E **Original Operating Manual**

GC-UV INSCAN 178
GAS SYSTEM

Art.-Nr. #P1001

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Safety Notice

A WARNING sign indicates the presence of a dangerous hot surface. It alerts individuals to exercise caution when dealing with surfaces that are heated and may cause harm. Before proceeding beyond a WARNING sign, it is crucial to thoroughly comprehend and comply with the specified requirements to avoid any potential damage to the product or loss of critical data.

A WARNING notice can also denote a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

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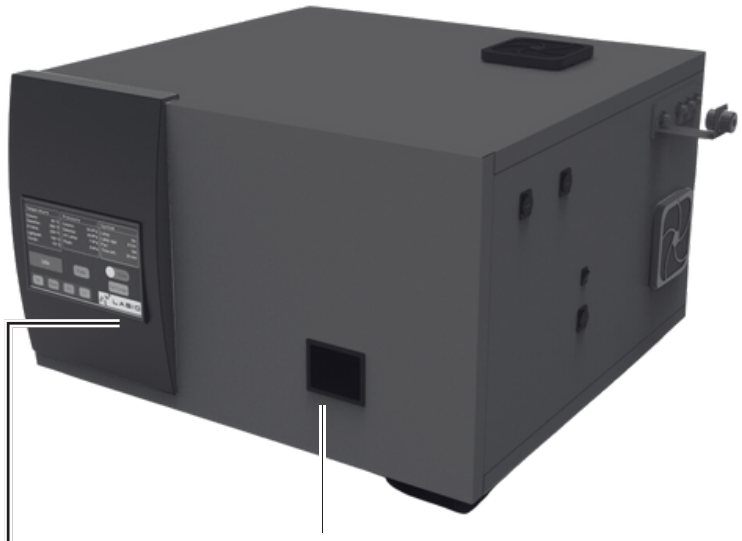
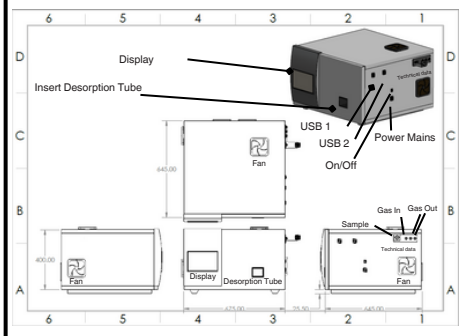
1



1
Display

2
Match with arrow from
Desorption Tube

2



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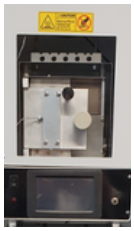
Additional products that follow the
GC-UV INSCAN 178



Tube Cleaner

Autosampler

Table of Contents

E

Danger! - To reduce the risk of injury, read the operating manual.

Caution! Wear hearing protection. Exposure to noise can cause hearing loss.

Caution! Wear a mask in case of handling with toxic and/or hazardous chemical subtsances. Processing materials can generate harmful VOCs. Read SDS before.

Caution! Wear safety goggles.

Class II

For use in dry environments only.

Be aware!

When using devices, certain safety precautions must be followed to prevent injuries and damages. Please check the completeness of the items according to the described scope of delivery. If there are any missing parts, please contact our service center or the sales point within 5 working days after purchasing the product, providing a valid proof of purchase. Please read this user manual/safety instructions carefully. Keep theis document in a safe place so that you have access to the information at all times.

1. Safety Instructions

You can find the corresponding safety instructions in the included booklet! **Warning!**
Read all safety instructions, instructions, illustrations, and technical data provided with this power tool. Failure to follow the instructions below may result in electric shock, fire, and/or serious injury. **Keep all safety instructions and instructions for future reference.**

2. Product Desscription

2.1 Device Description (Picture 1)
2.1.1 GC Desorption System
The GC Desorption allows for the introduction of the sample into the chromatographic system by tubes. It is responsible for vaporizing and injecting the sample into the column for separation and analysis.

2.1.2 GC Display
The GC display is the user interface of the gas chromatograph, typically a screen or panel, where important information about the instrument's operation, parameters, and results are displayed. It allows users to monitor and control the chromatographic analysis.

2.3 Device Description (Picture 2)
2.3.1 Technical Data
Technical data refers to the specific information and specifications related to the gas chromatograph. It includes details such as instrument model, dimensions, weight, power requirements, temperature range, detector type, and other performance characteristics. Technical data provides essential information for proper instrument selection, installation, and operation.

