLY MADE AWARE OF THE POSSIBILITY THEREOF OR ARE NEGLIGENT. Thermo cannot and does not guarantee or warrant that the Software or files available for downloading through any Thermo download Web Site are or will be free of infection or viruses, worms, Trojan horses or other code that manifest contaminating or destructive properties. Customer is responsible for implementing sufficient procedures and checkpoints to satisfy its particular requirements for accuracy of data input and output, and for maintaining a means external to the Site for the reconstruction of any lost data. It is solely Customer's responsibility to evaluate the accuracy, completeness and usefulness of all Software. Thermo does not warrant the accuracy, currency, and completeness of Software or that the Software is error-free, will accomplish any particular result or will operate without interruption.
4. IN NO EVENT MAY ANY ACTION BE BROUGHT AGAINST THERMO OR INFORMATION PARTNERS ARISING OUT OF THIS AGREEMENT MORE THAN ONE YEAR AFTER THE CLAIM OR CAUSE OF ACTION ARISES, DETERMINED WITHOUT REGARD TO WHEN THE CUSTOMER SHALL HAVE LEARNED OF THE ALLEGED DEFECT, INJURY, OR LOSS.
5. IN NO EVENT SHALL THE TOTAL LIABILITY OF INFORMATION PARTNERS AND THERMO EXCEED THE LICENSE FEE PAID BY CUSTOMER FOR THE

SOFTWARE GIVING RISE TO THE CLAIM (WHETHER SUCH LIABILITY ARISES FROM TORT, NEGLIGENCE, STRICT LIABILITY, BREACH OF WARRANTY, BREACH OF CONTRACT OR OTHERWISE).

6. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF IMPLIED WARRANTIES OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSIONS OR LIMITATIONS MAY NOT APPLY TO EVERY CUSTOMER WHERE APPLICABLE.

#### **F. APPLICABLE LAW**

1. This Agreement will be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts without giving effect to the principles of conflict of laws thereof, and both parties consent to the jurisdiction of the federal and state courts situated in the Commonwealth of Massachusetts in any action arising under this Agreement. In the event of any legal proceeding between Thermo and Customer relating to this Agreement, neither party may claim the right to a trial by jury, and both parties waive any right to a trial by jury. The application of the U.N. Convention on Contracts for the International Sale of Goods to this Agreement is hereby expressly excluded.

#### **G. EXPORT COMPLIANCE**

1. Customer acknowledges that the Software and Documentation is subject to export controls of the U.S. Government, which may include those of the Export Administration Regulations of the U.S. Department of Commerce. Customer agrees to comply with the Export Administration Regulations and all other applicable laws and regulations relating to the export, re-export, or import of the Software and Documentation.

#### **H. ENTIRE UNDERSTANDING**

1. This Agreement constitutes the entire understanding of the parties with respect to the subject matter hereof. Without limiting the generality of the foregoing, it is expressly agreed that the terms of any prior Customer purchase order will be subject to the terms of this license and that any acceptance of a purchase order by Thermo will be for acknowledgment purposes only and none of the terms set forth in the purchase order will be binding upon Thermo. Any representation, promise, warranty, covenant or undertaking not expressly set forth in this license shall not be deemed a part of the Agreement or otherwise legally effective.

#### **I. SEVERABILITY**

1. If a term or condition of this Agreement is held to be invalid or unenforceable, the remaining terms and conditions of this Agreement will remain in full force and effect.

#### **J. AUDIT**

1. Customer grants Thermo the right to audit, during regular business hours, Customer's use of the Software and Documentation to ensure compliance with this Agreement.

#### **K. INDEMNIFICATION**

1. Customer agrees to indemnify, defend and hold harmless Thermo and Information Partners from and against any and all claims of third parties arising out of or related to Customer's use of the Software, regardless whether such claims were foreseeable by Thermo or the Information Partners.

