iCAP 7000 Series
ICP-OES Spectrometer

Reference Guide

Site pre-installation guide
Instrument overview
Instrument safety information
Pre-installation checklist

© March 2014 Thermo Fisher Scientific Inc.
www.thermoscientific.com
8499 400 90041

Sales contact:

Service contact:

Purpose of this document

This document provides the following

- A brief **introduction to the iCAP 7000** Series of instruments, including a list of common accessories available for your instrument
- Details of where to find **further information** about using your instrument
- **Pre-installation Guide** - Important information on what preparations need to be made **before** you receive your instrument
- Important **safety** information
- EC Declaration of conformity
- **Checklist** to ensure that your lab is ready before your instrument arrives

Contents

1 Introduction to the iCAP 7000 Series 8
1.1 Overview 8
1.2 Further information 9
1.3 Quick Start Guide 9
1.3.1 User Manual 9
1.3.2 Qtegra Help 10
1.3.3 Online 10

2 System Accessories 11

3 Pre Installation Guide 12
3.1 Transportation 12
3.1.1 Package Size 12
3.1.2 Short Term Storage 12
3.1.3 Transit Damage 13
3.1.4 Warranty 13
3.2 Working Area Requirements 13
3.2.1 Introduction 13
3.2.2 Before installation 14
3.2.3 Location 14
3.2.4 Environmental Requirements 15
3.2.5 Electrical 17
3.3 Power Quality 17
3.3.1 Spectrometer Size 18
3.3.2 Gas Requirements 19
3.3.3 Gas Consumption 20
3.3.4 Water Temperature Control 20
3.3.5 Waste Storage 20
3.3.6 Spectrometer Fume Extraction 21
3.3.7 Sample Fume Extraction 23
3.4 Communications Interface 23
3.4.1 On the Spectrometer 23
3.4.2 On the Data Station 24

4 Safety 25
4.1 iCAP 7000 Safety 25
4.2 iCAP 7000 Sicherheit 30
4.3 Sécurité de l'iCAP 7000 34

5 EC Declaration of Conformity 39

6 Special Agreements 42

7 Pre-Installation Checklist 43

1 Introduction to the iCAP 7000 Series

1.1 Overview

The iCAP 7000 Series is a range of Inductively Coupled Argon Plasma Optical Emission Spectrometers (ICP-OES) which use an Echelle optical design and a Charge Injection Device (CID) solid-state detector to measure trace elemental concentrations in a wide range of samples.

Most samples are liquids that are pumped through a nebuliser to produce a fine spray. The large droplets are removed by a spray chamber and the small droplets then pass through to the plasma. The solvent is evaporated and the residual sample decomposes to atoms and ions that become excited and emit characteristic light which is measured and corresponds to the concentration of each element type in the original sample.

Control of the spectrometer is provided by PC-based Thermo Scientific™ Qtegra™ Intelligent Scientific Data Solution™ (ISDS).

To avoid loss of analytical performance and compromising safety only Thermo Scientific specified parts should be used.

The **iCAP 7000 spectrometer** consists of several major components:

- plasma torch and sample introduction parts
- radio frequency power generator
- optical system
- CID detector with thermoelectric cooling
- Control electronics

Warning: Before operating your iCAP ensure you read and understand all the **safety information** at the end of this document. ▲

To comply with safety and warranty requirements, the iCAP 7000, accessories and associated equipment must be installed by a Thermo Scientific-trained and certified engineer.

Specific site requirements are required for the iCAP 7000 series ICP-OES. Please see the **Working Area Requirements** section below for details.

Detailed information on laboratory requirements for your iCAP 7000 series ICP-OES spectrometer can be found the **Pre-installation Guide** section later in this document.

1.2 Further information

Help with running your instrument, including comprehensive software user guides can be found in the **Qtegra Help page** (Figure 1).

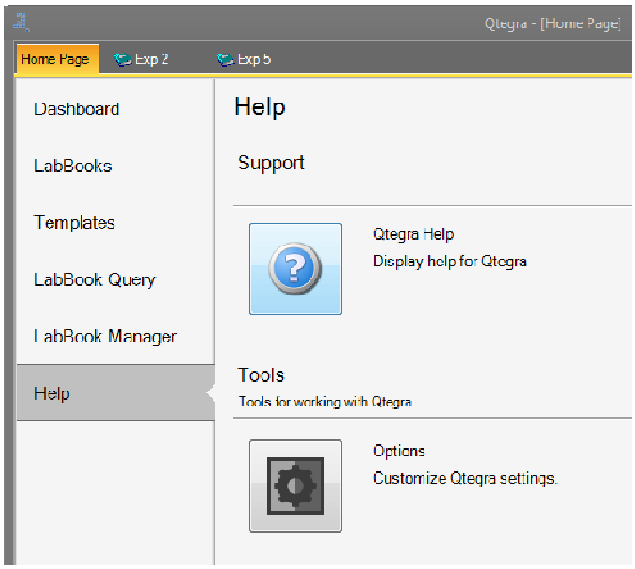


Figure 1. Qtegra Help topics screenshot

1.3 Quick Start Guide

The Quick Start Guide includes basic information required to get you started with operating your iCAP 7000 Series ICP-OES. More advanced operating instructions can be found in the User Manual, and from the Qtegra software's built-in Help.

1.3.1 User Manual

The User Manual details the operation and maintenance of your instrument hardware. It also includes full information about the safety hazards involved in working with the spectrometer and its accessories, and the means by which such hazards can be minimised. This manual is supplied in Adobe PDF format on the Supplementary Information CD supplied with your instrument.

Note: ensure you have read and understood all the safety instructions contained at the end of this document before operating your iCAP 7000 Series ICP-OES.

1.3.2 Qtegra Help

As mentioned above, the Qtegra ISDS has its own active Help system that describes features and functions of the software. This can be accessed by clicking on **Help page** from **Qtegra** (see **Figure 1**).

1.3.3 Online

For information about Thermo Scientific and your iCAP 7000 Series ICP-OES Spectrometer, including application notes and other material visit the Thermo Scientific website:

www.thermoscientific.com/ICP7000

2 System Accessories

Required:

- Recirculating chiller unit (specified later in this document)
- Data Station (specified later in this document)

Optional:

- Cetac ASX-520 Autosampler (requires dedicated RS232 on Data Station)
- Cetac ASX-260 Autosampler (requires dedicated RS232 on Data Station)
- Cetac XLR-8 Autosampler (requires dedicated RS232 on Data Station)
- Cetac ASX 1400 Autosampler (Stirring)
- CETAC APS1650 Automated Prep Station (Oils Dilutor)
- Cetac U-6000AT+ Ultrasonic Nebuliser
- IsoMist
- Hydride Generation Accessory
- Argon Humidifier
- High Solids Sample Introduction kit
- HF Acid Sample Introduction kit
- Organics Sample Introduction Kit
- Volatile Organics Sample Introduction kit

Please request site requirement guides for any purchased accessories.

3 Pre Installation Guide

3.1 Transportation

The section below is part numbered 8499 400 90061

The spectrometer is supplied with all compatible accessories that have been purchased to meet the customer's system requirements. Items may be shipped in separate packages.

WARNING: All items should be transported to the installation site on pallets, in their original packaging and the right way up. Under no circumstances may any package be moved without its pallet unless under the direct control of an authorised Thermo Fisher service engineer.

Proposed routes from the customer receiving area to the installation site must be checked for suitability. The largest pallet size should be used to calculate clearances.

WARNING: The boxed Spectrometer should be moved using a mechanical lift. Care should be taken in doorways, corridors or when lowering to avoid trapping fingers.

3.1.1 Package Size

The instrument will be supplied inside especially designed packaging. The dimensions are shown in the table below.

