

**trinamiX**

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Operation Manual

# trinamiX Liquid Analysis Flow Kit

Document number: TD1000267

Document version: 1.0

Document date: 2024.08.29

## NOTICE

The trinamiX Liquid Analysis Flow Kit (hereafter referred to as “the kit”) is specifically designed for transmission measurements using the trinamiX PAL One NIR spectrometer.





# 1 Components



## 2 Intended Use

The trinamiX Liquid Analysis Flow Kit is designed for the measurement of liquids utilizing near-infrared spectroscopy in conjunction with the trinamiX NIR Spectroscopy Solution. However, the trinamiX Liquid Analysis Flow Kit is not intended for the following purposes:

- Medical or safety-critical applications.
- Use in potentially explosive environments.
- Use by consumers or children.
- Legally regulated measurement applications.
- Use or contact with corrosive or caustic liquids or strong bases.
- Contact with food or feed. Food or feed must be disposed of after contact with the kit.
- Contact with hazardous, radioactive, or infectious liquids or materials.
- Use in outdoor environments or in strong magnetic fields.

## 3 Operating Conditions

<b>Operating temperature</b>	0 – 40 °C
<b>Humidity</b>	20 % – 80 %
<b>Storage temperature</b>	0 – 45 °C
<b>Conditions</b>	Use only in dry indoor areas

## 4 Safety Instructions

Please read this operating manual and the operating manual of the spectrometer carefully. Pay attention to all warnings, instructions, and disclaimers before operating the kit to ensure maximum safety and smooth operation. Keep the manuals in an easily accessible place. The safety features of the kit and its components may be compromised if they are not operated in accordance with their intended use and operating conditions. Do not use the kit if it is damaged.

### **⚠ WARNING**

**The device contains a neodymium permanent magnet. Make sure that there is sufficient distance, especially from magnetic data storage devices. People wearing a pacemaker are particularly at risk - be sure to keep your distance from the magnet!**

## 5 Installation and Usage

1. Insert one end of the thin tube ( $\varnothing$  1.6 mm) at least 0.5 cm into the thick tube ( $\varnothing$  8 mm). Repeat with the second tube.

### **⚠ CAUTION**

Perform the following step on a flat work surface so that the flow cell is not damaged. The glass supports are very fragile. Tip: Moisten the glass nozzle or tube with water to make it glide better.

2. Slide the free ends of the thick tubes onto the glass sockets of the flow cell.
3. If necessary, the thin tube can be cut off completely to the “thick” end (the syringe is then vertical).
4. Insert the 6ml Luer/Lock syringe with the short, blunt stainless-steel cannula completely into the opening of the thin tube.

# 6 Measurement procedure

Always ensure that you recalibrate the spectrometer when switching between operating modes, such as using a transflection cell instead of performing reflective measurements. In addition, we recommend repeating the calibration approximately every hour to maintain accuracy. To streamline frequent usage, it is advisable to designate one clean and dry flow cell as a reference flow cell and a second as the measurement flow cell. If you only have one flow cell available, be sure to thoroughly clean and dry it before conducting any calibration measurements.

1. Perform an open port measurement without the transflection cap mounted on the spectrometer, or, if mounted, with an opened cap and no flow cell inserted.
2. Mount the transflection cap on the spectrometer, insert an empty, clean, and dry flow cell and close the cap. Perform a reference measurement.
3. If two separate flow cells are available, exchange the reference flow cell with the measurement flow cell.
4. Draw 6 ml of the liquid to be measured into the syringe without air bubbles.
5. Push 3 ml quickly through the measuring flow cell.
6. Start the measurement. The measurement can take place while the liquid is in a steady state.
7. Repeat this measurement procedure twice by pushing 0.5 ml through and subsequently measuring each time.
8. At the end of each measurement, the syringe should be almost empty (push through the rest).
9. Now clean the flow cell by drawing 6 ml of air and pushing it through to remove the remaining liquid.
10. If you do not want to use a separate reference flow cell for calibration, rinse the measurement flow cell with pure ethanol and then dry it with dry air.

At the end of a series of measurements and before storing, the flow cell must be thoroughly cleaned. To do this, rinse the flow cell first with a suitable solvent and then with pure ethanol. Then dry the flow cell with compressed air, for example. If necessary, clean the flow cell with a special flow cell cleaning agent such as Hellmanex® III cleaning concentrate.

# 7 Disclaimer

Devices, software, documentation and other parts of products offered by trinamiX are not designed to be used outside the intended use.

To the maximum extent permitted by law, all other terms, conditions and warranties, whether expressed or implied are expressly excluded. To the maximum extent permitted by law, liability under any condition or warranty, which cannot be legally excluded, is limited at trinamiX option to replacement or resupply of goods or services or payment for the same.

## 7.1 Liability

The protection of the kit may be impaired in the following cases.

Liability for property damage and personal injury is then transferred to the user:

- The kit or its components are not used according to this operating manual.
- The kit is used outside of its intended use.
- The user makes changes to the kit.
- The kit is used with accessories that have not been recommended by trinamiX.
- The kit is serviced by people who have not been authorized by trinamiX.

## 7.2 Disclaimer

Although the descriptions, designs, data and information contained herein are presented to the best of our knowledge and belief and are deemed correct, they are for your guidance only. As many factors can affect processing or application/use, we recommend that you conduct tests prior to use to determine the suitability of the kit for your specific purpose. This does not release you from the obligation to perform a complete inspection of the kit upon delivery or any other obligation.

The kit is provided “as is” and “with all faults” to the extent permitted by law. No express or implied warranties of any kind, including warranties of merchantability or fitness for a particular purpose, are given with respect to described products or designs, data or information, or that the products, designs, data or information can be used without infringing the intellectual property rights of others. In no event shall the descriptions, information, data or designs provided be considered as part of our terms of sale.

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## Contact trinamiX

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trinamiX GmbH  
Industriestr. 35  
67063 Ludwigshafen  
Germany

[support@trinamiXsensing.com](mailto:support@trinamiXsensing.com)

[www.trinamiXsensing.com](http://www.trinamiXsensing.com)

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This operation manual describes the following product:  
**trinamiX Liquid Analysis Flow Kit**