2.3.2 Carrier Gas Inlet (Nitrogen)
The carrier gas inlet is the point where the carrier gas, often nitrogen, is introduced into the gas chromatograph system. The carrier gas carries the sample components through the column for separation and subsequent detection. Nitrogen is commonly used as a carrier gas due to its inertness and availability.

2.3.3 Gas Outlet
The gas outlet is the point where gases exit the gas chromatograph system. It is typically connected to a vent or exhaust system to safely remove the gases, including carrier gas and any waste or byproducts generated during the analysis.

2.3.4 Sampling Inlet
You can use this port and to connect to the gas sampler. Or you can use the mobile sampler with the desorption tubes.

2.3.5 Mains Power Socket
The mains power socket refers to the designated socket or connection point on the gas chromatograph where the power cord is plugged in. It provides the electrical supply needed to operate the instrument.

2.3.6 ON/OFF
The ON/OFF function is a simple switch or button on the gas chromatograph that allows users to turn the instrument on or off. It controls the power supply to the system, enabling or disabling its operation.

2.3.7 USB 1
USB 1 is a Universal Serial Bus (USB) port on the gas chromatograph that provides a standard interface for connecting external devices or peripherals. It allows for data transfer, or connections to other devices such as computers.

2.3.8 USB 2
USB 2 Spectrometer refers to a specific USB port on the gas chromatograph that is dedicated to connecting a spectrometer device.

2.3.9 Ventilation FAN
The ventilation fan is a component of the gas chromatograph responsible for actively circulating air or gas within the instrument's enclosure.

2.2 Device Description (Picture 3)

2.2.1 Cleaning System
A specialized cleaning system effectively cleans desorption tubes, ensuring their reusability for testing. By utilizing the cleaning system, desorption tubes can be thoroughly cleaned and prepared for reuse, minimizing waste and reducing costs.

2.2.1 Autosampler
With the autosampler feature, the INSCAN 178 system enables precise and efficient gas sampling in confined environments. The air is collected through a suction fuction tot he desorption tubes that then can be inserted in the INSCAN 178.

2.4 Transfer of Product

If you hand over the device to other individuals, please provide them with this user manual/safety instructions. Please also refer to the warranty table in the service information section at the end of the manual. We assume no liability for this.

- Open the packaging.
- Carefully remove the device from the packaging.
- Remove any packaging materials and packaging/transportation restraints, if present.
- Check if the scope of delivery is complete by referring to the provided list.
- Inspect the device and accessories for any signs of transportation damage.
- If possible, keep the packaging until the end of the warranty period.

Warning!
The device and packaging materials are not toys! Children should not play with plastic bags, foils, and small parts! There is a risk of choking and suffocation! Keep all safety instructions and warnings in mind.

- Charger
- Batteries
- Original Operating Manual
- Safety Instructions

3. Intended Use

The Labio GC-UV INSCAN analytical systems are specifically designed for chemical analysis applications. It is intended to be used by professionals in laboratory settings and industrial environments for the analysis of various substances and chemical compounds.

This system is equipped with advanced features and capabilities to perform precise and accurate chemical analysis using gas chromatography (GC) coupled with ultraviolet (UV) detection.

It is important to note that the Labio GC-UV INSCAN analytical system is intended for professional use by trained personnel who are familiar with analytical techniques and safety protocols. Proper handling, maintenance, and calibration of the system are essential to ensure accurate and reliable results.

Users should refer to the accompanying documentation, including the original operating manual and safety instructions, for detailed guidance on the correct operation and maintenance of the Labio GC-UV INSCAN analytical system. It is crucial to follow all safety precautions and guidelines to ensure the safety of the users and the integrity of the analytical results.

4. Technical Data

System Specifications

Measuring principle: .....GC-UV
Run Time.....Typically > 5 min
Power: .....≤ 500W
Frequency: 230V 50Hz
Detector Spectral Range: .....156nm - 305nm
Samples: .....Gases
Weight: .....50 kg
Size.....800x600x500mm
Detection Principle: .....Beer-Lamberts Law
Analysis Software.....Clarity
Operational Temperature Range.....10°C to 40°C
Data Connection.....USB
Sample Volume.....Typical 2L

Noise and Vibration

The noise and vibration values ave been determined according to EN 62841.

Sound pressure level LpA .....65,67 dB (A)
Uncertainty KpA.....3 dB
Sound power level LWA.....76,32 dB (A)
Uncertainty KWA .....3 dB

The provided vibration total values and noise emission values have been measured according to a standardized test method and can be used for comparing one power tool with another. The provided vibration total values and noise emission values can also be used for a preliminary assessment of the exposure.