Width	Depth	Height	Weight
980 mm	900 mm	920 mm	108 Kg
(38.6 in)	(35.4 in)	(36.2 in)	(238 Ib)

Table 1. Packaged Dimensions and Weight

Transportation to some destinations may necessitate additional packaging, for example a packing crate. Dimensions and exact specifications may vary, but allow 1200mm for each dimension for standard packaging.

3.1.2 Short Term Storage

To maintain the instrument in serviceable condition and to comply with the conditions of warranty, ensure that storage of each item is maintained within the stated parameters detailed for the Working Area Requirements below. Make sure that the packages are stored the correct way up.

Note: Do not open the Packages without the permission of the Thermo Fisher Scientific trained engineer

When the packages are opened prior to installation, the contents will be checked against the packing list(s).

3.1.3 Transit Damage

Before accepting delivery of any equipment, the packages should be inspected for signs of obvious damage. The nature of the damage should be noted on the delivery notice and signed by the carrier's representative.

Within the time stated in the Thermo Fisher Scientific terms and conditions an inspection should be made for concealed damage. The local Thermo Fisher Scientific organisation should be advised of any damage in writing and, on receipt of specific instructions, the customer should return the equipment complete and in the original packing material.

3.1.4 Warranty

Note that the instrument is warranted against defects in material and workmanship for a period of 12 months from installation, or 15 months from shipment, whichever is the lesser time. This warranty does not cover: damage sustained as a result of improper storage (including by the customer prior to installation); resale to a third party or modification from the original design.

Note: Warranty is not transferable to a third party without written approval from Thermo Fisher Scientific.

3.2 Working Area Requirements

It is critical that the specific requirements are met before an installation engineer arrives on site. Failure to do so may result in delays to installation and additional charges.

3.2.1 Introduction

This section is designed to help ensure that your iCAP 7000 Series ICP-OES Spectrometer will be installed efficiently and will be able to meet your requirements quickly and completely.

It will minimise installation time if the services and facilities detailed here are available before the equipment is delivered.

Properly installed and maintained, your system will provide you with years of reliable service. Please inform your local Thermo Fisher Scientific organisation what aspects of support are most important to you and a tailored agreement can be provided to prolong the life of your instrument.

This section describes the environment and the resources required at the installation site of the iCAP 7000 Series ICP-OES Spectrometer and associated equipment. Safety requirements for the installation are also detailed.

Warning: The installation of all services must comply with the appropriate rules and regulations required by the local authorities responsible for those services in the workplace. An installation engineer is not responsible for the fitting or compliance of the facilities or services.

The choice of an operating site for the instrument will be influenced by local considerations for example, ease of access and availability of electrical power.

Logical planning of the installation can save both time and money. The objective of this manual is to provide information that will enable the best site to be chosen and to highlight the essential requirements.

If further information or advice is required, contact your local Thermo Fisher Scientific organisation. A list of Thermo Fisher Scientific organisations and agents can be found at www.thermoscientific.com.

Installation of the system will include some familiarisation training; however comprehensive method development and software training will require additional training that should be ordered separately.

Pre-installation visits can be made on request, but may be chargeable.

3.2.2 Before installation

Prior to installation make sure that the proposed area is compatible with the conditions specified. The laboratory must offer a dry, even temperature and dust-free conditions, with no possibility of condensation forming. Sample preparation activities and corrosive materials should be located in a separate room to avoid problems due to corrosive fumes.

A comprehensive 'Risk Assessment' should be carried out that is specific to the handling of solvents, samples and sample preparation.

Particular consideration should be taken to avoid direct sunlight, proximity to heat sources, draughts and vibration. Do not locate the system where sudden changes in temperature can occur, for example near a door or window, care should be taken with the location of items such as air conditioning vents and heating vents.

3.2.3 Location

The choice of site will be influenced by the dimensions and weights of the spectrometer and accessories. Other factors are the environment and the availability of electricity, water and gas supplies, as well as the need for a suitable ventilation system to dispose of the exhaust gases. All of these factors are covered in the following sections.

The instruments are designed for use on a normal laboratory bench. Ideally the instrument should be placed on a moveable bench with 0.5 meters of access behind the instrument. The mounting surface must be level and the instruments must not be placed on any type of cushioning

as this could block ventilation. A length of bench approximately 3 meters is required for the spectrometer, PC and autosampler. A chiller is usually located under the same bench.

The mounting arrangements should be capable of supporting the weight of the spectrometer and its accessories. Make sure that the working surface is sufficiently rigid to prevent vibration as this may affect the optical alignment of the spectrometer and accessories.

To avoid the possibility of liquid ingress into the top of the spectrometer the location should ensure it is not possible to store sample or other liquids directly above the instrumentation.

Organic or volatile solvents should not be stored, even for a short time, near the instrument.

Do not position the equipment so that it is difficult to operate the extraction, electrical supply, cooling water, purge gas and plasma gas controls.

3.2.4 Environmental Requirements

The atmospheric temperature requirement is 15 to 35°C (60 to 95°F), the temperature should not change by more than 2°C per hour.

Atmospheric humidity should be 20 to 80% relative humidity for an ambient temperature between 15 and 30°C and 20 to 60% relative humidity for an ambient temperature between 30 and 35°C. Atmospheric conditions must be non-condensing. The instrument room should be at a positive pressure with respect to rooms with a corrosive atmosphere.

Recommended atmospheric pressure should be between 70 kPa to 106 kPa - approximately 400 m (1300 ft) below sea level and 3000 m (10,000 ft) above sea level.

Warning: Argon is an asphyxiant; if the extraction is turned off sufficient air must be supplied to prevent the concentration of argon reaching a harmful level.

In order to ensure optimum analytical performance, reliability and longevity of your iCAP 7000 Series product it is important that a number of basic laboratory considerations are observed as listed in the table below:

Consideration	Why is this aspect important?
General environmental conditions of the laboratory	The environmental conditions of the laboratory should be maintained in compliance with Good Laboratory Practice (GLP) to ensure a clean and safe work environment for laboratory personnel.
Appropriate placement of the instrument with availability of a clean air supply	The iCAP, as with all ICPs, draws air through the unit as a source of cooling. If the laboratory air contains a high content of particulates, exhibits high humidity and/or is contaminated with corrosive gases this could lead to premature corrosion, component failure and aging of the instrumentation.
Appropriate placement of sample introduction accessories when working with corrosive or volatile liquids	Liquid autosamplers should be installed to ensure that there is sufficient air clearance around the base of the iCAP instrument. It is also recommended that a cover and/or appropriate extraction is utilised in association with this accessory when working with corrosive/volatile liquids.
Placement of sample preparation accessories if working with acids or volatile liquids	Sample preparation accessories should be installed and operated in an area which is completely separated from the instrument laboratory when performing operations with corrosive or volatile matrices.
Chemical storage and spillage control	It is recommended that the handling of chemicals and reagents is kept to a minimum in the instrument laboratory. Any chemical or reagent spillages should be cleaned up immediately to reduce contamination of the laboratory air. All chemicals and reagents should be handled and stored externally to the instrument laboratory and in accordance with the appropriate MSDS documentation.
Handling of flammable liquids	If handling flammable liquids, the operator should be aware of the basic standards which apply to safe handling and storage of such materials. It is recommended that procedures to prevent accidents and protect people from the hazards of flammable substances are put in place.

Table 2. Laboratory Considerations

3.2.5 Electrical

The spectrometer will require an electrical supply at **230 (± 10%) VAC 4 kVA 50/60 Hz**. The spectrometer will be supplied with a 2.5 m mains cord.

For customers in the **USA and Canada** the mains cord supplied will terminate in a NEMA L6-20P Twist&Lock plug. (Coding is black (X – AC high), white (Y – AC low), green (G – earth/ground).