#### **L. TERMINATION**

1. Thermo may, in addition to its other legal rights and remedies and upon written notice to Customer, terminate this Agreement in the event Customer breaches any term of this Agreement or becomes insolvent, files or has filed against it a petition in bankruptcy or undergoes a reorganization pursuant to a petition in bankruptcy filed with respect to it.
2. Upon termination, Customer will, unless otherwise agreed to in writing by Thermo, immediately return to Thermo the Software and Documentation, and all copies thereof, and will erase all electronic storage of copies of the Software.
3. Termination of this Agreement will not affect any obligation or liability of Customer arising prior to termination, and the following sections shall survive: 2b, 2c, 2d, 2.2, 3 through 9, 10b, 10c, 11 and 12.

#### **M. FORCE MAJEURE**

1. Neither Thermo nor Information Partners will be responsible for any delay or failure in performance resulting from any cause beyond their control.

#### **N. RESTRICTED RIGHTS APPLICABLE TO U.S. GOVERNMENT ONLY**

1. Use, duplication or disclosure of any included database, Software or associated materials by the U.S. Government is subject to the restricted rights applicable to commercial computer software (under FAR 52.227019 and DFARS 252.227-7013 or parallel regulations). The manufacturer for this purpose is Thermo Finnigan LLC, 355 River Oaks Parkway, San Jose, CA 95134-1908 or the applicable Information Partner.

## **End-User License Agreement—Microsoft Office Professional Plus 2013 and TraceFinder 3.2**

IF YOU PURCHASED THE TRACEFINDER 3.2 WITH MICROSOFT OFFICE SOFTWARE PACKAGE THEN YOU AGREE TO BE BOUND BY THIS COMBINED END-USER LICENSE AGREEMENT (EULA) FOR THERMO FISHER SCIENTIFIC TRACEFINDER 3.2 AND MICROSOFT OFFICE PROFESSIONAL PLUS 2013

**Thermo Scientific TraceFinder 3.2 with Microsoft Office Professional Plus 2013 Edition**

**Licenses: One (1) for Microsoft Office Professional Plus 2013 Edition and two (2) for Thermo Fisher Scientific TraceFinder 3.2.**

**END-USER LICENSE AGREEMENT – MICROSOFT OFFICE PROFESSIONAL PLUS 2013 EDITION**

Thank you for choosing a software application that includes Microsoft Office 2013. This is a license agreement between the licensor of the software application or suite of applications with which you acquired the Microsoft software (“licensor”) and you. For your convenience, we’ve organized this agreement into two parts. The first part includes introductory terms; the Additional Terms follow and contain greater detail. You should review the entire agreement, including any linked terms, because all of the terms are important and together create this contract that applies to you. You can review linked terms by pasting the forward link into your browser window. **THE ADDITIONAL TERMS CONTAIN A BINDING ARBITRATION CLAUSE AND CLASS ACTION WAIVER. IF YOU LIVE IN THE UNITED STATES, THESE AFFECT YOUR RIGHTS TO RESOLVE A DISPUTE WITH THE LICENSOR OR MICROSOFT, AND YOU SHOULD READ THEM CAREFULLY.**

**BY ACCEPTING THIS AGREEMENT OR USING THE SOFTWARE, YOU AGREE TO ALL OF THESE TERMS AND CONSENT TO THE TRANSMISSION OF CERTAIN INFORMATION DURING ACTIVATION AND FOR INTERNET-BASED FEATURES OF THE SOFTWARE. IF YOU DO NOT ACCEPT AND COMPLY WITH THESE TERMS, YOU MAY NOT USE THE SOFTWARE OR FEATURES.** Instead, you should return it to the place where you purchased the software license, for a refund or credit.

