



TELEDYNE
CETAC TECHNOLOGIES
Everywhereyoulook™

BGX-100 Blend Gas Accessory

Operator's Manual

Manual Part Number **480179** Rev0

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480179 Rev0, August, 2014

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Teledyne CETAC Technologies
Customer Service & Support
14306 Industrial Road
Omaha, Nebraska 68144, USA
Phone (800) 369-2822 (USA only)
Phone (402) 733-2829
Fax (402) 733-1932
E-mail custserv@cetac.com

REVISIONS

Teledyne CETAC Technologies strives to provide the scientific community with an unparalleled combination of effective technology and continuing value. Modular upgrades for existing instruments will continue to be a prime consideration as designs progress.

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1 Introduction

ICP-AES and/or ICP-MS instruments may not be equipped with an extra blend gas such as oxygen. If organic solvents are to be introduced to the ICP, oxygen addition to the carrier (nebulizer) gas can help prevent carbon buildup on the ICP torch and the ICP-MS sampling cones (sampler and skimmer).

The CETAC BGX-100 blend gas accessory incorporates a mass flow controller for oxygen addition up to 50 mL/min \pm 1 mL/min. A manual flow adjustment knob and a digital readout of gas flow are provided.

Oxygen gas is usually teed into the sample out line that is connected between the nebulizer/membrane desolvation system and the host ICP instrument. Typical oxygen flow rates range from 5 to 30 mL/min. The BGX-100 can be easily used with the CETAC U6000AT+ ultrasonic nebulizer/membrane desolvator, the CETAC Marin-5 enhanced nebulizer system, or the CETAC Aridus II desolvating nebulizer system.



Figure 1-1 CETAC BGX-100 Blend Gas Accessory

About This Book

This document describes the procedures for installing, using, and maintaining the nebulizer system.

This manual covers the following products:

- CETAC BGX-100 Accessory

WARNING

CHEMICAL INJURY HAZARD

The BGX-100 accessory is intended for use only by qualified operators who have been trained in safe laboratory practices. Make sure you know the hazards associated with all of the chemicals you are using, and take the appropriate precautions. Exposure to laboratory chemicals may result in serious injury.

BGX-100 Overview

Front View



Figure 1-2. BGX-100 Front View.

The following features are located on the front of the accessory:

Display. The readout will display the gas flow rate in units of L/min. So the reading "020" is 0.020 L/min or 20 mL/min of blend gas.

Flow rate adjustment knob. Turning the knob clockwise will increase the flow rate of blend gas.

Back View

The following features are located on the back of the accessory:



Figure 1-3. BGX-100 Back View

Power input connector. The power plug from the external 24 VDC power supply will connect to the port.

Power switch.

OXYGEN/HELIUM SUPPLY. A blend gas supply port is located at the lower left corner of the back of the BGX-100. This gas connection uses a 1/8 inch Swagelok® connection.

GAS OUT. A blend gas out port is located at the upper left corner of the back of the BGX-100. This port is a press-fit style for 1/4 inch O.D. tubing.

BGX-100 Accessory Items

The BGX-100 is shipped with the following items:

- One external 24 VDC Power Supply
- One Power Cord. If the cord is not of the correct type for your country, contact Teledyne CETAC Technologies.
- One Gas Inlet Line
- One Gas Outlet Line with tee connector

Where to Go for More Information

In addition to this manual, you can refer to the following resources:

- New versions of this manual may be available under “Service and Support” on CETAC’s Web site:

www.cetac.com

Teledyne CETAC Technologies Customer Service and Support:

Phone: 1 (800) 369-2822 (USA only)

1 (402) 733-2829

Fax: 1 (402) 733-1932

E-mail: custserv@cetac.com

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2 Preparing for Installation

Before you install the BGX-100, you should evaluate the physical arrangement of the laboratory to choose a suitable location. Once you choose a location, you must carefully unpack the system prior to beginning the installation.

Establishing Optimal Conditions

Malfunction or damage can occur if specific operating conditions are not met. Meeting these conditions requires establishing the proper laboratory environment and replacement of ICP-AES, ICP-MS, U6000AT⁺, Marin-5, Aridus II™, and BGX-100 components that wear out during normal usage. The following sections explain how to meet these conditions.