Warning:

The actual vibration and noise emissions during the use of the power tool may differ from the declared values, depending on how the power tool is used, particularly the type of workpiece being processed.

Limit the noise and vibration to a minimum!
• Use only in good condition.
• Regularly maintain and clean the device.
• Adjust your work techniques to the device.
• Do not overload the device.
• Have the device checked if necessary.
• Turn off the device when not in use.
• Wear gloves.

Specifications

Column Type: .....Capillary
Column Temperature:..15°C - 250°C, subambient
Column Heating Rate: .....Up to 150°C/min
Carrier Gas:..... Nitrogen N4.6 (99.996% purity)
Carrier Gas Nominal Input Pressure.....4 – 10 bar
Detector Resolution: .....2048 x 64
Detector Dynamic Range: 15 000:1
Spectral Resolution: 0,07nm
Detector SNR: 450:1
Detector Dark Noise:.....8.2 RMS counts
Detector Sensitivity: .....~ 0.32 counts/e-
Detector Integration TIme.....7.2 ms – 5 s
Operational Temperature Range.....10°C to 40°C
Sampling Method:.....Desorption

Operating and storage conditions

Sample gas pressure.....Ambient
Sample gas flow rate.....2 – 10 l/min
Storage temperature.....0 to 60 °C
Operating Temperature.....Long term 10 to 40 °C, short term 0 to 40 °C

Performance specifications

Zero-point drift.....< 2 % of measuring range per zero-point calibration interval
Sensitivity drift.....None
Linearity deviation.....< 2 % of measuring range
Temperature drift.....< 2 % of measuring range per 10 K temperature change
Background measurement interval.....24 hours

Caution!

Remaining risks:

Even when operating this analytical instrument correctly, there are always remaining risks. The following hazards can occur due to the design and construction of this instrument:

- Lung damage if a suitable dust mask is not worn when presence of hazardous chemical substances.
- Hearing damage if suitable hearing protection is not worn.

5. Installation Procedure

5.1 Location Selection

- Choose a well-ventilated area with sufficient space to accommodate the GC-UV instrument and associated equipment.
- Ensure the installation site is free from excessive heat, direct sunlight, and environmental contaminants that may affect the instrument's performance.

5.2 Instrument Unpacking

- Carefully unpack the GC-UV instrument, following the manufacturer's guidelines.
- Inspect the instrument for any signs of physical damage during shipping. If any damage is observed, contact the manufacturer or supplier immediately.

5.3 Power Connection

- Verify the power requirements of the GC-UV instrument (voltage, frequency, and power rating) and ensure they match the available power supply.
- Connect the instrument to a dedicated power outlet with proper grounding to minimize electrical noise and ensure instrument stability.

5.4 Gas Supply Connection

- Connect the required gas supplies (carrier gas) to the corresponding inlet ports on the instrument.
- Ensure proper pressure regulation and use high-quality gas filters to prevent contamination of the system.

5.5 Instrument Leveling and Stabilization

- Allow the instrument to stabilize for a recommended period (as specified by the manufacturer) to ensure thermal equilibrium before further setup.

5.4 Instrument Connections

- Connect the GC-UV instrument to the computer workstation or data acquisition system using the appropriate cables and connectors provided.
- Ensure the communication between the instrument and the computer is established and functional.

5.5 Instrument Calibration and Setup

- Follow the manufacturer's instructions to perform the initial instrument calibration and setup procedures.
- Install any necessary software or drivers required for instrument control and data acquisition.

5.6 System Verification

- Perform system verification tests, such as leak checks, temperature calibration, and performance checks, as recommended by the manufacturer.
- Verify the proper functioning of all instrument components, including the GC column, UV detector, and autosampler (if applicable).

5.7 Training and Familiarization

- Receive training on the safe operation, maintenance, and troubleshooting of the GC-UV instrument from qualified personnel.
- Familiarize yourself with the instrument's user manual, software interface, and operating procedures.

5. Operation

5.1 Perform a Dry-run:
Before operating the device, familiarize yourself with all the controls, buttons, and indicators on the instrument.