**How can I use the software?** We do not sell our software or your copy of it – we only license it. Under our license we grant you the right to install and run that one copy on one computer (the licensed computer) for use by one person at a time, but only if you comply with all the terms of this agreement. Our software license is permanently assigned to the licensed computer. Please refer to the Additional Terms for licenses and conditions that are specific to certain countries, Limited Rights Versions and Special Editions of the software. The components of the software are licensed as a single unit. You may not separate or virtualize the components and install them on different computers. The software may include more than one version, such as 32-bit and 64-bit, and you may install and use only one version at a time. Except for the permitted use described under “Remote Access” below, this license is for direct use of the software only through the input mechanisms of the licensed computer, such as a keyboard, mouse, or touchscreen. It does not give permission for installation of the software on a server or for use by or through other computers or devices connected to the server over an internal or external network. The software also is not licensed for commercial hosting. For more information on multiple user scenarios and virtualization, see the Additional Terms.

**How do I obtain a backup copy?** You may order or download a backup copy of the software from [microsoft.com/office/backup](http://microsoft.com/office/backup). You may not distribute the backup copy of the software. You may use it only to reinstall the software on the licensed computer.

**Can I transfer the software to another computer or user?** You may not transfer the software to another computer or user. You may transfer the software directly to a third party only, as part of a transfer of the integrated software turnkey application or suite of applications (the “Unified Solution”) delivered to you by or on behalf of the Licensor solely as part of the



Unified Solution, and as installed on the licensed computer, with the Certificate of Authenticity label, if applicable, and this agreement. Before the transfer, that party must agree that this agreement applies to the transfer and use of the software. You may not retain any copies.

**How does Internet activation work?** Activation associates the use of the software with a specific computer or device. During activation, the software will automatically contact Microsoft or its affiliate to confirm the license is associated with the licensed computer. This process is called “activation.” Because activation is meant to identify unauthorized changes to the licensing or activation functions of the software, and to otherwise prevent unlicensed use of the software, **you have no right to use the software after the time permitted for activation and you may not bypass or circumvent activation.** If you have not entered a product key during the time permitted for activation, most features of the software will stop running.

**Does the software collect my personal information?** If you connect your computer to the Internet, some features of the software may connect to Microsoft or service provider computer systems to send or receive information. You may not always receive a separate notice when they connect. If you choose to use any of these features, you agree to send or receive this information when using that feature. Many of these features can be switched off or you can choose not to use them.

**How do we use your information?** Microsoft uses the information it collects through the software features to upgrade or fix the software and otherwise improve our products and services. In certain circumstances, we also share it with others. For example, we share error reports with relevant hardware and software vendors, so that they can use the information to improve how their products run with Microsoft products. You agree that we may use and disclose the information as described in our Privacy Statement at [r.office.microsoft.com/r/rlidOOPrivacyState15HighLight?clid=1033](http://r.office.microsoft.com/r/rlidOOPrivacyState15HighLight?clid=1033).

**What does this agreement apply to?** This agreement applies to the software, the media on which you received the software, and also any Microsoft updates, supplements, and services for the software, unless other terms come with them.

**Are there things I’m not allowed to do with the software?** Yes. Because the software is licensed, not sold, Microsoft reserves all rights (such as rights under intellectual property laws) not expressly granted in this agreement. In particular, this license does not give you any right to, and you may not: use or virtualize features of the software separately, publish, copy (other than the permitted backup copy), rent, lease, or lend the software; transfer the software (except as permitted by this agreement), attempt to circumvent technical protection measures in the software, reverse engineer, decompile, or disassemble the software, except if the laws where you live permit this even when our agreement does not. In that case, you may do only what your law allows. When using Internet-based features, you may not use those features in any way that could interfere with anyone else’s use of them, or to try to gain access to any service, data, account or network, in an unauthorized manner.



**What about upgrading or converting the software?** If you install the software covered by this agreement as an upgrade or conversion to your existing software, then the *upgrade or conversion replaces the original software that you are upgrading or converting from*. You do not retain any rights to the original software after you have upgraded and you may not continue to use it or transfer it in any way. This agreement governs your rights to use the upgrade software and replaces the agreement for the software from which you upgraded.