NOTE

Damage or malfunction that results from unsatisfactory operating conditions may constitute misuse and abuse and can be excluded from warranty coverage.

Establishing the Laboratory Environment

To establish satisfactory operating conditions in your laboratory environment, follow these guidelines:

- Operate the BGX-100 in a conventional laboratory environment where the temperature is 50-86°F (10-30°C), the humidity is 20-70% non-condensing, and the unit is not exposed to excessive flammable or corrosive materials.
- Avoid rough handling of the BGX-100. If possible, do not expose the system to vibration or shock.
- Protect the BGX-100 from long-term exposure to condensation, corrosive materials, solvent vapor, continual standing liquids, or large spills. Exposures of this type can damage the electronics.

CAUTION

Observe the same general electrostatic discharge precautions as with any other integrated circuit electronic device. Low humidity environments, especially when combined with static-generating materials require maximum care. Discharge static buildup and ground to the BGX-100 cabinet before performing any maintenance. Do not touch or short-circuit bare contacts.

Avoid using the BGX-100 if strong electromagnetic interference or radio frequency interference is present. In environments with very low humidity, high static charges may affect the stability of the analyte signal, causing a transient drop in intensity within the proximity of the charged object.

Choosing a Location

The BGX-100 is designed to be placed between the sample introduction system (such as a CETAC U6000AT+ ultrasonic nebulizer/membrane desolvator) and the torch of the ICP-AES or ICP-MS instrument.

Space Requirements

Dimensions for the BGX-100 Accessory are 16 cm (W) x 18.9 cm (D) x 11.2 cm (H). At least 7.6cm (3 inches) of clearance should be allowed in front of and behind BGX-100.

The BGX-100 weighs approximately 1 kg (2.2 pounds).

Gas Requirements

The BGX-100 requires a supply of blend gas. This gas is usually high-purity oxygen, but another gas such as helium may be used.

The gas supply should be regulated to a pressure of 350 kPa (50 psig, 3.44 bar).

The gas supply pressure must not exceed 860 kPa (125 psig, 8.6 bar).

Ensure that you position the system so that the gas supply can be quickly shut off if needed.

Power Requirements

The BGX-100 is powered by an external 24 VDC power supply. Place the power supply within 1.2 meters of the BGX-100, and the power supply itself within 1.2 meters of the power outlet. See page 24 for power supply specifications.

The supplied power cord meets the requirements of the country where the instrument was purchased. If the instrument is to be used in a country other than the one specified at the time of ordering, obtain a new power cord set that meets the requirements of that country. If you need a different power cord, contact Teledyne CETAC Technologies.

WARNING

SHOCK HAZARD

This equipment is designed for connection to a grounded (earthed) outlet. The grounding type plug is an important safety feature. For continued protection against electrical shock or damage to the instrument, do not disable this feature.

Ensure that you position the system so that the power cord connector is easily accessible (is not blocked), so the cord can be quickly disconnected if needed. In case of hazard, the system should be disconnected from the power source.

Do not apply power until ready to operate the system.

Unpacking the Instrument

Inspect external packaging upon receipt for signs of physical damage from rough handling or abuse during shipment. Inspect all items during unpacking and notify the carrier immediately of any visible or concealed damage. Remove packing checklist from the shipping container, and check off items against it. Leave accessories in the packing until you are ready to install them on the BGX-100.

If the system is shipped or removed from storage during cold weather, allow the packaged equipment to equilibrate to room temperature before opening and exposing to warm, humid air. It is usually sufficient to provide four to eight hours for this purpose.

CAUTION

EQUIPMENT DAMAGE FROM CONDENSATION

If condensation forms on or inside the instrument, allow it to dry thoroughly before connecting it to a power source and operating it. Failure to do so may cause equipment damage.

NOTE

Keep the factory packaging in case the product ever needs to be returned or shipped to another location.

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3 Installation

Connecting the Gas Lines

- 1 Locate the BGX-100 in an area between the nebulizer system and the host ICP-AES or ICP-MS instrument. See Figure 3-1 for a typical arrangement of the BGX-100. (Please note that the figure is not to scale.)