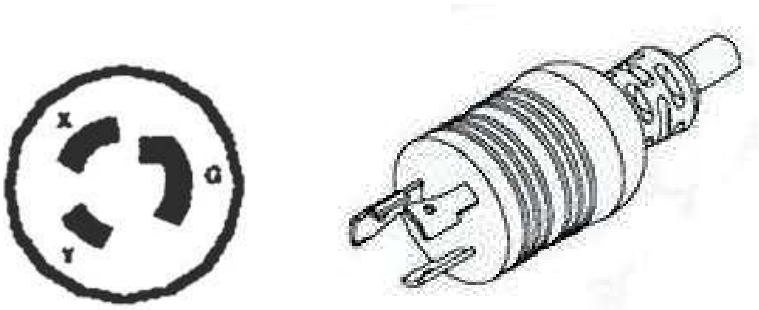


Figure 2. NEMA L6-20P plug for USA/Canada

For customers in the **rest of the world** the mains lead is shipped with **no terminating plug**, but with wires ready for a suitable 20-32 A plug. Coding is blue (neutral), brown (live), green/yellow (earth/ground).

Connection to the laboratory supply should be with an appropriately rated plug conforming to local electrical guide lines and local requirements. It must be possible to electrically isolate the instrumentation.

Additional standard mains sockets will be required for the Data Station PC, and for an autosampler, chiller, printer or any other additional accessory required.

Each electrical outlet must have an effective earth/ground connection. This protection must not be negated by the use of an extension cable without a protective earth conductor.

3.3 Power Quality

The power supplied to iCAP 7000 must be stable. The input (line) voltage must be 230 VAC. The input frequency must be between 47 and 63 Hz. Special care to avoid brownouts (drop in voltage) and spikes (increase in voltage) over short timescales must be taken. When there are doubts on the quality of the power supplied use an uninterruptible power supply (UPS) and a voltage stabiliser.

3.3.1 Spectrometer Size

Width	Depth	Height	Weight
832 mm	751 mm	632 mm	85 Kg
(32.7 in)	(29.5 in)	(24.8 in)	(187 lbs)

Table 3. Spectrometer Dimensions and Weight

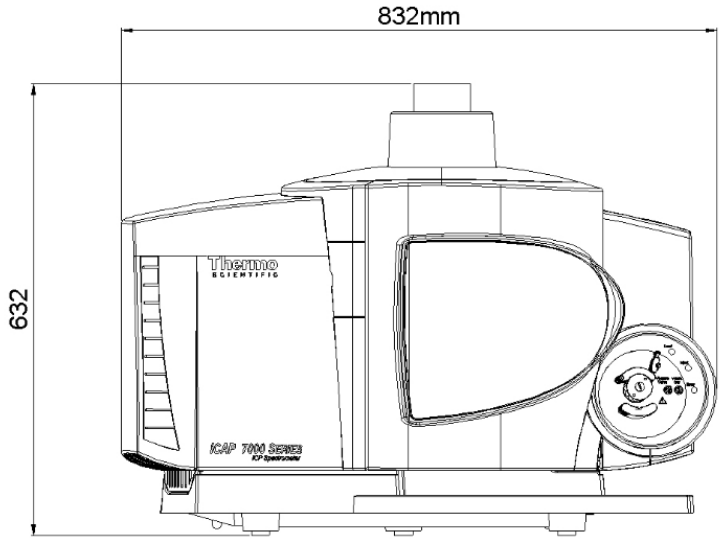


Figure 3. iCAP 7000 Series Front View

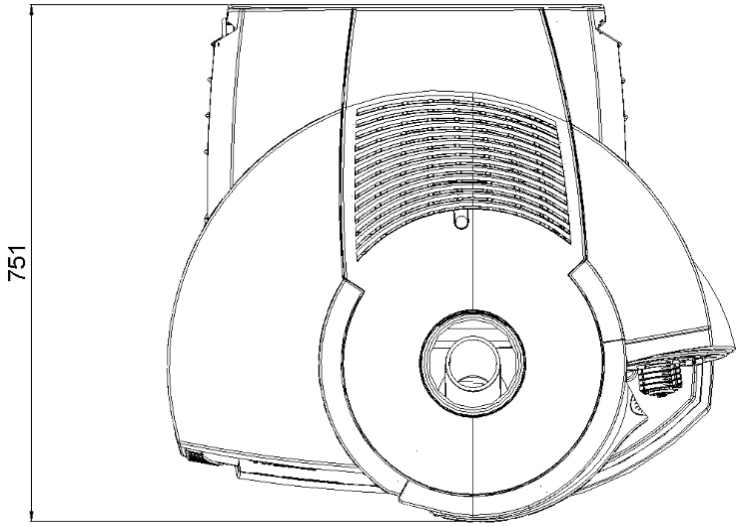


Figure 4. iCAP 7000 Series Top View

3.3.2 Gas Requirements

The spectrometer will require **argon at 5.5 bar (80 psi)** (minimum quality of **99.995 % pure** with less than 10 ppm water and less than 10 ppm oxygen - used for operation and optical path purge). The maximum flow requirement could be up to 25 l/min during installation.

To ensure the argon supply quality to the instrument is not contaminated by the gas lines refrigerator grade copper, or stainless steel, must be used. The pipe work must be cleaned by a suitably qualified contractor before use.

Warning – Do not exceed 6.0 bar (87 psi) pressure

For **purging** the optical path in the spectrometer the same **argon** supply can be used, **or nitrogen** at 3.0 bar (45 psi) (minimum quality of 99.995% pure with less than 10 ppm water and less than 10 ppm oxygen) can be used instead of argon. The maximum flow requirement will be 15 l/min during installation. For optimum performance, a quality of 99.998% pure nitrogen is recommended.

For the **additional gas** MFC fitted to the 7600 clean dry oil-free air is required at a pressure of 2.0 bar (30 psi) and a flow of approx 100 ml/min. A quality of 99.99% is recommended with less than 100ppm of water. Great care should be taken to make sure that compressed air is dry and oil free or damage to the MFC will result.

The instrument will be supplied with three 1.6 m lengths of plastic tubing (6mm outer diameter Polyolefin for the purge and the plasma gas and 4mm for the additional gas).

To enable connection to the laboratory gas supply **a regulator should be within 1m of the instrument and have a push fit connector to enable connection to the supplied instrument tubing**. The instrument will be supplied with particulate gas filters and these must be correctly fitted and maintained.

Care should be taken to ensure that laboratory gas lines do not contaminate the gases used for the iCAP.

If liquid argon is not used it is recommended that banks of cylinders be used with switch over valves so that the gas supplies can be used continuously.

Warning: Nitrogen and argon gas may cause asphyxiation at high concentrations; appropriate care should be taken.

PLEASE NOTE: GAS REQUIREMENTS ARE NOT THE SAME AS FOR PREVIOUS THERMO ICP SPECTROMETERS. EG. IRIS INTREPID AND ICAP 6000 SERIES ADDITIONAL GAS

3.3.3 Gas Consumption

The gas consumption of an iCAP 7000 instrument varies with plasma conditions and purge operating parameters. The table below shows the approximate gas consumption for plasma gas and purge gas at different conditions.

Table 4. Typical iCAP gas consumption

Purge gas		**Plasma gas (cool + aux + neb)** min - max	
Trickle	1.2 l/m	iCAP 7200	12 - 15 l/m
Normal	3.2 l/m	iCAP 7400	12 - 15 l/m
Boost*	5 l/m	iCAP 7600	10 - 23.5 l/m

*Note that a 7200 instrument does not have selectable boost or normal purge gas flow available.

3.3.4 Water Temperature Control

A **recirculating chiller** should be used to remove waste heat from the spectrometer. The water temperature should be set to **5 °C below the ambient temperature** (and must be set between 15 °C and 30 °C).

The water used in the chiller must be distilled or **deionised water containing 2.5 % by volume of the correct inhibitor** (included with a new instrument and a maintenance kit which can be ordered from your local Thermo Fisher organisation. See consumables listing at the end of this document).