## **ADDITIONAL TERMS**

### **A. LICENSE RIGHTS AND MULTI USER SCENARIOS**

1. **Computer**. In this agreement, “computer” means a hardware system (whether physical or virtual) with a storage device capable of running the software. A hardware partition or blade is considered to be a computer.
2. **Multiple or Pooled Connections**. You may not use hardware or software to multiplex or pool connections, or otherwise allow multiple users or multiple computers or devices to access or use the software indirectly through the licensed computer.
3. **Use in a Virtualized Environment**. If you use virtualization software, including client hyper-v, to create one or more virtual computers on a single computer hardware system, each virtual computer, and the physical computer, is considered a separate computer for purposes of this agreement. This license allows you to install only one copy of the software for use on one computer, whether that computer is physical or virtual. If you want to use the software on more than one computer, you must obtain separate copies of the software and a separate license for each copy. Content protected by digital rights management technology or other full-volume disk drive encryption technology may be less secure in a virtualized environment.
4. **Remote access**. The user that primarily uses the licensed computer is the “primary user.” The primary user may access and use the software installed on the licensed device remotely from any other device, as long as the software installed on the licensed device is not being used non-remotely by another user simultaneously. As an exception, you may allow others to access the software simultaneously only to provide you with technical support.

### **B. BINDING ARBITRATION AND CLASS ACTION WAIVER**

1. **Application**. This Section B applies to any dispute **EXCEPT IT DOES NOT INCLUDE A DISPUTE RELATING TO THE ENFORCEMENT OR VALIDITY OF YOUR, THE LICENSOR’S, OR EITHER OF OUR LICENSORS’ INTELLECTUAL PROPERTY RIGHTS**. Dispute means any dispute, action, or other controversy between you and the licensor, or you and Microsoft, concerning the software (including its price) or this agreement, whether in contract, warranty, tort, statute, regulation, ordinance, or any other legal or equitable basis. “Dispute” will be given the broadest possible meaning allowable under law.
2. **Notice of Dispute**. In the event of a dispute, you or the licensor must give the other a Notice of Dispute, which is a written statement of the name, address, and contact information of the party giving it, the facts giving rise to the dispute, and the relief

requested. Send it by U.S. Mail to the licensor, ATTN: LEGAL DEPARTMENT. The licensor will send any Notice of Dispute to your U.S. Mail address if available, or otherwise to your e-mail address. You and the licensor will attempt to resolve any dispute through informal negotiation within 60 days from the date the Notice of Dispute is sent. After 60 days, you or the licensor may commence arbitration.

3. **Small Claims Court.** You may also litigate any dispute in small claims court in your county of residence or the licensor's principal place of business, if the dispute meets all requirements to be heard in the small claims court. You may litigate in small claims court whether or not you negotiated informally first.
4. **BINDING ARBITRATION. IF YOU AND THE LICENSOR, OR MICROSOFT, DO NOT RESOLVE ANY DISPUTE BY INFORMAL NEGOTIATION OR IN SMALL CLAIMS COURT, ANY OTHER EFFORT TO RESOLVE THE DISPUTE WILL BE CONDUCTED EXCLUSIVELY BY BINDING ARBITRATION. YOU ARE GIVING UP THE RIGHT TO LITIGATE (OR PARTICIPATE IN AS A PARTY OR CLASS MEMBER) ALL DISPUTES IN COURT BEFORE A JUDGE OR JURY.** Instead, all disputes will be resolved before a neutral arbitrator, whose decision will be final except for a limited right of appeal under the Federal Arbitration Act. Any court with jurisdiction over the parties may enforce the arbitrator's award.
5. **CLASS ACTION WAIVER. ANY PROCEEDINGS TO RESOLVE OR LITIGATE ANY DISPUTE IN ANY FORUM WILL BE CONDUCTED SOLELY ON AN INDIVIDUAL BASIS. NEITHER YOU, THE LICENSOR, NOR MICROSOFT, WILL SEEK TO HAVE ANY DISPUTE HEARD AS A CLASS ACTION, AS A PRIVATE ATTORNEY GENERAL ACTION, OR IN ANY OTHER PROCEEDING IN WHICH ANY PARTY ACTS OR PROPOSES TO ACT IN A REPRESENTATIVE CAPACITY. NO ARBITRATION OR PROCEEDING WILL BE COMBINED WITH ANOTHER WITHOUT THE PRIOR WRITTEN CONSENT OF ALL PARTIES TO ALL AFFECTED ARBITRATIONS OR PROCEEDINGS.**
6. **Arbitration Procedure.** Any arbitration will be conducted by the American Arbitration Association (the "AAA") under its Commercial Arbitration Rules. If you are an individual and use the software for personal or household use, or if the value of the dispute is \$75,000 or less whether or not you are an individual or how you use the software, the AAA Supplementary Procedures for Consumer-Related Disputes will also apply. To commence arbitration, submit a Commercial Arbitration Rules Demand for Arbitration form to the AAA. You may request a telephonic or in-person hearing by following the AAA rules. In a dispute involving \$10,000 or less, any hearing will be telephonic unless the arbitrator finds good cause to hold an in-person hearing instead. For more information, see [adr.org](http://adr.org) or call 1-800-778-7879. You agree to commence arbitration only in your county of residence or in the licensor's principal place of business. The licensor agrees to commence arbitration only in your county of residence. The arbitrator may award the same damages to you individually as a court could. The arbitrator may award declaratory or injunctive relief only to you individually, and only to the extent required to satisfy your individual claim.
7. Arbitration Fees and Incentives.