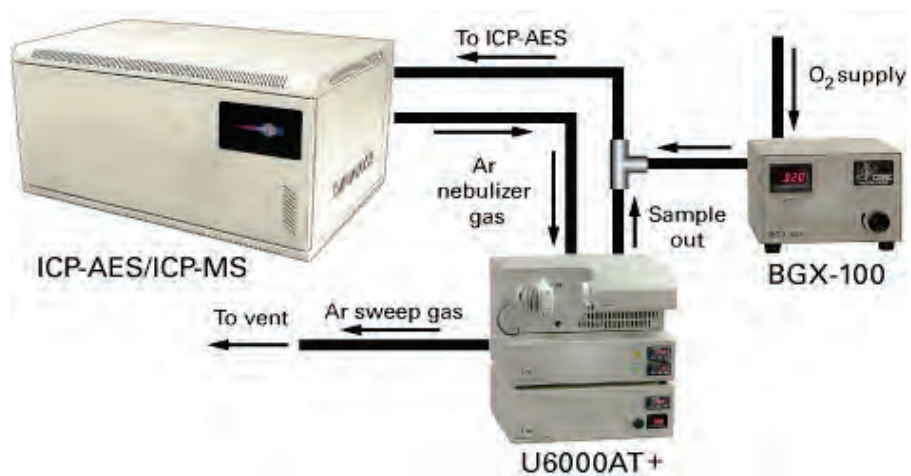


Figure 3-1 BGX-100 Blend Gas Accessory with U6000AT+ and ICP-AES or ICP-MS.

- 2 Connect the blend gas inlet line to the oxygen supply port on the back of the BGX-100 box. This gas line uses the 1/8 inch Swagelok connection. Connect the other end of the line to a known, good supply of regulated (50 psi pressure or 3.44 bar) oxygen gas.
- 3 Connect the gas out line (with tee fitting) to the gas out port on the back of the BGX-100. This port connection is a press-fit connection, so insert the gas line into the port and push firmly until the line is secure.
- 4 Connect the gas out line from the BGX-100 to the sample out line between the nebulizer system (ex. CETAC U6000AT+ Ultrasonic Nebulizer / Membrane

Desolvator) and the host ICP-AES or ICP-MS instrument. The gas out line may simply be attached into the sample out line using the tee fitting provided. Please note the setup in Figure 3-1.

Connecting the BGX-100 to the Power Source

- 1 Connect the cable from the 24 VDC external power supply to the 24 V input connector on the back of the BGX-100 box. Attach the power cord to the power supply and then finally connect the power cord to the proper wall voltage supply. A green power indicator light on the external power supply will illuminate.

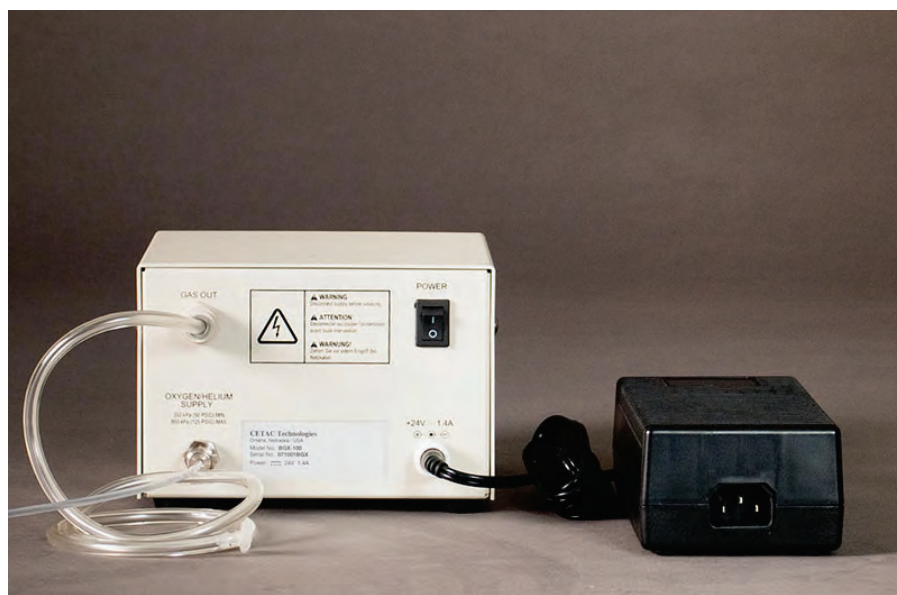


Figure 3-2 Connections to back of BGX-100

- 2 Turn on power to the BGX-100 accessory by switching the power switch on the back of the BGX-100. The blend gas flow digital readout will illuminate (numbers will be displayed in red color).