Step-by-step procedure;

- Ensure that the instrument is properly connected to the power supply and any required gas sources.
- Power on the instrument following the with the ON/OFF button (See Page 2).
- Allow the instrument to warm up and stabilize according to the recommended time (30min-1h)
- Set the desired operating parameters such as temperature, flow rate, wavelength (in the case of UV analysis), and any other relevant settings.
- Load the sample into the appropriate injection system, whether it's manual injection, autosampler, or other sample introduction methods.
- Initiate the analysis run according to the specified method or protocol.
- Monitor the instrument's performance during the analysis, paying attention to the display, indicators, and any warning messages or alarms.
- Observe the chromatographic separation or UV spectra generation in real-time, if applicable, to ensure proper peak resolution and signal intensity.
- Record and document any relevant data or observations during the analysis run.
- After the analysis is complete, properly dispose of the sample waste following appropriate safety and environmental protocols.
- Power off the instrument following the recommended procedure.
- Perform any necessary maintenance or cleaning tasks as specified by the manufacturer or according to standard operating procedures.

6. Cleaning, Maintenance, and Spare Parts Ordering

6.1 Cleaning

- Pay special attention to critical areas such as the injection port, detector, column, and sample pathways.
- Remove any residues or debris that may affect the accuracy and sensitivity of the analysis.
- Follow safety protocols and use protective equipment when handling cleaning agents.

6.2 Maintenance:

- Check and calibrate instrument parameters, including temperature, pressure, and detector response.
- Verify the performance of auxiliary equipment, such as gas supplies and autosamplers.
- Keep a maintenance log to track performed tasks, dates, and any identified issues for future reference.
- If necessary, consult the manufacturer's service manual or contact technical support for more complex maintenance procedures
- Inspect and replace worn or damaged components, such as seals, o-rings, septa, and syringe needles.

6.3 Spare Parts Ordering

- Maintain an inventory of commonly used spare parts to minimize instrument downtime.
- Identify the specific spare parts needed for your GC-UV instrument model and version.
- Contact the manufacturer or authorized distributor to order genuine spare parts.
- Provide accurate information, such as instrument model, serial number, and required part numbers, when placing an order.
- Follow the recommended replacement procedures provided by the manufacturer when installing the spare parts.
- Keep records of spare part orders, including dates, part descriptions, and purchase details, for future reference.

For pricing and further information on spare parts, please visit www.labioscientific.com.

7. Disposal and Recycling

The device is packaged to prevent transport damage. This packaging is a raw material and can be reused or recycled. The device and its accessories are made of various materials such as metal and plastic. Defective devices should not be disposed of in household waste. To properly dispose of the device, it should be taken to an appropriate collection point. If you are unsure of the location of a collection point, please inquire at your local municipal administration.

Proper disposal and recycling of the GC-UV instrument and related materials are important for environmental sustainability. Follow the guidelines below:

7.1 Disposal

- Observe local regulations and guidelines for the disposal of electronic equipment.
- Do not dispose of the instrument in regular household waste.
- Contact local authorities or recycling centers to determine proper disposal methods.
- Remove any hazardous materials or chemicals according to appropriate safety protocols.
- Safely dispose of batteries, cartridges, and other consumables following local regulations.

6.2 Recycling:

- Whenever possible, consider recycling options for the GC-UV instrument and its components.
- Contact recycling centers or organizations specializing in electronic waste recycling.
- Separate different materials, such as metals, plastics, and glass, for appropriate recycling processes.

By responsibly disposing of and recycling the GC-UV instrument, you contribute to minimizing environmental impact and promoting sustainable practices. Always follow local regulations and guidelines for proper disposal and recycling methods.

8. Storage

Proper storage of your GC-UV instrument is essential to maintain its performance and longevity. Follow the guidelines below for optimal storage:

1. Store the instrument in a clean, dry, and well-ventilated area.
2. Protect the instrument from extreme temperatures, humidity, and direct sunlight.
3. Ensure the storage area is free from dust, chemicals, and other contaminants.
4. Use protective covers or cases to shield the instrument from potential damage.
5. Keep the instrument in an upright position to prevent any liquids or debris from entering sensitive components.
6. If storing for an extended period, remove batteries or disconnect the power source to prevent battery leakage or power drain.
7. Store the instrument away from sources of vibration, electromagnetic fields, and potential mechanical impacts.
8. Keep the instrument out of reach of unauthorized individuals, especially children.

By following these storage guidelines, you can prolong the lifespan of your GC-UV instrument and maintain its optimal performance when not in use.

10. System Display

Display Status Function

Temperature

Column	The real time current temperature of the column.
Desorber	The desorption temperature.
8-Valve	The temperature of the switching 8-Valve.
Lightpath	The temperature of the gas cell of the detector.
Cooler	The temperature of the column cooler.

Pressure

Column	The real time current pressure of the column.
Detector	The purging gas pressure for the spectrometer.
UV Lamp	The purging gas pressure for the UV-lamp.
Flush	Desorption gas line flushing pressure.