- a. Disputes Involving \$75,000 or Less. The licensor will promptly reimburse your filing fees and pay the AAA's and arbitrator's fees and expenses. If you reject the licensor's last written settlement offer made before the arbitrator was appointed ("last written offer"), your dispute goes all the way to an arbitrator's decision (called an "award"), and the arbitrator awards you more than the last written offer, the licensor will give you three incentives: (1) pay the greater of the award or \$1,000; (2) pay twice your reasonable attorney's fees, if any; and (3) reimburse any expenses (including expert witness fees and costs) that your attorney reasonably accrues for investigating, preparing, and pursuing your claim in arbitration. The arbitrator will determine the amounts.
  - b. Disputes Involving More Than \$75,000. The AAA rules will govern payment of filing fees and the AAA's and arbitrator's fees and expenses.
  - c. Disputes Involving Any Amount. In any arbitration you commence, the licensor will seek its AAA or arbitrator's fees and expenses, or your filing fees it reimbursed, only if the arbitrator finds the arbitration frivolous or brought for an improper purpose. In any arbitration the licensor commences, it will pay all filing, AAA, and arbitrator's fees and expenses. It will not seek its attorney's fees or expenses from you in any arbitration. Fees and expenses are not counted in determining how much a dispute involves.
8. Claims or Disputes Must be Filed Within One Year. To the extent permitted by law, any claim or dispute under this agreement to which Section B applies must be filed within one year in small claims court (Section B.3) or in arbitration (Section B.4). The one-year period begins when the claim or dispute first could be filed. If such a claim or dispute is not filed within one year, it is permanently barred.
  9. Severability. If the class action waiver in Section B.5 is found to be illegal or unenforceable as to all or some parts of a dispute, then Section B (arbitration) will not apply to those parts. Instead, those parts will be severed and proceed in a court of law, with the remaining parts proceeding in arbitration. If any other provision of Section B is found to be illegal or unenforceable, that provision will be severed with the remainder of Section B remaining in full force and effect.
  10. Third-Party Beneficiary. Microsoft Corporation is not a party to this agreement but is a third-party beneficiary of your and the licensor's agreement to resolve disputes through informal negotiation and arbitration. If your dispute is with Microsoft, Microsoft agrees to do everything the licensor agrees to do in Section B, and you agree to do everything regarding Microsoft that Section B requires you to do regarding the licensor. Mail a Notice of Dispute with Microsoft to Microsoft Corporation, ATTN: LCA ARBITRATION, One Microsoft Way, Redmond, WA 98052-6399. You may commence an arbitration or small claims court case against Microsoft in your county of residence or King County, Washington.