4 BGX-100 Operation Parameters

The BGX-100 can introduce oxygen blend gas to the sample out line (connecting the nebulizer system to the host ICP-AES or ICP-MS instrument) in a range from 1 to 50 mL/min in increments of 1 mL/min. For most applications the minimum flow of oxygen is used to prevent carbon buildup on the ICP torch and the ICP-MS sampling cones (sampler and skimmer).

WARNING

EXPLOSION HAZARD

Follow your laboratory's safety rules and observe all necessary safety precautions when using oxygen gas.

Oxygen Flow Rate

Recommended BGX-100 oxygen flow rate range: 5 to 30 mL/min.

Maximum BGX-100 oxygen flow rate range: 0 to 50 mL/min.

Add enough oxygen to eliminate green-colored carbon emission in the ICP caused by the introduction of organic solvent vapor. Observe this through the ICP viewing window provided on the ICP-AES or ICP-MS instrument.

ICP-MS/ICP-AES Parameters

Re-optimize ICP-AES parameters such as nebulizer gas flow and viewing position for best signal and stability. A recommended nebulizer gas flow rate range may be 0.45 to 0.60 L/min.

Re-optimize ICP-MS parameters such as nebulizer gas flow, xyz sampling position, and ion optic voltages for best signal and stability. A recommended nebulizer gas flow rate range may be 0.45 to 0.80 L/min.

Introduction of volatile organic solvents to the ICP-AES or ICP-MS may require higher ICP power and a smaller diameter torch injector tube. Please consult the operator's manual for your ICP-AES or ICP-MS instrument.

Sweep Gas Flow Rate

If using another CETAC nebulizer system, argon sweep gas may also need adjustment (CETAC U6000AT+ Ultrasonic nebulizer / membrane desolvator and CETAC Aridus II desolvating nebulizer system).

If using a CETAC U6000AT+ or Aridus II system, the argon sweep gas flow can vary through a wide range. For the U6000AT+ this range may be 1.4 to 2.4 L/min; for the Aridus II this range may be 3.0 to 9.0 L/min.

Condenser Temperature

If using a CETAC U6000AT+ or Marin-5 system for volatile organic solvents, the condenser temperature is set below 0 °C, usually from -20 to -10 °C.

5 Maintenance

Routine maintenance of the BGX-100 consists of procedures for specific system components and expendable supplies. Maintenance includes checking the BGX-100 components for gas leaks or other problems/damage.

WARNING

The BGX-100 must be turned off and the power cord unplugged before performing any maintenance on the system.

WARNING

Turn off the gas supply at the gas source before performing any maintenance on the system.

Cleaning the BGX-100

Cleaning the BGX-100 is an important task. Failure to clean the BGX-100 can cause increased wear and reduce the system's operating life. It is especially important to clean up any liquid spills, particularly of acidic solutions or organic solvents. Note that it may be necessary to chemically neutralize spills. The following sections explain external and internal cleaning procedures.

External Cleaning

Use of the BGX-100 can result in spills on the top lid of the unit. To clean any external spills complete the following steps:

- 1 Shut down and disconnect the power cord and the gas supply to the BGX-100.
- 2 Wipe the top and sides of the BGX-100 using a towel dampened with a laboratory-grade cleaning agent.
- 3 Repeat step 2, using a towel dampened with clear water. This process removes any remaining contaminants.
- 4 Dry the cabinet of the BGX-100 with a dry towel. The BGX-100 must be thoroughly dry before you turn the BGX-100 power on and reconnect the gas supply.

Replacement of Gas Line Tubing

With extended use the Tygon® tubing can become worn and discolored. The tubing should be inspected after use and replaced if significant wear or discoloration is observed.

6 Troubleshooting the BGX-100

The BGX-100 is both easy to operate and reliable. However, problems with the system may occur. If good performance is not obtained, try to isolate the problem to determine if it originates in the BGX-100 or the external power supply.

