

**Instruction Manual and Safety Information**

**Alcolyzer 7001**  
**Alcolyzer 5001**

Find out more



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Original instructions

# Table of contents

<b>1</b>	<b>Safety instructions</b> .....	<b>5</b>
1.1	General safety instructions.....	5
1.2	Conventions for safety messages and typography .....	6
<b>2</b>	<b>Overview</b> .....	<b>6</b>
2.1	Intended use of the instrument.....	7
2.2	Functional components .....	7
<b>3</b>	<b>Installation</b> .....	<b>8</b>
3.1	Installation requirements .....	8
3.2	Installing the instrument .....	8
3.2.1	Mounting the hoses / waste vessel .....	8
3.2.2	Power connection .....	9
3.2.3	Switching the instrument on/off.....	9
3.2.4	Basic instrument settings / first check.....	9
<b>4</b>	<b>Operation</b> .....	<b>10</b>
<b>5</b>	<b>Instrument settings</b> .....	<b>10</b>
5.1	Language and regional settings .....	10
5.2	Time settings.....	10
5.3	Display brightness.....	10
5.4	Automatic sample names.....	10
5.5	Ethanol table .....	11
<b>6</b>	<b>Measurement settings – products</b> .....	<b>11</b>
6.1	Products .....	11
6.1.1	Importing/exporting products .....	11
6.2	Measurement settings .....	12
6.2.1	Dashboards / measuring quantities .....	12
6.2.2	Reports .....	12
6.2.3	User-defined measurement information.....	12
6.3	Measurement parameters .....	12
6.3.1	Measurement mode .....	12
6.3.2	Alcohol offset .....	12
6.3.3	Temperature mode .....	12
6.3.4	Ethanol table .....	13
<b>7</b>	<b>Performing a measurement</b> .....	<b>13</b>
7.1	Measurement with syringe filling.....	13
7.1.1	Starting a measurement.....	13
7.1.2	Filling sample .....	14
7.1.3	Actual measurement procedure.....	14
7.2	Filling automatically with Xsample .....	14
7.2.1	Measuring with Xsample 3100.....	14
7.2.2	Measuring with Xsample 5100.....	15
7.3	Data management.....	15
7.4	Degassing samples.....	15
<b>8</b>	<b>Checking, adjusting and calibrating</b> .....	<b>15</b>
8.1	Checks .....	15
8.1.1	Performing a check .....	15
8.2	Adjustments .....	16
8.2.1	Alcohol adjustments.....	16
8.2.1.1	Alcohol zero adjustment.....	16

8.2.1.2	Alcohol concentration adjustment .....	16
8.2.1.3	Alcohol special multipoint adjustment .....	17
8.2.2	Color adjustments .....	18
8.2.2.1	Color zero adjustment .....	18
8.2.2.2	Color concentration adjustment .....	18
8.2.3	Viewing the adjustment history .....	18
<b>9</b>	<b>Upkeep and cleaning .....</b>	<b>18</b>
9.1	Cleaning the measuring cell .....	18
9.1.1	Between series of measurements on the same day .....	19
9.1.2	At the end of the day .....	19
9.1.3	Once a week (preferably before the weekend) .....	19
9.2	Cleaning the instrument housing and the touchscreen .....	19
9.3	Storing the instrument .....	19
9.4	Transporting the instrument .....	20
<b>10</b>	<b>Maintenance and repair .....</b>	<b>20</b>
10.1	Maintenance performed by an authorized Anton Paar representative .....	20
10.2	Repair performed by an authorized Anton Paar representative .....	20
<b>Appendix A</b>	<b>Technical data .....</b>	<b>21</b>
Appendix A.1	Specifications .....	21
Appendix A.2	Instrument data and operating conditions .....	22
Appendix A.3	Wetted parts and housing surface materials .....	22
<b>Appendix B</b>	<b>Declarations of conformity .....</b>	<b>24</b>

# 1 Safety instructions



## Read the documentation

- Read the documentation before using the product.
- Follow all hints and instructions in the documentation to ensure the correct use and safe functioning of the product.