### C. CHOICE OF LAW

The laws of the state or country where you live govern all claims and disputes under this agreement, including breach of contract claims and claims under state consumer protection laws, unfair competition laws, implied warranty laws, for unjust enrichment, and in tort. If you acquired the software in any other country, the laws of that country apply. This agreement describes certain legal rights. You may have other rights, including consumer rights, under the laws of your state or country. You may also have rights with respect to the party from whom you acquired the software. This agreement does not change those other rights if the laws of your state or country do not permit it to do so.

### D. ACTIVATION

1. More on How Activation Works. During activation, the software will send information about the software and your computer to Microsoft. This information includes the version, license version, language, and product key of the software, the Internet protocol address of the computer, and information derived from the hardware configuration of the computer. For more information about activation, see [microsoft.com/piracy/activation.mspx](http://microsoft.com/piracy/activation.mspx). If the licensed computer is connected to the Internet, the software will automatically connect to Microsoft for activation. You can also activate the software manually by Internet or telephone. In either case, Internet and telephone service charges may apply.
2. Re-activation. Some changes to your computer components or the software may require re-activation of the software.
3. Activation Failure. During online activation, if the licensing or activation functions of the software are found to be counterfeit or improperly licensed, activation will fail. The software will notify you if the installed copy of the software is improperly licensed. In addition, you will receive reminders to obtain a properly licensed copy of the software.
4. Updates and Upgrades. You may only obtain updates or upgrades for the software from Microsoft or authorized sources. Certain upgrades, support, and other services may be offered only to users of genuine Microsoft software. To identify genuine Microsoft software, see [howtotell.com](http://howtotell.com).

### E. INTERNET-BASED FEATURES; PRIVACY

The following software features use Internet protocols, which send to Microsoft (or its suppliers or service providers) computer information, such as your Internet protocol address, the type of operating system, browser and name and version of the software you are using, and the language code of the computer where you installed the software. Microsoft uses this information to make the Internet-based features available to you, in accordance with the Office 2013 Privacy Statement, at [r.office.microsoft.com/r/rlidOOPrivacyState15HighLight?clid=1033](http://r.office.microsoft.com/r/rlidOOPrivacyState15HighLight?clid=1033). Some Internet-based features may be delivered at a later date via Microsoft's Update service.

1. Consent for Internet-Based Services. The software features described below and in the Office 2013 Privacy Statement connect to Microsoft or service provider computer systems over the Internet. In some cases, you will not receive a separate notice when they connect. In some cases, you may switch off these features or not use them. For more information

about these features, see the Office 2013 Privacy Statement at [r.office.microsoft.com/r/rlidOOPrivacyState15HighLight?clid=1033](http://r.office.microsoft.com/r/rlidOOPrivacyState15HighLight?clid=1033). **BY USING THESE FEATURES, YOU CONSENT TO THE TRANSMISSION OF THIS INFORMATION.** Microsoft does not use the information to identify or contact you.