If you cannot solve a problem using the steps given in this chapter, contact Teledyne CETAC Technologies Customer Service and Support.

Phone: (800) 369-2822 (USA only)
(402) 733-2829
Fax: (402) 733-1932
E-Mail: custserv@cetac.com

Gas Flow Readout Display Will Not Illuminate

- 1 Ensure that the 24 VDC power supply is connected to a power source and to the BGX-100.
- 2 Check that the green power light indicator on the power supply is on.
- 3 If the gas flow readout will still not illuminate, then the power supply may be defective. Contact CETAC Customer Service and Support.

No Gas Flow Indicated on Readout

- 1 Check that the gas supply is on (check gas valve or gas tank regulator).
- 2 Check that the gas connections are correct and there are no gas leaks.
- 3 Adjust the gas flow adjustment knob through a wide range to check if gas flow will display on the readout.
- 4 If no gas flow is indicated, then the mass flow controller may be defective. Contact CETAC Customer Service and Support.

ICP Will Not Start

- 1 Check that the gas connections are correct and there are no gas leaks.
- 2 Turn on the oxygen flow to 10 mL/min (010 on the readout display) for 3 minutes to remove any air from the gas line connection to the sample out line. Then set the oxygen flow to 0 mL/min (000) and try to start the ICP.

Returning the Product to CETAC for Service

Refer to the following information if you need to return the product to Teledyne CETAC Technologies for service.

Shipping the Product

Follow these guidelines when shipping the product:

- **Use the original packing materials.** If the original shipping materials are not available, place a generous amount of shock-absorbing material around the instrument and place it in a box that does not allow movement during shipping. Seal the box securely.
- Contact Teledyne CETAC Technologies before shipping the product.
- Pre-pay all shipping expenses including adequate insurance.
- Write the following information on a tag and attach it to the product:
 - Name and address of the owner
 - Product model number and serial number
 - Description of service required or failure indications
- Mark the shipping container as FRAGILE.
- In all correspondence, refer to the instrument by model name or number and full serial number.
- **Do not return products which are contaminated by radioactive materials, infectious agents, or other materials constituting health hazards to CETAC employees.**

Product Warranty Statement

NOTE

Contact Teledyne CETAC Technologies or refer to the warranty card which came with your product for the exact terms of your warranty. The following copy is provided for your convenience, but warranty terms may be different for your purchase or may have changed after this manual was published.

TELEDYNE CETAC TECHNOLOGIES warrants that for one (1) year from the date of shipment of any CETAC unit manufactured or supplied by CETAC and found in the reasonable judgment of CETAC to be defective in material or workmanship will be repaired by CETAC without charge for parts and labor.

The unit, including any defective part, must be returned to CETAC within the warranty period. The expense of returning the unit to CETAC for warranty service will be paid for by the buyer. CETAC's responsibility in respect to warranty claims is limited to making the required repairs or replacements, and no claim of breach of warranty shall be cause for cancellation or recession of the contract of sale of any unit.

Products may not be returned which are contaminated by radioactive materials, infectious agents or other materials constituting health hazards to CETAC employees.

This warranty does not cover any unit that has been subject to misuse, neglect, negligence or accident. The warranty does not apply to any damage to the unit that is the result of improper installation or maintenance, or to any unit that has been operated or maintained in any way contrary to the operating or maintenance instructions as specified in the CETAC Instruction and Operations Manual. The warranty does not cover any unit that has been altered or modified so as to change its intended use. Any attempt to repair or alter any CETAC unit by anyone other than by CETAC authorized personnel or agents will void this warranty.

In addition, the warranty does not extend to the repairs made necessary by the use of parts, accessories, or fluids which are either incompatible with the unit or adversely affect its operation, performance or durability.

CETAC reserves the right to change or improve the design of any unit without assuming any obligation to modify any unit previously manufactured.

THE FOREGOING EXPRESS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

CETAC'S OBLIGATION UNDER THIS WARRANTY IS STRICTLY AND EXCLUSIVELY LIMITED TO THE REPAIR OR REPLACEMENT OF DE-FECTIVE PARTS, AND CETAC DOES NOT ASSUME OR AUTHORIZE ANYONE TO ASSUME FOR THEM ANY OTHER OBLIGATION.