## 1.1 General safety instructions

### General

- The present manual is termed "Instruction Manual and Safety Information" (IMSI). It is designed as a quick guide providing you with the most important information regarding the safe installation and use of the product. Refer to the Reference Guide for a comprehensive description of the instrument. Download Anton Paar documents for free from the Anton Paar website:  
<https://www.anton-paar.com>
- The documentation is a part of the product. Keep it for the complete working life of the product and make it easily accessible to all persons involved with the product. If you receive any additions or revisions from Anton Paar, these must be treated as part of the documentation.

### Liability

- This document does not claim to address all safety issues associated with the use of the product and samples. It is your responsibility to establish health and safety practices and to determine the applicability of regulatory limitations.
- Anton Paar only warrants the safe and proper functioning of the product if no modifications are made to mechanics, electronics, or software.
- Use the product only for the purpose described in the documentation. Anton Paar is not liable for damages caused by incorrect use of the product.
- The results delivered by the product depend on the correct function of the product and various other factors. We recommend that you have experts check the results (i.e., perform plausibility testing) before taking consequential actions based on the results.

### General precautions

- Observe and adhere to your national safety regulations regarding the handling of all substances associated with your measurements (e.g. use safety goggles, gloves, respiratory protection, etc.).
- Samples and cleaning liquids that have been used in the measuring system are not suited for human consumption after use.

- Check the wetted parts of the product for chemical resistance to all samples and cleaning liquids.
- Take care that samples, cleaning liquids and gases are chemically compatible when they come into contact with each other. They must not react exothermally or produce hazardous substances.
- Before you start a measurement or cleaning procedure, take care that all parts, in particular the measuring cells, the filling adapters, the hoses, and the waste vessel, are properly connected and in good condition.
- Before you start a measurement or cleaning procedure, check the filling adapters for leak tightness.
- Take measures that spilled liquids cannot get into plug connections or venting slots of electrical appliances.
- Connect the measuring system to the AC power supply via a safety switch located at a safe distance from the instruments. In an emergency, turn off the power using this switch instead of the power switch on the instruments.

### Installation

- The installation procedure shall only be carried out by authorized personnel who are familiar with the installation instructions.
- Use only accessories, consumables, or spare parts supplied or approved by Anton Paar.

### Using the product

- Ensure that all operators have been trained beforehand to use the product safely and correctly.
- Ensure that the product is sufficiently supervised during operation.
- In case of damage or malfunction, stop operating the product. Do not operate the product under conditions that could result in damage to goods or injuries or loss of life.
- If you suspect that spilled substances got into the product, disconnect the product from the electrical supply and have it checked for electrical safety by a service technician authorized by Anton Paar.

### Precautions for flammable samples and cleaning agents

- Keep potential sources of ignition, like sparks or open flames, at a safe distance from the product.
- Place the instrument on a laboratory bench made of fireproof material, preferably bricks, ceramics, or stoneware
- Store only the minimum required amount of sample, cleaning liquids, and other hazardous materials near the product.
- Do not spill sample/cleaning liquids or leave their containers uncovered. Immediately remove spilled sample/cleaning liquids.

- Ensure that the setup location is sufficiently ventilated. The environment of the product must be kept free from flammable gases and vapors.
- Provide fire-extinguishing equipment.

### Operation in areas with risk of explosion

- The product is **not** explosion-proof and therefore must not be operated in areas with risk of explosion.

### Service and repairs

- Service and repair procedures may be carried out only by authorized persons or by Anton Paar.


### Disposal

- Concerning the disposal of the product, observe the legal requirements in your country. Contact your Anton Paar representative for further questions.

## 1.2 Conventions for safety messages and typography

### Conventions for safety messages


The following conventions for safety messages are used in this document:



**WARNING**

**Description of risk**

Warning indicates a hazardous situation which, if not avoided, **could** result in death or serious injury.