Temperature variation must be less than 0.2 °C per hour

The chiller must be able to supply in excess of **5 l/min** with a back pressure of 90psi and a cooling capacity in excess of **750 W** at a room temperature of 25 °C and at your altitude.

The airflow into and from the chiller must not be blocked or diverted by placing the chiller in an enclosed space.

The chiller must provide 50 micron particulate filtration.

A suitable chiller (ThermoFlex 900) can be supplied from your local Thermo Fisher organisation.

For instruments being used at an altitude above 1500 m (5000 feet) a ThermoFlex 1400 is recommended.

The spectrometer will be supplied with plastic connecting tubing that has a **12 mm outside diameter**.

Connection to the water chiller should be within 3 meters of the instrument, or insulated tubing must be used.

3.3.5 Waste Storage

The analysis of a sample, by ICP-OES, usually involves production of a fine mist from a liquid sample. Waste will be produced that could be – harmful, corrosive and toxic, or an organic solvent.

An appropriate container is required that is solvent proof, shatterproof and vented away from the instrument. Compatible container materials ensure that wastes will not react with, corrode them. Ensure the waste container does not constitute a spill or trip hazard. It may be necessary to neutralise waste to prevent any toxin build up.

Ensure pump, sample, waste tubing and vessels are labelled with appropriate safety symbols to protect anyone in the proximity of, using or maintaining the equipment.

The waste solution level should be kept below the level of the pump and spray chamber to prevent back siphoning with associated contamination and leakage risks.

The volume of waste should be kept to a minimum, following a risk assessment in accordance with local legal and Health and Safety guidelines. Take care to allow for mixing of chemicals and chemical/physical effects (for example expansion and heat production).

Inspect and empty the waste regularly. Appropriate facilities should be provided for the disposal of any waste following local legal and Health and Safety guidelines for disposal.

Do not store large volumes of chemicals (including samples) near the instrument or operators.

3.3.6 Spectrometer Fume Extraction

This instrumentation is designed for operation in clean air conditions. The laboratory must be free of all contaminants that could have a degrading effect on the instrument components.

Dust, acid and organic vapours must be excluded from the work area. The warranty will be void if the equipment is operated in sub-standard conditions.

WARNING: The spectrometer must never be operated without an effective fume extraction system attached to the torch compartment chimney.

Hot fumes, which may be corrosive and toxic, are discharged from the instrument chimney during operation. To ensure a safe working environment and safe removal of waste combustion products, an effective extraction system must be installed, this should include appropriate filtering of hazardous toxic fumes.

The extraction must be set to the following, measured in the centre of the extraction tube at the spectrometer end, while disconnected from the instrument, as shown in figure 5 below. The extraction tube has an inlet diameter of 125 mm (5 in). A 2 meter (6.5 ft) flexible tube is supplied with the instrument.

PLEASE NOTE: EXTRACTION REQUIREMENTS ARE NOT THE SAME AS FOR PREVIOUS THERMO FISHER ICP SPECTROMETERS.

An iCAP 7000 Duo instrument will require an extraction of 10 m/s (33 ft/s; 22.4 mph)**.**

An iCAP 7000 Radial instrument will require an extraction of 5 m/s (16 ft/s; 11.2 mph)**.**

The extraction flow must be adjustable to enable the installation engineer to correctly set the flow and achieve the required extraction. This can be achieved with a butterfly valve, or an adjustable gate as shown in figure 5 below. A flow of about 14 m/s before the supplied flexible tube should be sufficient.

The extraction system must not be affected by external weather conditions or other uses the system may be used for.

The extraction system must not allow the fumes or the fumes condensation to return toward the instrument.

Extraction fan specification varies depending on lab layout, and lengths, diameters and type of tubing required to reach the instrument. Consult a qualified extraction specialist to ensure that the correct flow is achieved at the instrument.

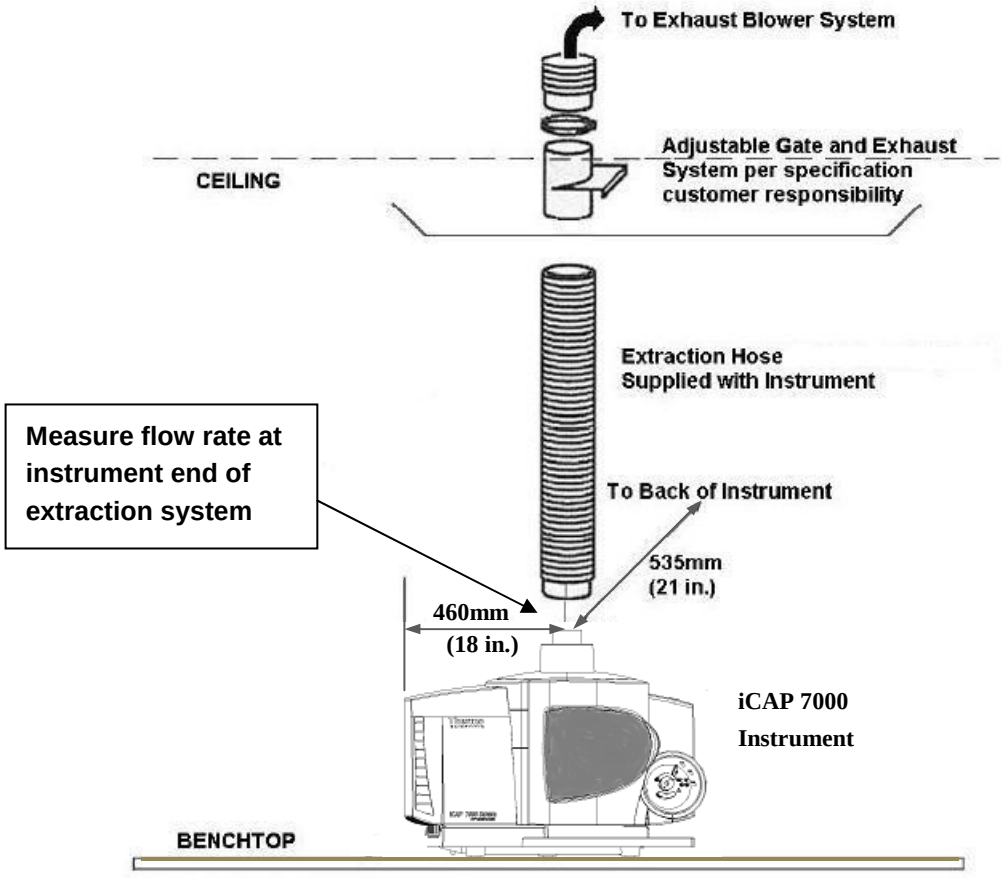


Figure 5. iCAP 7000 Extraction System

3.3.7 Sample Fume Extraction

Additional, separate, extraction should be considered if significant numbers of **volatile, or acidic, samples** are left in the proximity of the instrumentation. If an autosampler is used with volatile or acidic samples a separately vented enclosure should be used.

This should include appropriate filtering of hazardous toxic fumes.

3.4 Communications Interface

An Ethernet connection is used between the **instrument** and a **computer** for Data Station communication. Therefore, if the Data Station computer is connected to a local area network, an additional Ethernet port is required for connection to the instrument.

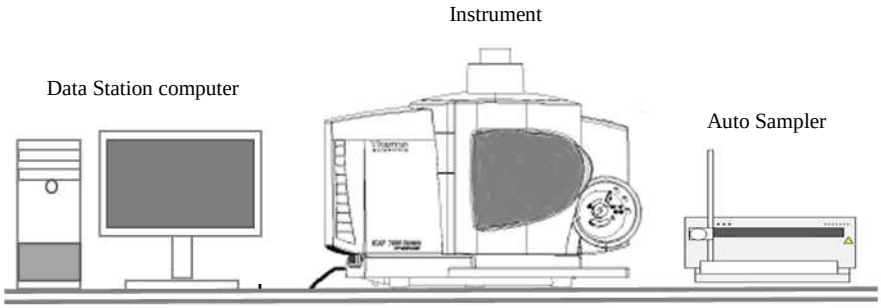


Figure 6. iCAP 7000 system diagram

3.4.1 On the Spectrometer

Note: The Instrument Ethernet port must be configured to allow it to communicate with the instrument.