CETAC ASSUMES NO RESPONSIBILITY FOR INCIDENTAL CONSEQUENTIAL OR OTHER DAMAGES (EVEN IF ADVISED OF SUCH POSSIBILITY), INCLUDING BUT NOT LIMITED TO, LOSS OR DAMAGE OF PROPERTY, LOSS OF REVENUE, LOSS OF USE OF THE UNIT, LOSS OF TIME, OR INCONVENIENCE.

This warranty and all matters arising pursuant of it shall be governed by the laws of the State of Nebraska, United States.

Returned Product Procedures

Claims for shipment damage (evident or concealed) must be filed with the carrier by the buyer. CETAC must be notified within ninety (90) days of shipment of incorrect materials. No product may be returned, whether in warranty or out of warranty, without first obtaining approval from CETAC. No replacements will be provided, nor repairs made, for products returned without such approval. Any returned product must be accompanied by a return authorization number. The expense of returning the unit to CETAC for service will be paid by the buyer. The status of any product returned later than thirty (30) days after issuance of a return authorization number will be subject to review. Shipment of repaired products will generally be made forty-eight (48) hours after the receipt.

Do not return products which are contaminated by radioactive materials, infectious agents, or other materials constituting health hazards to CETAC employees.

Returned Product Warranty Determination

After CETAC's examination, warranty or out of warranty status will be determined. If a warranted defect exists, the product will be repaired at no charge and shipped prepaid back to the buyer. If the buyer desires an air freight return, the product will be shipped collect. Warranty repairs do not extend the original warranty period.

If an out of warranty defect exists, the buyer shall be notified of the repair cost. At such time the buyer must issue a valid purchase order to cover the cost of repair and freight, or authorize the products to be shipped back as is, at the buyer's expense. Failure to obtain a purchase order number approval within fifteen (15) days of notification will result in the products being returned as is, at the buyer's expense.

7 Safety and Regulatory Information

Review this product and related documentation to familiarize with safety markings and instructions before you operate the instrument.

Characteristics

Environmental Characteristics

These environmental characteristics indicate the conditions for *safe* operation. The recommended environment for the best experimental results is described on page 9.

Operating Temperature	+5 °C to +40 °C (+41 °F to +104 °F)
Non-Operating Temperature	+0 °C to +55 °C (+32 °F to +131 °F)
Operating Altitude	Up to 2,000 m (6,562 ft)
Operating Relative Humidity	0% to 80% non-condensing for temperatures up to 31° C, decreasing linearly to 50% at 40° C
Non-Operating Relative Humidity	0% to 95% non-condensing
Pollution Degree	Pollution Degree 2 Normally no pollution or only dry, non-conductive pollution occurs. The pollution has no influence. Occasionally, however, a temporary conductivity caused by condensation may be expected.

For indoor use only.

Avoid sudden, extreme temperature changes which could cause condensation on circuit boards in the product.

Electrical Characteristics

Power Supply

Input:

AC Voltage, Frequency, and Current

100-240 V ~

47-63 Hz

1.9 A


Installation Category: CAT II (Line voltage in appliance and to wall outlet)

Output:

21-27 VDC (24 VDC nominal), 80 W, 3.33 A

BGX-100

Input:

DC Voltage and Current 

24 V

1.4 A

Installation Category: CAT I (Mains isolated)

Use only with the provided power supply.

Safety Notices

WARNING

INJURY HAZARD

If the equipment is used in a manner not specified by Teledyne CETAC Technologies, the protection provided the equipment may be impaired.

Repair or service that is not covered in this manual should only be performed by qualified personnel.

Power Cord Set Requirements and Maintenance

The power cord set supplied with your instrument meets the requirements of the country where you will use the instrument. Power is supplied to the autosampler through the included 24V power supply.

The operator should check the power supply cord condition. The equipment should not be operated if the mains inlet is cracked or broken. Any obvious damage to the case (from a drop or fall) should be checked by service personnel for loose or damaged parts. See individual parts lists for approved replacement parts.

Mains Disconnect

The power switch on the rear panel is not the mains disconnect. Power mains disconnect is accomplished by unplugging the power cord at the instrument or at the wall outlet. Ensure the power cord is easily accessible and removable, in the event of an emergency which requires immediate disconnection.