**CAUTION**

**Description of risk**

Caution indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**NOTICE**

**Description of risk**

Notice indicates a situation which, if not avoided, could result in damage to property.

**TIP:** *Tip gives extra information about the situation at hand.*

### Typographical conventions

The following typographical conventions are used in this instruction manual:

Convention	Description
<i>Names for physical buttons</i> <i>Labels for tabs, buttons etc. in the software</i>	The names and labels are written in <i>italic</i> .
<i>Menu Level 1 &gt; Menu Level 2</i>	Menu paths are written in <i>italic</i> . The menu levels are connected using a closing angle bracket.

## 2 Overview

Alcolyzer 5001 and Alcolyzer 7001 determine the alcohol content of beverages by a patented NIR (near infrared) analysis method. The instruments combine highest accuracy with easy handling and robust design.

**Table 1:** Comparison of model expandability

Model	Optional color measurement	Optional automation
Alcolyzer 5001	no	no
Alcolyzer 7001	yes	yes

Alcolyzer 7001 is optionally available with an integrated color measurement device. The color value (EBC or SRM (ASBC)) is determined by the measurement of light absorption (light of a wavelength of 430 nm).

Optionally, Alcolyzer 7001 can be combined with sample changers Xsample 3100 or Xsample 5100.

### User interface

- The touchscreen user interface supports easy and intuitive operation.
- Freely define your favorites on the home screen and have quick access to the instrument functions that you need every day.
- Define your own products (in addition to the pre-defined product measurement settings), your own measurement parameters (derived from the parameters coming with the instrument), or the contents of output reports.
- Export all measured data as a PDF or CSV file onto any connected storage device or a network share. Data can be printed via USB, network, or serial port.
- If you prefer, you can optionally connect an external keyboard or mouse and a barcode reader.

### Compact and robust design

The instrument is ready for reliable measurements also in demanding environments due to:

- compact design;
- sealed housing that withstands shocks, dirt, and spillages;

- robust housing materials: coated aluminum (top and sides), aluminum (base and back), polystyrene/butadiene (front).

## 2.1 Intended use of the instrument

Your instrument is capable of measuring the alcohol content of beverages.

### Restrictions and exclusions

- Do not leave beverage samples longer than necessary in the measuring cell because the sugar content will leave residues on the inner surface of the glass cuvette.

- Do not fill a sample if you do not know which cleaning liquid removes this sample.
- Do not fill and test liquids that attack the instrument's materials.
- Do not use hydrofluoric acid as a cleaning agent as it attacks the glass of the measuring cell.
- Do not fill substances that may harden inside the measuring cell.
- Do not mix substances inside the measuring cell if these substances may react chemically.

## 2.2 Functional components



Fig. 1: Views of the instrument

### Front

- Home button
- Touchscreen

### Right side

- Syringe holder
- Sample outlet
- Sample inlet
- Extension slot cover plate (Alcolyzer 7001)

### Left side

### Rear

- Fan
- Type plate with serial number (P/N = mat. no.)
- AC power jack
- Fuse holder
- Power on/off switch

### Interface connectors on the rear

- Service port
- COM / RS-232 serial port (DE-9F connector)

- |   |                                      |    |                                    |
|---|--------------------------------------|----|------------------------------------|
| 7 | Blind covers                         | 17 | USB OTG socket (Micro-A)           |
| 8 | Protection cover for the USB sockets | 18 | USB 2.0 socket (type A)            |
| 9 | USB 2.0 sockets (type A), 3x         | 19 | Ethernet terminal (RJ45 connector) |
|   |                                      | 20 | CAN interface                      |

## 3 Installation

### 3.1 Installation requirements



#### WARNING

Using hazardous or flammable chemicals as samples or cleaning liquids could destroy the instrument and cause serious injuries unless you take special precautions.

- Observe the safety instructions in Section 1.1 [▶ 5] concerning a suitable setup location.