Any firewalls installed on the PC must be disabled for the Instrument Ethernet adaptor, or alternatively **configured to allow the appropriate instrument communications** socket traffic. The Ethernet adaptor is dedicated to the instrument and will not be connected to any other networks, therefore there is no security risk associated with allowing communication via the Instrument Ethernet adaptor.

The IP address of the Instrument Ethernet adaptor will by default be configured by the installation engineer. The Instrument IP address will be 90.0.0.50.

3.4.2 On the Data Station

The **Data Station requirements** will normally be met by a PC meeting the minimum specification:

- Windows 7 Professional 32 bit (Service pack 1)
- Dual core 2.4 GHz (i3, i5, i7 series or equivalent AMD)
- 500 GB free hard disk space
- 4 GB RAM
- 21", 16.9 monitor
- Resolution 1920 x 1080
- USB 2.0 x 2
- Dedicated Ethernet port for spectrometer communication
- A DVD ROM drive for software installation
- Some accessories require a dedicated RS232 port
- A second Ethernet port for local networking if required
- Internet connection recommended
- A printer port maybe required
- Microsoft Office recommended

A suitable PC is available from your local Thermo Fisher Scientific organisation.

The installation engineer is not responsible for network and customer specific set-up of the PC.

4 Safety

4.1 iCAP 7000 Safety

For your own safety, the safety of others and to prevent damage to the instrument, it is important that this chapter is carefully read and understood before installing ,operating, or coming into contact with the instrument and its accessories. We suggest you display a copy of this manual near the instrument in sight of the operator.

The safety standards contained in this manual comply with the requirements of the Health and Safety at Work Act 1974[1] as published by the United Kingdom Health & Safety Executive (HSE).

4.1.1 Introduction

The instrument and accessories described in this manual are designed to be used by properly trained personnel only. Any adjustment and repair of this equipment must only be carried out by a Thermo Fisher Scientific certified field service engineer who is aware of the hazards involved.

[1] www.hse.gov.uk/legislation/hswa.htm

4.1.2 Safety Precautions

For the correct and safe use of the instrument and its accessories it is essential that the operating and service personnel follow generally accepted safety procedures in addition to the specific precautions specified in this manual. Specific warning and caution statements and symbols are included in the relevant sections of this manual.

The maximum normal operating noise level of the iCAP 7000 has been recorded at 62dBA (at one meter) and therefore does not necessitate the wearing of ear protection.

Warning and caution statements and symbols are marked on the apparatus where appropriate. The symbols are described in the table below:

Yellow/black or Red/white WARNING: the operator must refer to an explanation in the User Documentation.▲

White/black/moulded Protective earth (ground) terminal▲

Yellow/black Surfaces which may be hot▲

Yellow/black Hazardous voltages present. Handle by insulation only. Do not touch terminal points.▲

Yellow/black Radio Frequency Radiation, Specific safety details in user manuals.▲

Yellow/black UV Radiation, Specific safety details in user manuals.▲

Yellow/black Do not open the instrument or remove covers. No user serviceable parts inside. ▲

Unless otherwise stated in this manual, the covers of the instrument and accessories should only be removed by qualified, appropriately trained service personnel.

All spare parts and consumables items must be approved by Thermo Fisher Scientific.

4.1.3 Handling of Harmful Substances

Some of the chemicals used in spectrometry are harmful, corrosive and/or flammable, and samples maybe radioactive, toxic or potentially infective.

Normal laboratory procedures, safe work practices and regulations for handling, storing and disposing of such materials should be followed.

Following safe work practices will help protect you and your co-workers from the hazards of harmful substances:

- Obtain and read the MSDS for all of the materials you work with;
- Be aware of all of the hazards (fire, health, reactivity, biological hazard) of the materials you work with;
- Know which of the materials you work with are harmful;
- Use the proper personal protective equipment when working with harmful materials;
- Practice good housekeeping, personal cleanliness, and equipment maintenance;
- Know how to handle emergencies involving harmful materials;
- Always follow the health and safety rules that apply to you.

The instrument can be hazardous due to the use and to the nature of the samples or reagents you may work with. It is important you apply prominently the appropriate symbol to warn your co-workers and Thermo Scientific field service engineer.

The following symbols constitute a non-exhaustive list example:

Yellow/black Warning; Biological hazard. ▲

Yellow/black Warning; Corrosive substance ▲

Yellow/black Warning; Radioactive material or ionizing radiation ▲

Yellow/black Warning; Toxic material ▲

Yellow/black Warning; Flammable material ▲

The above recommendations are for general guidance only and should not be relied upon for legal compliance purposes. Thermo Fisher Scientific do not make any warranty, expressed or implied, that your

workplace is safe or healthful or that it complies with all laws, regulations or standards.

4.1.4 Peristaltic Pump

Warning: Follow the instructions of the maintenance chapter, use suitable pump tubing and replace appropriately. Damaged tubing may result in fluid leaks.

Warning: Keep body parts and foreign objects away from the rollers while the peristaltic pump is operating.

4.1.5 Electrical Safety

All mains powered equipment is designed for operation with a fully earthed mains supply. The mains earth connection to the equipment must be connected, otherwise safety may be impaired.

Where reference is made to electrical safety the national regulations for the country of use when fitting the power cord plugs should followed. A qualified electrician should be consulted for all electrical connections. If liquid is spilled on, or adjacent, to the instrument immediately isolate the instrument and accessories from the electrical supply, by turning off the power remote to the instrumentation.

4.1.6 Equipment Cleaning and Decontamination

It is the user's responsibility to carry out appropriate cleaning and decontamination of the equipment if hazardous material is spilt on or inside the equipment, sample introduction and accessories. Cleaning and decontamination are specified in the relevant sections of this manual. Before using any other procedures, users should check with the manufacturers that the proposed method will not damage the equipment.

It is the user's responsibility to carry out appropriate cleaning and decontamination of the equipment before a service visit and/or maintenance. Safety documentation and decontamination certificate shall be made available to Thermo Fisher Scientific field Service engineer.

4.1.7 Impaired Safety Protection

Whenever Safety Protection has been impaired the instrument and accessories must be made inoperative and secured against any unintended operation. The matter should then be referred to the local Thermo Fisher Scientific service organisation. Safety protection is likely to be impaired if the instrument fails to operate normally, or shows visible damage. If the equipment is used in a manner not specified by the manufacturer the safety protection provided by the equipment may be impaired.

4.1.8 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 symbol:

Thermo Fisher Scientific has contracted with one or more recycling/disposal companies in each EU Member State and this product should be disposed of or recycled through them. Further information on the compliance of Thermo Fisher Scientific with these directives, the recyclers in your country and information on Thermo Fisher Scientific products which may assist the directive are available at www.thermo.com/WEEERoHS.

4.1.9 Regulatory Notices

The iCAP 7000 spectrometer and accessories are CE marked, indicating compliance with the following European Directives:

2004/108/EC Electromagnetic Compatibility Directive (EMC Directive)

2006/95/EC Electrical Equipment designed for use within certain voltage limits (Low Voltage Directive).

For further details, refer to the regulatory notice for the iCAP 7000 spectrometers and accessories, which is reproduced below.

4.2 iCAP 7000 Sicherheit

Lesen Sie diesen Abschnitt besonders sorgfältig vor der Installation und dem Gebrauch des Gerätes. Wir empfehlen, ein Exemplar dieses Handbuchs in der Nähe des Gerätes und dem Benutzer zugänglich aufzubewahren.