2. **Customer Experience Improvement Program (CEIP).** This software uses CEIP. CEIP automatically sends Microsoft information about your hardware and how you use this software. We do not use this information to identify or contact you. CEIP will also periodically download a small file to your computer. This file helps us collect information about problems that you have while using the software. When available, new help information about the errors might also be automatically downloaded. To learn more about CEIP, see [microsoft.com/products/ceip/EN-US/privacypolicy.aspx](http://microsoft.com/products/ceip/EN-US/privacypolicy.aspx).
3. **Online Features and Content.** Features in the software can retrieve online content from Microsoft and provide it to you. Certain features may also permit you to search for and access information online. Examples of these features include clip art, templates, online training, online assistance and help, and Outlook Weather on the Calendar. If you save a template provided by Office.com, information will be sent online to Microsoft, such as information that identifies the template, but not any specific document you have created using the template. This information is used to provide you with content you request and to improve our services. You may choose not to use these online features and content. See the Office 2013 Privacy Statement linked at the end of this agreement for more information.
4. **Cookies.** If you choose to use online features in the software, such as online assistance and help, and templates, cookies may be set. To learn how to block, control and delete cookies, please read the cookies section of the Office 2013 Privacy Statement linked at the end of this agreement.
5. **Digital Certificates.** The software uses digital certificates. These digital certificates confirm the identity of Internet users sending X.509 standard encrypted information. They also can be used to digitally sign files and macros to verify the integrity and origin of the file contents. The software retrieves certificates and updates certificate revocation lists using the Internet, when available.
6. **Automatic Update.** Software with Click-to-Run technology may periodically check with Microsoft for updates and supplements to the software. If found, these updates and supplements might be automatically downloaded and installed on your licensed computer.
7. **Use of Information.** Microsoft may use the computer information, error reports, and malware reports to improve our software and services. We may also share it with others, such as hardware and software vendors. They may use the information to improve how their products run with Microsoft software.
8. **Misuse of Internet-Based Services.** You may not use these services in any way that could harm them or impair anyone else's use of them. You may not use the services to try to gain unauthorized access to any service, data, account or network by any means.

9. Office Roaming Service. If you choose to sign into the software with your Microsoft account, you turn on the Office Roaming Service. Turning on the Office Roaming Service sends certain settings (including your list of Most Recently Used Documents, your custom dictionary, and your visual themes) online to Microsoft servers, where they are stored and downloaded to your computer the next time you sign into the service with your Microsoft account. For more information about the Office Roaming Service, see the full Privacy Statement found at [r.office.microsoft.com/r/rlidOOPrivacyState15HighLight?clid=1033](http://r.office.microsoft.com/r/rlidOOPrivacyState15HighLight?clid=1033), then clicking the Privacy Statement link in the Important Information section at the bottom of the page.

### F. ADDITIONAL LICENSING REQUIREMENTS AND/OR USE RIGHTS

1. Third-Party Programs. The software may include third-party programs that Microsoft, not the third party, licenses to you under this agreement. Notices, if any, for the third-party program are included for your information only.
2. Font Components. While the software is running, you may use its fonts to display and print content. You may temporarily download the fonts to a printer or other output device to print content, and you may embed fonts in content only as permitted by the embedding restrictions in the fonts.
3. Media Elements. Microsoft grants you a license to copy, distribute, perform and display media elements (images, clip art, animations, sounds, music, video clips, templates and other forms of content) included with the software in projects and documents, except that you may not: (i) sell, license or distribute copies of any media elements by themselves or as a product if the primary value of the product is the media elements; (ii) grant your customers rights to further license or distribute the media elements; (iii) license or distribute for commercial purposes media elements that include the representation of identifiable individuals, governments, logos, trademarks, or emblems or use these types of images in ways that could imply an endorsement or association with your product, entity or activity; or (iv) create obscene or scandalous works using the media elements. Other media elements, which are accessible on [Office.com](http://Office.com) or on other websites through features of the software, are governed by the terms on those websites.
4. Language Packs and Proofing Tools. If you acquire a language pack, language interface pack or proofing tool that offers additional language version support for the software, you may use the additional languages included in that pack or tool. The language packs, language interface packs and proofing tools are a part of the software and may not be used separately.

### G. GEOGRAPHIC AND EXPORT RESTRICTIONS

You must comply with all domestic and international export laws and regulations that apply to the software, which include restrictions on destinations, end users, and end use. For further information on export restrictions, visit [microsoft.com/exporting](http://microsoft.com/exporting).