The instrument is designed for operation under typical laboratory benchtop conditions.

The setup location and surroundings must meet the minimum requirements specified under “Operating conditions” in the technical data, refer to Appendix A.2 [▶ 22].

Allow the equipment to reach ambient temperature before installation. This is particularly important if the equipment has been stored or transported at lower temperatures.

#### The right place

#### NOTICE

##### No spray water protection

Consider that the instrument is not protected against spray water.

Place the instrument on a stable, flat bench.

To ensure temperature stability and trouble-free measurement, do **not** position your instrument:

- next to a heating facility,
- in a drafty place (e.g. near an air conditioning, ventilation system, or an open window),
- in direct sunlight.

#### NOTICE

##### Do not inhibit heat dissipation

A strong built-in cooling fan dissipates heat through the bottom and rear of the instrument. Ensure that the air flow is not blocked and provide for a minimum distance of 10 cm (4 in) to walls behind and beside the instrument.

The instrument requires an electrical outlet nearby:

- 100–240 V~, 50/60 Hz, fluctuation ±10 %

**IMPORTANT:** Ensure that the power plug and the power switch are always easily accessible so that the instrument can be easily disconnected from the AC power supply at any time.

### 3.2 Installing the instrument

Table 2: Installation procedure

Step	Refer to
1. <b>Place</b> the instrument on a bench in an appropriate environment.	Section 3.2 [▶ 8]
2. Mount the <b>hoses</b> and connect the <b>waste vessel</b> .	Section 3.2.1 [▶ 8]
3. Connect the instrument to the <b>power supply</b> and <b>switch it on</b> .	Section 3.2.2 [▶ 9] Section 3.2.3 [▶ 9]
4. Define basic <b>instrument settings</b> and perform a <b>first check</b> .	Section 3.2.4 [▶ 9]

#### Installation of an optional sample changer – only Alcolyzer 7001

Refer to the instructions coming with the sample changer.



#### WARNING

##### Risk of electric shock

Connect only voltages that comply with PELV (protective extra-low voltage) according to EN 61140 or with SELV (safety extra-low voltage) according to EN IEC 62368-1 to the interface connectors (except the power inlet) of the instrument.

**IMPORTANT:** Connect only Anton Paar equipment with a maximum power consumption of 40 W to the CAN interface. Otherwise the instrument will not work.

#### 3.2.1 Mounting the hoses / waste vessel



#### CAUTION

##### Possible leakage of dangerous liquids

Dangerous liquids leaking from the instrument may cause injuries or risk of fire.

- Only use the supplied hoses and waste vessel if their materials are resistant to your samples and cleaning liquids.
- If the supplied parts are not suitable, use other parts made of an appropriate material.



**Fig. 2:** All hoses mounted – syringe connected

- 1 Adapter Luer 1/4" UNF
- 2 Syringe holder
- 3 Hose 140x3x2 PTFE
- 4 Hose 140x3x2 PTFE
- 5 Waste vessel

#### Filling hose

1. Screw an adapter Luer 1/4" UNF, mat. no. 64792 (from the accessory kit), into the upper screw hole of the syringe holder (1+2 in above figure).
2. Screw one end of a hose 140x3x2 PTFE, mat. no. 187223 (from the accessory kit), into the lower screw hole of the syringe holder (2+3 in above figure).
3. Screw the other end of the hose into the sample inlet "IN" (lower screw hole), as in the above figure.

#### Waste hose / waste vessel

1. Screw one end of a hose 140x3x2 PTFE, mat. no. 187223 (from the accessory kit), into the threaded hole in the cap of the waste vessel (4+5 in above figure).
2. Screw the other end of the hose into the sample outlet "OUT" (upper screw hole), as in the above figure.