4.2.1 Einführung

Die hier beschriebenen Geräte und ihr Zubehör erfordern gründlich ausgebildetes Bedienungspersonal. Spezielle Justierungen, Wartungen und Reparaturen am geöffneten Gerät dürfen nur von autorisierten Personen durchgeführt werden.

4.2.2 Allgemeine Richtlinien zur sicheren Handhabung des Gerätes

Für die korrekte und sichere Handhabung des Gerätes und des entsprechenden Zubehörs ist es unbedingt erforderlich, dass das Bedienungs- und Service-Personal, zusätzlich zu den üblichen und gesetzlich vorgeschriebenen Sicherheitsmaßnahmen, den in der Bedienungsanleitung angegebenen Richtlinien Folge leistet.

Spezielle Vorsichts- und Warnungshinweise finden Sie im der Bedienungsanleitung besonders vermerkt

Der maximale Geräuschpegel der iCAP 7000 ist 62dBA. Das Tragen von Gehörschutz ist daher nicht erforderlich.

Gelb/Schwarz oder Rot/weiß WARNUNG: Bitte konsultieren Sie das Benutzerhandbuch.▲

Weiß/Schwarz: Masse / Schutzleiter▲

Gelb/Schwarz Heiße Oberfläche▲

Gelb/Schwarz Gefährliche Hochspannung. Nur an der Isolierung berühren. Niemals Kontakte anfassen.▲

Gelb/Schwarz Radiofrequenzstrahlung, spezifische Sicherheit schildert das Benutzerhandbuch.▲

Gelb/Schwarz UV-Strahlung, spezifische Sicherheit schildert das Benutzerhandbuch. ▲

Gelb/Schwarz Öffnen Sie das Instrument nicht und entfernen Sie keine Abdeckungen. Im Gerät befinden sich keine vom Benutzer wartbaren Teile .▲

Die Geräteabdeckung sollte ausschließlich durch einen qualifizierten Thermo Fisher Scientific Service-Ingenieur enfernt werden. Alle Ersatzteile und Verbrauchsmaterialien müssen Thermo Scientific genehmigt werden.

4.2.3 Umgang mit Gefahrstoffen

Einige der in der Spektroskopie zur Anwendung kommenden Chemikalien sind gesundheitsschädlich, ätzend, leicht entzündlich, radioaktiv, infektiös oder toxisch.

Daher muss dafür Sorge getragen werden, dass die normalen Laborrichtlinien zur Handhabung dieser Chemikalien zur Anwendung kommen.

Sicherer Umgang mit Gefahrstoffen

- Lesen Sie das Sicherheitsdatenblatt für alle Gefahrstoffe und Materialien mit denen Sie arbeiten;
- Machen Sie sich mit den Gefährdungspotentialen der jeweiligen Materialien vertraut (Brandgefahr, Gesundheitsgefährdung, chemische Reaktivität, biologische Gefahren);
- Benutzen Sie geeignete persönliche Schutzausrüstung wenn Sie mit Gefahrstoffen arbeiten;
- Folgen Sie den üblichen Laborrichtlinien, achten Sie auf Ordnung, Sauberkeit und gute Instandhaltung der verwendeten Geräte;
- Machen Sie sich mit Notfallmaßnahmen vertraut;
- Folgen Sie den vorgeschriebenen Sicherheitsmaßnahmen.

Je nach verwandten Proben und Chemikalien kann das Gerät eine Gefahr für den Nutzer oder Servicepersonal darstellen. Bringen Sie daher geeignete Warnsymbole gut sichtbar am Gerät an, die Ihre Mitarbeiter und Thermo Scientific Servicepersonal vor den vom Gerät ausgehenden Gefahren warnen.

Die folgende Liste erhebt keinen Anspruch auf Vollständigkeit:

Gelb/Schwarz Biologische Gefahr. Zeigt an, dass biologische Materialien, die ein erhebliches Risiko tragen analysiert wurden. ▲

Gelb/Schwarz Ätzende Substanz ▲

Gelb/Schwarz Radioaktives Material oder ionisierende Strahlung ▲

Gelb/Schwarz Giftstoffe ▲

Gelb/Schwarz Leichtentzündliches Material ▲

Die oben aufgeführten Empfehlungen sollen nur als Anhaltspunkt dienen. Sie sind keine rechtsverbindliche Empfehlung. Thermo Fisher Scientific übernimmt keine Verantwortung, weder audrücklich noch implizit, dass Ihre Arbeitsumgebung sicher ist und alle gesetzlichen Vorschriften, Richtlinien und Standards erfüllt.

4.2.4 Peristaltische Pumpe

Achtung: Folgen Sie der Anleitung im Kapitel "Wartung"; verwenden Sie ausschließlich geeignetes Schlauchmaterial und ersetzen Sie es gemäß der Anleitung. Schadhafte Schläuche können Lecks verursachen.

Achtung: Halten Sie Abstand von den Rollen der peristaltischen Pumpe um Verletzungen zu vermeiden.

4.2.5 Elektrische Sicherheit

Vom Netz gespeiste Geräte sind so entwickelt, dass eine Masseverbindung vorhanden sein sollte. Ohne Masseverbindung könnte die elektrische Sicherheit beeinflusst werden.

Im Hinblick auf die elektrische Sicherheit müssen die folgenden Punkte beachtet werden:

Die elektrische Installation muss nach den jeweiligen Bestimmungen des Landes durch qualifiziertes Fachpersonal erfolgen.

Verschüttete Flüssigkeiten: Das Gerät und/oder Zubehör sofort ausschalten.

4.2.6 Reinigung und Dekontamination der Geräte

Es liegt in der direkten Verantwortung des ANWENDERS und nicht des Geräteherstellers, eine Dekontamination des Gerätes durchzuführen, falls sich Gefahrstoffe im Gerät, der Probenzufuhr oder in Zubehörteilen befinden.

Reinigungs- und Dekontaminationsarbiten sind in der Bedienungsanleitung beschrieben.

Bevor Sie eine Reinigungs- bzw. Dekontaminierungsmethode einsetzen, die nicht vom Hersteller empfohlen wird (vgl. Wartungshinweise dieser Bedienungsanleitung), sollten Sie zusammen mit dem Hersteller sicherstellen, dass diese Vorgehensweise das System nicht beschädigt.

Es liegt in der direkten Verantwortung des ANWENDERS und nicht des Geräteherstellers, vor einem Service- oder Reparaturtermin eine Dekontamination des Gerätes durchzuführen. Sicherheitsunterlagen und Dekontaminationszertifikat müssen dem Thermo Fisher Servicepersonal zugestellt werden.

4.2.7 Beeinträchtigung der Sicherheitseinrichtungen

Immer dann, wenn eine Beeinträchtigung der Sicherheit vorliegt, muss dafür Sorge getragen werden, dass keine weitere unbefugte Bedienung des Gerätes oder des Zubehörs erfolgen kann und der autorisierte Service-Ingenieur informiert wird.

Eine Sicherheitsbeeinträchtigung liegt z.B. dann vor, wenn nicht mehr die erwarteten Ergebnisse oder eine sichtbare Beschädigung vorliegen.

Wenn das Gerät nicht gemäß Spezifikationen des Herstellers eingesetzt wird, könnte die Sicherheit beeinträchtigt werden.

4.2.8 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 getroffen mit Verwertungs-/Entsorgungsanlagen in allen EU-Mitgliederstaaten und dieses Produkt muss durch diese Firmen wiederverwertet oder entsorgt werden. Mehr Informationen über die Einhaltung dieser Anweisungen durch Thermo Fisher Scientific, die Verwerter und Hinweise die Ihnen nützlich sein können, die Thermo Fisher Scientific Produkte zu identifizieren, die unter diese RoHS Anweisung fallen, finden Sie unter www.thermo.com/WEEERoHS.

4.2.9 Übereinstimmung mit Regularien

Alle Spektrometer der iCAP 7000 tragen das CE Zeichen und entsprechen damit den europäischen Regelwerken.