WARNING

SHOCK HAZARD

Ensure that power cord is disconnected before removal of any covers.

Cleaning Instructions

For additional cleaning information, see “cleaning” in the index.

To clean the exterior surfaces of the instrument, complete the following steps:

- 1 Shut down and unplug the instrument.
- 2 Wipe the instrument exterior surfaces only using a towel dampened with a lab-grade cleaning agent.
- 3 Repeat step 2, using a towel dampened with clear water.
- 4 Dry the instrument exterior using a dry towel.

WARNING

SHOCK HAZARD

Do not allow any liquid to enter the instrument cabinet other than as intended through the specified tubing, or come into contact with any electrical components. The instrument must be thoroughly dry before you reconnect power, or turn the instrument on.

Operating Environment

WARNING

SHOCK HAZARD

To reduce the risk of fire hazard and electrical shock, do not expose the unit to rain or humidity. To reduce the risk of electrical shock, do not open the cabinet. All maintenance is to be performed by an Authorized CETAC Service Provider.

Protection provided by the equipment may be impaired if the equipment is used in a manner not specified by the manufacturer.

WARNING

SHOCK HAZARD

Equipment is not intended for wet locations. Miscellaneous liquids in the equipment could cause hazardous conditions.

WARNING

EXPLOSION HAZARD

Do not operate in an explosive atmosphere.

WARNING

CHEMICAL HAZARDS

Learn about the chemicals which will be used in and near the instrument, and observe the necessary precautions. Always use appropriate personal protective equipment, including protective eyewear.

Explanation of Caution and Warning Notices



Warning symbol marked on equipment. This symbol means "Attention! Refer to the manual."



Warning symbol marked on equipment. This symbol means "Dangerous voltage!" Risk of death or injury. Cover is to be removed only by trained service personnel. Disconnect power cord before removing cover.

WARNING

The **WARNING** notice denotes a hazard. It calls attention to a procedure, practice, or the like, that, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood

CAUTION

The **CAUTION** notice calls attention to a procedure or practice that if not correctly performed or adhered to, could result in equipment damage, loss of data, or inaccurate data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

Electromagnetic Interference

FEDERAL COMMUNICATIONS COMMISSION (FCC) NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential environment is likely to cause harmful interference, in which case the user will be required to correct the interference at his expense.

MODIFICATIONS

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Teledyne CETAC Technologies may void the user's authority to operate the equipment.

CABLES

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods to maintain compliance with FCC Rules and Regulations.

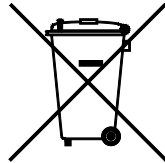
CANADIAN NOTICE

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus" ICES-001 of the Department of Communications.

AVIS CANADIEN

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-001 édictée par le ministre des Communications.

Explanation of Regulatory Marks



Do not dispose in domestic household waste.

The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste, in compliance with the European Waste Electrical and Electronic Equipment Directive (WEEE, 2002/96/EC).

For instructions on how to return end-of-life equipment, producer-supplied electrical accessories, or auxiliary items for proper disposal please contact the supplier or importer. In the event a supplier cannot be reached, contact Teledyne CETAC Technologies customer service department at 1 (800) 369 2822.



The CE mark is a registered trademark of the European Community. This CE mark shows that the product complies with all the relevant European Legal Directives.

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8 Glossary

- C-Flow:** PFA microconcentric nebulizer.
- ETFE:** Ethylene tetrafluoroethylene.
- FEP:** Fluorinated ethylene propylene.
- Hz:** Hertz.
- ICP-MS:** Inductively coupled plasma-mass spectrometer.
- ID:** Inside diameter.
- LED:** Light-emitting diode.
- OD:** Outside diameter.
- PEEK:** Polyetheretherketone.
- PFA:** Perfluoroalkoxy.
- PSI:** Pounds per square inch.
- PTFE:** Polytetrafluoroethylene.
- PVC:** Polyvinyl chloride.
- Sweep Gas:** Ar gas flowing counter-current to aerosol flow.
- VAC:** Volts alternating current.
- VDC:** Volts direct current.

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Manual Part Number **480179** Rev0

Printed in USA