### H. ENTIRE AGREEMENT



This agreement (together with terms accompanying any software supplements, updates, and services that are provided by Microsoft and that you use), and the terms contained in web links listed in this agreement, are the entire agreement for the software and any such supplements, updates, and services (unless Microsoft provides other terms with such supplements, updates, or services). You can review this agreement after your software is running by going to the software Help screen and clicking on the Microsoft Software License Terms link or going to

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# Glossary

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

## Numerics

$\mu$  micro ( $10^{-6}$ )

$\Omega$  ohm

## A

**A** ampere

**ACE** automatic collision energy

**ac** alternating current

**amu** atomic mass unit

**ADC** analog-to-digital converter

**ASCII** american standard code for information interchange

## B

**baud rate** data transmission speed in events per second.

## C

$^{\circ}\text{C}$  degrees Celsius

**CD-ROM** compact disc read-only memory

**CE** (F. Conformité Européenne) European conformity. Mandatory european marking for certain product groups to indicate conformity with essential health and safety requirements set out in european directives.

**cfm** cubic feet per minute

**CI** chemical ionization

**CID** collision induced dissociation

**CIP** carriage and insurance paid to

**cm** centimeter

**cc or cm<sup>3</sup>** cubic centimeter

**CPU** central processing unit (in a computer)

## D

**Da** Dalton

**DAC** digital-to-analog converter

**dc** direct current

**DDS** data dependency scanning

**DEP™** direct exposure probe

**DIP** direct insertion probe

**DS** data system

**DSP** digital signal processor

## E

**EI** electron ionization  
**ESD** electrostatic discharge  
**eV** electron volt  
**EN** european conformity

## F

**f** femto ( $10^{-15}$ )  
**°F** degrees Fahrenheit  
**FCC** federal communication commission  
**FOB** free on board  
**ft.** foot  
**FSE** field service engineer  
**FTP** file transfer protocol

## G

**g** gram  
**G** giga ( $10^9$ )  
**GB** gigabytes 1024 MB (billion)  
**GC** gas chromatograph  
**GC/MS** gas chromatograph / mass spectrometer  
**GND** electrical ground  
**GPIO** general-purpose interface bus  
**GUI** graphical user interface

## H

**HV** high voltage  
**Hz** hertz (cycles per second)

## I

**ICIS™** interactive chemical information system  
**IEC** international electrotechnical commission  
**IEEE** institute of electrical and electronics engineers  
**in.** inch  
**I/O** input/output

## K

**k** kilo ( $10^3$ , 1000)  
**K** Kelvin  
**kb** kilobyte 1024 bytes (thousand)  
**kg** kilogram  
**kPa** kilopascal  
**kVA** kilo volt amperes (1000 VA)

## L

**L** liter  
**LAN** local area network  
**lb** pound  
**LED** light-emitting diode

## M

**m** meter; milli ( $10^{-3}$ )  
**M** mega ( $10^6$ )  
**MB** megabyte or 1,024 kb (million)  
**M<sup>+</sup>** molecular ion  
**min** minute  
**mL** milliliter  
**mm** millimeter

**MS** scan power:  $MS^1$ , mass spectrometer

**m/z** mass-to-charge ratio

## N

**n** nano ( $10^{-9}$ )

## P

**p** pico ( $10^{-12}$ )

**Pa** Pascal

**PCB** printed circuit board

**PID** proportional / integral / differential

**PN** part number

**P/P** peak-to-peak voltage

**PPINICI** pulsed positive ion negative ion chemical ionization

**ppm** parts per million

**PQD** pulsed  $q$  dissociation

**psig** pounds per square inch, gauge

## Q

**$q$**  maximum excitation energy

## R

**RAM** random access memory

**RF** radio frequency

**RMS** root mean square

**ROM** read-only memory

**RS-232** industry standard for serial communications

## S

**s** second

**SCSI** small computer system interface

**SIM** selected ion monitoring

**SI** international system of units

**S/N** signal to noise ratio

## T

**TIC** total ion current

**TCP/IP** transmission control protocol / Internet protocol

**Torr** torr

## U

**URL** uniform resource locator

**USB** universal serial bus

## V

**V** volt

**V ac** volts alternating current

**V dc** volts direct current





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