2004/108/EC Elektromagnetische Kompatibilität (EMC)

2006/95/EC Elekrische Geräte, die für den Einsatz innerhalb bestimmter Spannungsgrenzen konzipiert sind (Regularien zur Minimalspannung)

Weitere Angaben über die oben genannten Standards finden Sie auf der nächsten Seite im Auszug aus den Regelwerken für die Spektrometer der iCAP 7000.

4.3 Sécurité de l'iCAP 7000

Pour votre sécurité, la sécurité des autres et pour prévenir d'éventuels dommages à l'instrument, il est important de lire attentivement et de comprendre ce chapitre avant d'installer, d'utiliser ou d'être exposé à l'instrument et ses accessoires. Il est recommandé d'afficher une copie visible de ce manuel près de l'instrument.

Les normes de sécurité contenues dans ce manuel sont conformes aux recommandations du « Health and Security at Work Act 1974 » publié par le « Health & Safety Executive (HSE) » du Royaume Uni.

4.3.1 Introduction

L'instrument et les accessoires décrient dans ce manuel sont conçus pour être utiliser uniquement par un personnel proprement qualifié.

Le réglage, la maintenance et les réparations de l'équipement doivent être seulement réalisés par des ingénieurs de maintenance qualifiés et certifiés Thermo Fisher Scientific, informés des risques encourus.

4.3.2 Précautions de Sécurité

Pour un usage correct et sans danger de l'instrument et de ses accessoires, il est essentiel que les utilisateurs et le personnel de maintenance suivent les procédures de sécurité généralement acceptées, en plus des précautions spécifiques indiquées dans ce manuel. Les indications et les symboles spécifiques de mise en garde et de précaution sont inclus dans les sections appropriées de ce manuel.

Le niveau sonore maximum de l'iCAP 7000 en utilisation normale a été enregistré à 62 dBA et ne nécessite ainsi pas le port de protections auditives.

Les indications et les symboles de mise en garde et de précaution sont marqués sur l'instrument aux endroits appropriés. Ces symboles sont décrits dans le tableau suivant:

Jaune/Noir ou Rouge/Blanc AVERTISSEMENT: l'opérateur doit se référer à une explication dans la Documentation d'utilisateur.▲

Blanc/Noir Terminaison de mise à la terre (masse). ▲

Jaune/Noir Surfaces pouvant être brûlantes▲

Jaune/Noir Présence de tensions dangereuses. Manipuler uniquement par l'isolation. Ne pas toucher les extrémités.▲

Jaune/Noir Rayonnement de Radiofréquence, détails spécifiques de sûreté dans le manuel de l'utilisateur.▲

Jaune/Noir Le Rayonnement ultra-violet, détails spécifiques de sûreté dans le manuel de l'utilisateur.▲

Jaune/Noir Ne pas retirer les panneaux de l'instrument ou l'ouvrir. Aucune pièce ne requiert maintenance par l'utilisateur à l'intérieur de l'instrument.▲

Sauf indication contraire dans ce manuel, les panneaux de l'instrument et des accessoires doivent être seulement retirés par un ingénieur de maintenance qualifié et certifié Thermo Fisher Scientific.

Toutes les pièces de rechange et les articles consommables utilisés doivent être approuvés par Thermo Fisher Scientific.

4.3.3 Manipulation de Substances Nocives

Certains produits chimiques utilisés en spectrométrie sont nocifs, corrosifs et/ou inflammables, et les échantillons peuvent être radioactifs, toxiques ou potentiellement contagieux.

Les procédures courantes de laboratoire, Bonnes Pratiques de Laboratoires et règles générales et spécifiques de Santé et Sécurité au travail pour la manipulation, le stockage et le traitement de tels matériaux doivent être observées.

Suivre les pratiques de Santé et Sécurité au travail aident à la protection de l'utilisateur et de ses collègues contre les dangers que présentent les substances nocives, ainsi :

- Obtenir et lire les MSDS de tous matériaux et substances utilisés ;
- Etre conscient des dangers (inflammable, risque pour la santé, réactivité, risque biologique) des matériaux utilisés ;
- Connaître les substances potentiellement dangereuses ;
- Utiliser un équipement personnel de protection adéquat ;
- Pratiquer une bonne tenue du laboratoire, propreté personnelle et maintenance de l'équipement ;
- Connaître les mesures d'urgence à adopter en cas d'incident impliquant des matériaux nocifs ;
- Suivre impérativement les règles de Santé et Sécurité au travail qui s'appliquent à votre laboratoire et pays.

L'instrument peut présenter un risque dû à la nature des échantillons analysés et solvants utilisés. Il est important d'appliquer bien en évidence les symboles appropriés pour prévenir les personnes susceptibles d'entrer en contact avec l'instrument (collègues et ingénieurs de maintenance Thermo Fisher Scientific).

Les symboles suivants constituent un exemple de liste non exhaustive :

Jaune/Noir Avertissement; Risque biologique. ▲

Jaune/Noir Avertissement; Substance corrosive. ▲

Jaune/Noir Avertissement; Matériau radioactif or rayonnement ionisant. ▲

Jaune/Noir Avertissement; Matériau toxique. ▲

Jaune/Noir Avertissement; Matériau inflammable. ▲

Les recommandations précédentes sont uniquement des instructions d'ordre général et ne doivent pas être considérées comme fondement de conformité dans un registre légal. Thermo Fisher Scientific ne donne aucune garantie, exprimée ou implicite, que le lieu de travail est sûr au niveau sécurité ou santé, ou qu'il est conforme avec la loi, les réglementations ou les normes en vigueur.

4.3.4 Pompe Peristaltique

Avertissement : Suivre les instructions du chapitre de maintenance, utiliser les tubes de pompe adéquats et remplacer de manière appropriée. Des tubes endommagés peuvent entraîner des fuites de liquide.

Avertissement : Eloigner parties du corps et autres objets des rouleaux pendant le fonctionnement de la pompe péristaltique.

4.3.5 Sécurité Electrique

Tous les équipements alimentés par un courant électrique sont conçus pour fonctionner avec une alimentation électrique avec prise de terre. L'équipement doit être raccordé à la terre, dans le cas contraire, la sécurité peut être compromise. Suivre les règlementations nationales du pays d'utilisation lors de l'installation électrique. Un électricien qualifié doit être consulté.

Si un liquide est renversé sur, ou à proximité de l'instrument, isoler immédiatement l'instrument et les accessoires de l'alimentation électrique.

4.3.6 Nettoyage et Décontamination de l'Equipement

C'est la responsabilité de l'utilisateur de procéder au nettoyage et à la décontamination appropriés de l'équipement si des matériaux dangereux ont été renversés sur, ou dans l'équipement, le système d'introduction d'échantillon et les accessoires.

Des procédures de nettoyage et de décontamination sont spécifiées dans les sections appropriées de ce manuel. Avant d'utiliser toutes autres procédures, les utilisateurs doivent vérifier avec le constructeur que la méthode proposée ne peut pas endommager l'équipement.

C'est la responsabilité de l'utilisateur de procéder au nettoyage et à la décontamination appropriés de l'équipement avant toute visite de

révision et/ou maintenance. Les documents de sécurité et décontamination doivent être accessible à l'ingénieur de maintenance Thermo Fisher Scientific.

4.3.7 Altération des Protections de Sécurité

Dans le cas d'une altération des protections de sécurité, l'instrument et les accessoires doivent être rendus inopérants et protégés contre toute utilisation involontaire. La cause du problème doit alors être communiquée au Service Après Vente Thermo Fisher Scientific le plus proche. Les protections de sécurité sont susceptibles d'être altérées si l'instrument ne fonctionne pas normalement, ou montre des dommages évidents. Les protections de sécurité peuvent être compromises si l'utilisation de l'équipement n'est pas conforme aux spécifications du fabriquant.