**IMPORTANT:** Always keep the waste vessel closed with the cap during operation.

### 3.2.2 Power connection



#### WARNING

##### Risk of electric shock or fire

- Connect the instrument only to an electrical outlet with protective earthing.
- Never connect the instrument to the AC power supply with protective separation or protective insulation.
- Ensure that the non-fused earth conductor of the power cable is connected to earth.
- Ensure that the current rating of the power cable is at least 10 A.

#### NOTICE

##### Possible damage due to wrong voltage

Before you switch on the instrument, make sure that the correct line voltage and line frequency are available (AC 100–240 V, 50/60 Hz).

If large voltage fluctuations are to be expected, we recommend using a constant voltage source (UPS).

- Connect the AC power jack of the instrument (12, Fig. 1 [▶ 7]) to a suitable electrical outlet with the supplied power cable.

### 3.2.3 Switching the instrument on/off

- Use the power switch on the rear of the instrument (14, Fig. 1 [▶ 7]) to switch the instrument on or off. After the instrument has been switched on, the home screen will come up on the display.
- After power-on wait at least 30 minutes for the internal temperature to stabilize.

#### NOTICE

##### Risk of damaging the instrument

Never plug or unplug CAN cables while the instrument is switched on.

**TIP:** Do not turn off the instrument during the night. This allows the measuring cell to achieve long term temperature stability.

**IMPORTANT:** After you have switched off the instrument, the electrical components stay live for a few seconds.

If you have to **restart** the instrument, switch it off and **wait approx. 15 seconds** before switching it on again.

### 3.2.4 Basic instrument settings / first check

After installation set the instrument settings, refer to Section 5 [▶ 10].

If you want to use product settings already defined on another instrument, you can import them, refer to Section 6.1.1 [▶ 11].

Conclude initial setup with a zero alcohol check, refer to Section 8.1 [▶ 15], to verify that your instrument is in perfect condition. Your instrument has been factory adjusted, but during transport the adjustment may have been compromised.

**IMPORTANT:** *Wait at least 15 minutes after a restart for the internal temperature to stabilize.*

- If the check succeeds, your instrument is ready for routine measurements.
- If the check fails, clean the measuring cell thoroughly and repeat the check.
- If the check still fails, perform an alcohol zero adjustment as described in Section 8.2 [▶ 16].



## 4 Operation

Refer to the Reference Guide for a comprehensive description of the instrument software and all available settings and functions.

## 5 Instrument settings

For the configuration of an optional sample changer (only AlcoLyzer 7001), refer to the instructions that come with the sample changer.

### 5.1 Language and regional settings

- Select  **Settings** in the menu, then under **System** select  **Time & language**.

First of all you will want to set the system **language** so that you feel comfortable on the instrument:

- Set **Language** to a language that you prefer.

On the occasion set the number format (decimal symbols etc.) and the date and time **formats**:



- Select **Format** according to your requirements.

Finally select the **keyboard layout** for the onscreen keyboard and the **keymap** for an optional USB keyboard:

- Set **Keyboard layout** and **HW keyboard keymap** appropriately.

### 5.2 Time settings

Set the system time correctly so that the time stamps of measurements and system events are correct and traceable:

1. Select  **Settings** in the menu, then under **System** select  **Time & language**.
2. Set **Region** and **City** to your time zone.  
Daylight saving time will be calculated automatically.

**TIP:** *The date and time formats are defined with the **Format** setting (refer to Section 5.1 [▶ 10]).*

To set date and time **manually**:



- Set **Date** to the current date.

- Set **Time** to the current time.

*Alternatively, set date and time via **time server**:*

1. Configure a network connection first.
2. Switch **Use time server** to **Yes**.  
The **Time servers** input field replaces the input fields **Date** and **Time**.
3. The **Time servers** setting depends on your network settings.
  - If you have set up an **automatic** network configuration, you can leave the **Time servers** input field empty.
  - If you have set up a **manual** network configuration, or if you want to specify a time server anyway:  
Specify the address(es) of your time server(s) in the **Time servers** input field.  
Put each time server in a new line. Do not separate addresses by commas or semicolons etc.
4. It depends on your time server when the system time will be synchronized. It may also be necessary to restart the instrument.