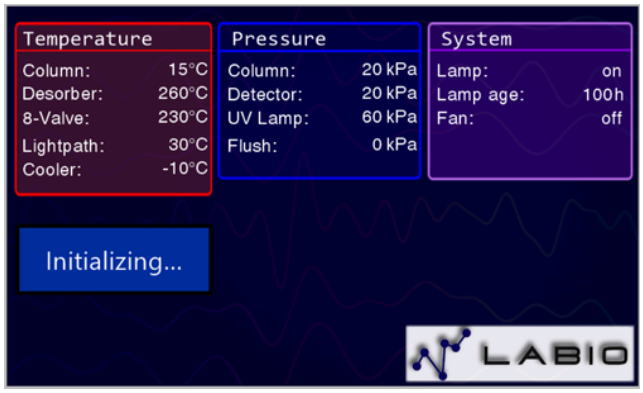
UV Lamp

Lamp age	How long the lamp has been on.
Lamp	Shows if the lamp is on or off.
Fan	If the column cooling fan is on or off.

Status

Idle	Shows that the instrument is not ready to perform a chemical measurement.
Ready	Shows that you can start a chemical measurement.
Cooling	Shows that column cooling is under progress.
Cleaning	Shows that the column is cleaning.

The user interference of the Display can be customized for specific client needs.



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EU countries only

Do not dispose of electric tools in household waste!

According to European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) and its implementation into national law, used electric tools must be collected separately and properly recycled.

Alternative recycling option instead of returning the product:

The owner of the electrical device is alternatively obligated, in case of disposal, to participate in the proper recycling of the device. The old device can be handed over to a designated collection point that conducts disposal in accordance with national waste management and recycling laws. This does not apply to accessories and auxiliary equipment without electrical components that are included with the old device.

Service Information

Category	Examples
Consumables/Wear Parts*	Columns serviced or replaced after contamination
Supplies	Calibration standards
Extra Parts	Regulator, Nitrogen bottles

Warranty Certificate

Dear customer,

Our products undergo strict quality control. If, however, this device does not function properly, we sincerely apologize and kindly ask you to contact our service department at the address provided on this warranty card or the point of purchase where you acquired the device. The warranty described in this warranty document is provided by Labio a.s., (warrantor). The following conditions apply to the assertion of warranty claims:

These warranty conditions exclusively apply to consumers, i.e., natural persons who intend to use this product for non-commercial purposes, neither in the context of their commercial nor any other independent activities. These warranty conditions govern additional warranty services that we promise to buyers of the device in addition to the statutory warranty rights. Your statutory warranty rights are not affected by this warranty. Our warranty service is free of charge for you.

The warranty service exclusively covers defects in the device resulting from material or manufacturing errors, and at our discretion, is limited to the rectification of such defects in the device or the replacement of the device. Please note that our devices are not designed for commercial, artisanal, or professional use. Therefore, a warranty contract is not concluded if the device has been used within the warranty period in commercial, artisanal, or industrial establishments or subjected to equivalent stress.

The following are excluded from our warranty;

- Damage to the device resulting from failure to observe the assembly instructions or due to improper installation, failure to follow the operating instructions (e.g., connection to an incorrect mains voltage or current type), failure to observe maintenance and safety regulations, exposure of the device to abnormal environmental conditions, or lack of care and maintenance.
- Damage to the device resulting from abusive or improper use (e.g., overloading the device or using unauthorized tools or accessories), ingress of foreign objects into the device (such as sand, stones, or dust, transport damage), acts of violence or external influences (e.g., damage caused by dropping).

- Damage to the device or its components resulting from normal wear and tear, regular use, or other natural causes.

- The warranty period is 1 year and begins with the transfer of the device to the initial purchaser. Warranty claims must be asserted within two weeks after the defect is discovered but before the expiration of the warranty period. Assertion of warranty claims after the expiration of the warranty period is excluded. Repair or replacement of the device does not extend the warranty period, nor does it initiate a new warranty period for the device or any installed replacement parts. This also applies when on-site service is provided.

- To assert your warranty claim, please report the defective device at the point of purchase or at www.labioscientific.com. Please have the purchase receipt or other proof of purchase of the new device ready. Devices sent without appropriate documentation or without a nameplate are excluded from warranty service due to a lack of identification. If the defect of the device is covered by our warranty service, you will promptly receive a repaired or new device.

- For wear parts, consumables, and missing parts, we refer to the limitations of this warranty as stated in the service information provided in this user manual.

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This information is subject to change without notice.

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