4.3.8 Conformité DEEE

Ce produit doit être conforme á la directive européenne (2002/96/EC) des Déchets d'Equipments Electriques (DEEE). Il est marqué par le symbole suivant:

Thermo Scientific s'est associé avec une ou plusieurs compagnies de recyclage dans chaque état membre de l'Union européenne et ce produit devra 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.thermo.com/WEEERoHS.

4.3.9 Conformitè Normative

Tous les spectromètres iCAP 7000 et accessoires sont marqués CE, indiquant leur conformité avec les Directives Européennes suivantes:

2004/108/EC Directive de Compatibilité Electromagnétique (Directive EMC).

2006/95/EC Equipement Electrique conçu pour une utilisation avec des limites de tension fixées (Directive Basse Tension).

Pour plus de détails sur ces normes, se référer à la notice de conformité fournie avec les spectromètres iCAP 7000, reproduite sur la page suivante.

5 EC Declaration of Conformity

No. : DEC0002

The undersigned, representing the following manufacturer

Manufacturer or Authorised Representative:	Thermo Electron Manufacturing Ltd
Address :	SOLAAR House, 19 Mercers Row, Cambridge CB5 8BZ, UK

herewith declares that the product

Product Identification :	iCAP 7000 Series Inductively Coupled Plasma Spectrometer

is in conformity with the provisions of the following EC directive(s)

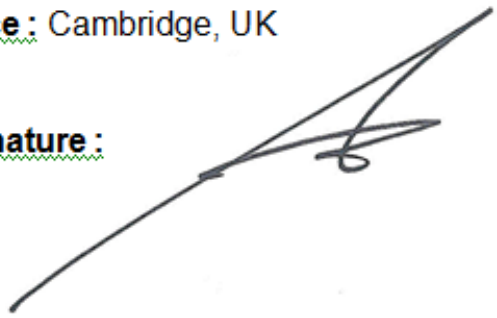
Reference No	Title
2006/95/EC	Low Voltage Directive
2004/108/EC	EMC Directive

and that the standard(s) and/or technical specifications referenced overleaf have been applied.

Last two digits of the year in which the CE marking was affixed : 13

Place : Cambridge, UK **Date :** 9th April 2013

Signature :



Name : Dr Neil C. Bird **Function :** R&D Director

EC DECLARATION OF CONFORMITY

No. : DEC0002

References of standards and/or technical specifications applied for this declaration of conformity, or parts thereof :

- harmonized standards :

number	title	result
safety:		
BS EN 61010-1:2001	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use. General Requirements.	Pass
IEC 61010-2-061:2003	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use. Particular Requirements for Laboratory Atomic Spectrometers with Thermal Atomization and Ionization.	Pass
BS EN 61010-2-081:2001/A1:2003	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use. Particular Requirements for Automatic and Semi-automatic Laboratory Equipment for Analysis and other purposes	Pass
EMC:		
Conducted & Radiated Emissions		
EN61000-3-3:2008	Flicker Emissions	Pass
EN61000-3-2:2006	Harmonic Emissions	Pass
EN61326-1:2006	Electrical Equipment for Measurement, Control and Laboratory Use. EMC Requirements. General Requirements.	Pass (class B)
Methods:		
CISPR11	Conducted Emissions	Pass
CISPR11	Radiated Emissions	Pass
Immunity		
EN61326-1:2006	Electrical Equipment for Measurement, Control and Laboratory Use. EMC Requirements. General Requirements.	Pass
Methods:		
IEC61000-4-3	Radiated Field Immunity	Pass
IEC61000-4-6	Conducted RF Immunity	Pass
IEC61000-4-4	Electrical Fast Transients	Pass
IEC61000-4-2	Electrostatic Discharge	Pass
IEC61000-4-5	Surges	Pass
IEC61000-4-11	Voltage Dips & Interruptions	Pass

- other technical solutions, the details of which are included in the technical documentation or the technical construction file :

Other references or information required by the applicable EC directive(s):

The documentation relating to this declaration is on file.

Notices:

1. About the System: Use only with Thermo Fisher Scientific approved computer and accessories
2. About Shielded Cables: Use only shielded cables supplied by Thermo Fisher Scientific when connecting this instrument to the computer and other accessories
3. About System Installation: Installation of the system to be performed in accordance with instructions contained in the appropriate Thermo Fisher Scientific User Guide.

Compliance with the above notices is necessary to ensure that the appropriate radio frequency emissions will be maintained within the limits of the specifications referred to in this declaration.

6 Special Agreements

This section should detail any special agreements arranged with your local Thermo Fisher Scientific organisation.

7 Pre-Installation Checklist

This checklist is to be filled in by the customer to confirm that all relevant factors concerned with the installation have been considered and dealt with.

On completion of the list, a copy should be forwarded to the local Thermo Fisher Scientific organisation with a request for installation to be carried out. Failure to send the checklist may result in delays with the instrument installation, any delays may incur extra charge.

Company name:

Company representative name:

Position:

	Required	**Checked**
Location		
Table dimensions for the spectrometer	900 x 600 mm	
Table dimensions for the auto sampler (right side of the spectrometer)	600 x 550 mm	
Table dimensions for keyboard and mouse (left side of the spectrometer)	600 x 30 mm	
Extraction		
Tube diameter for extraction	125 mm	
Extraction capability (at the instrument)	10 m/s (Duo) 5 m/s (Radial)	
Adjustable valve in the extraction tube	Yes	
Electrical supply		
Plug 200-240 VAC, 20-32A, single phase 4000 W, 50/60 Hz	Yes	
Standard mains plug 200-240 VAC for each accessory	Yes	

Argon Gas		
Regulator valve in the wall 0 -10 bar (0 – 150 psi)	Yes	
Gas union dimension at the exit of the regulator valve	Push fitting for plastic 6mm outside diameter	
Maximum distance between the instrument and the regulator valve	1 m	
Purity of argon (Gas or Liquid)	99.995% 0_2<10 ppm H_20<10 ppm	
Pressure required at the input of spectrometer	5.5 bar (80 psi) Do not exceed 6 bar	
Optic nitrogen purge (Optional)		
Regulator valve in wall 0 – 10 bar (0 – 150 psi)	Yes	
Gas union dimension at the exit of the regulator valve	Push fitting for plastic 6mm outside diameter	
Maximum distance between the instrument and the regulator valve	1 m	
Purity of nitrogen (Gas or Liquid)	> 99.995%; 0_2<10 ppm; H_20<10 ppm	
Pressure required at the input of spectrometer	3 bar (45 psi)	
Additional Gas – Compressed Air (7600 only)		
Regulator valve in the wall 0 -4 bar (0 – 60 psi)	Yes	
Gas union dimension at the exit of the regulator valve	Push fitting for plastic 4mm outside diameter	
Maximum distance between the instrument and the regulator valve	1 m	
Purity of bottled air or dried compressed air	99.99% H_20<100ppm	
Pressure required at the input of spectrometer	2 bar (30 psi)	
Waste		
Appropriate waste container (following risk assessment)	Yes	
Auto Sampler rinse and waste		
Minimum 1 l container for the rinse supply station and waste	2 needed	

Chiller		
Maximum distance from the spectrometer	2 m	
Pipe supply outer diameter dimension	12 mm	
Cooling capability	750W minimum	
	Required	**Checked**
Flow rate (all chillers)	>5.0 l/min	
Pressure at 5 L/min (Thermoflex 900 chiller only)	80 psi (5.5 bar)	
Chiller inhibitor	Yes	
PC and printer (if not bought with the instrument)		
4 GB RAM, 500 GB HDD, 2 Ethernet ports, 1 serial port, USB ports, monitor, ink jet printer	Yes	
Windows 7 Professional 32 bit (service pack 1)	Yes	

Caution: The instrument installation will not start before Thermo Fisher receives this document back completed. In the case of false information causing the installation to be stopped, a travel cost may be charged.

I certify the exactness of the information supplied in this document.

Signature: **Date:**