### 5.3 Display brightness

1. Select  **Settings** in the menu, then under **Hardware** select  **Instrument settings**.
2. To set the **Display brightness**, drag the slider to a convenient position.

**TIP:** *The display brightness is reduced when no user interaction has been detected for 20 minutes. As soon as you touch the screen, the display brightness is back to its previous value.*

### 5.4 Automatic sample names

You can set the instrument so that it generates pattern-based automatic sample names.

1. Activate the function:
  - a. Select  **Settings** in the menu, then under **System** select  **Sample naming**.
  - b. Switch **Use automatic sample naming** to **Yes**.
2. After the function has been activated, define a pattern for the automatic sample names:
  - Tap **Configure**.  
The current elements of the name pattern are shown in an ordered list on the right, which shows their position in the pattern.
3. Assemble the name elements of the pattern:
  - To add a name element, select it from the list of available elements in the area on the left (tap ).
  - Tap on any of the elements in the name pattern on the right to select it. You can then change its position in the pattern or remove it from the pattern.

- Tap on a selected element in the name pattern again to deselect it.
- You can arrange name elements in any order and you can repeat elements in the pattern (for example a separator).
- Special name elements:

*Separator* is the character “\_”, which can be used to separate name elements.

*User input* will be replaced with the sample name that you specify when you start a measurement.

*Text* inserts a text string into the name. To define the text string, select the particular name element in the name pattern, then enter the text string in the input field *Text*.

4. Tap **Save** to save the name pattern.

## 5.5 Ethanol table

An ethanol table defines the relation between the ethanol concentration and the density of a binary water/ethanol mixture.

Select one of the predefined tables or provide a user-defined table or a polynomial function. By default the ethanol table is set to *EtOH OIML (% v/v)*.

### Selecting a specific ethanol table

1. Select **Settings** in the menu, then under *Modules* select your alcohol module.
2. Tap in the action box and select an ethanol table from the drop-down box.
3. Tap **Save**.

### User-defined ethanol table

Instead of selecting a predefined ethanol table:

1. Select *User-defined table*, then tap *Edit table*.
2. Import a table of data pairs: ethanol concentration [% v/v]; true density (example: 0.18;0.99795)
  - each data pair in a separate line
  - data values of a pair separated by a semicolon
  - up to 1000 data pairs

**TIP:** You can export a table template and edit it.

**TIP:** The larger the number of data pairs and the higher the accuracy of the data pairs, the higher the accuracy of the results that you can obtain.

**TIP:** Table data will be interpolated but not extrapolated. This means that the data pairs should cover the whole range of values that you want to measure.

### User-defined polynomial function

Instead of selecting a predefined ethanol table:

1. Select *User-defined polynomial function*.
2. Specify the two sets of coefficients A0 to A4 and B0 to B4 for the required two polynomials (eq. 1 and eq. 2):

$$c = A0 + A1 \cdot \rho + A2 \cdot \rho^2 + A3 \cdot \rho^3 + A4 \cdot \rho^4$$

c.....ethanol concentration [% v/v]  
 ρ.....true density = input  
 Ai.....coefficients to be determined

**Fig. 3:** eq. 1

$$\rho = B0 + B1 \cdot c + B2 \cdot c^2 + B3 \cdot c^3 + B4 \cdot c^4$$

ρ.....true density  
 c.....ethanol concentration [% v/v] = input  
 Bi.....coefficients to be determined

**Fig. 4:** eq. 2

The function in eq. 2 is the inverse of the function in eq. 1.

## 6 Measurement settings – products

### 6.1 Products

You can individually define the measurement settings for each of your products or sample varieties and save them for repeated use:

1. Select **Products** in the menu.
2. Tap **Create product**.
3. Specify a name and a description for the product.
4. Define measurement settings and optionally configure limits.
5. Tap to select an image for the representation of the product.
6. Tap **Save** to save the collection of measurement settings for the product.

**TIP:** The instrument comes with several predefined product settings, which you can use as a template.

**TIP:** We recommend to use the predefined product “Beer (decarbonated)” for all types of beer, beer mix drinks, and alcopops. Use the predefined product “Wine Ext.” for wines with more than 50 extract.

#### 6.1.1 Importing/exporting products



You can define the measurement settings for a product on one instrument and transfer the product settings to another instrument of the same type.

#### Export of products

1. Select **Data explorer** in the menu, then tap on *Products*.
2. Tap **Select** in the action box, then select the product settings that you want to export.
3. Tap in the action control for the selection and specify where the export file shall be stored.


**IMPORTANT:** *Measurement modes are currently not included in the export.*

### Import of products

1. Select  *Products* in the menu.
2. Tap  *Import products*, then select a file with the product settings that you have exported before.  
You can select which products to import from the file.
3. Tap *Import* to import the selected products.  
The instrument will restart.

## 6.2 Measurement settings

Measurement settings comprise the measurement parameters, the assignment of a dashboard, and a report configuration for the results.


- For measurements without predefined product, assign dashboard and report configuration under *Setup*  on the *Measurement* spot.

### 6.2.1 Dashboards / measuring quantities

Dashboards serve to monitor your measurements.

The instrument already comes with dashboards predefined for various generic products. You can adapt them to your needs or define new dashboards according to your requirements.

You can place the following widgets onto a dashboard of the instrument:

- measurement information (giving information about the current status of the measurement)
- display boxes for any measuring quantity  
(Select  *Quantities* in the menu for a complete reference of available quantities. Tap on any of the quantities to see a comprehensive description.)

### 6.2.2 Reports

Measurement results are presented as reports, which you can access in the data explorer.



**TIP:** *The report configuration can also be changed after the measurement. It is independent of the dashboard configuration.*

### 6.2.3 User-defined measurement information

If you want to record additional specific information with every sample or product measurement, you can activate custom data fields. These data fields will show as input fields before you start a sample measurement. The text that you enter in a field can be included in the measurement report.

You find all activated custom data fields in the data group *Measurement*.

### Defining custom data fields

1. Select  *Settings* in the menu, then under *System* select  *Custom data fields*.
2. Activate any of the available custom data fields with the corresponding switch.
3. Define a name for the custom data field.  
This name will identify the custom data field and serve as a label.
4. Optionally declare the custom data field as mandatory with the corresponding switch.  
If a custom data field is mandatory, you cannot start a measurement before you have entered text in the input field.

## 6.3 Measurement parameters

### 6.3.1 Measurement mode

- Select *Standard* for a standard single measurement of the filled sample.

Refer to the Reference Guide for a comprehensive description of all measurement modes.

#### Predefined measurement modes

Mode	Description
<i>Multiple Filling</i>	3 determinations of a single sample; new filling of sample for each determination; cleaning before refill
<i>Multiple Meas.</i>	3 determinations of a single sample from one filling
<i>Repeated Mode</i>	up to 3 determinations of a single sample; new filling of sample for each determination; no cleaning before refill;  stops if two consecutive determinations deviate by less than 0.01 % v/v, or after 3 determinations; saves all measurements

### 6.3.2 Alcohol offset

If you see a deviation between the alcohol content determined by AlcoLyzer 5001/7001 and your reference value (e.g., alcohol content determined with the distillation method), you can define an offset to compensate for the deviation.

The offset can be in the range from –10 % v/v to +10 % v/v.

### 6.3.3 Temperature mode

The selected temperature mode (15 °C or 20 °C) determines for which temperature all results of the measurement system will be shown.

- After a temperature change between measurements, perform an equilibration measurement.

## 6.3.4 Ethanol table

The ethanol table can be set as an instrument setting and as a measurement setting (e.g. when you define a product). For a detailed description, refer to Section 5.5 [▶ 11].

# 7 Performing a measurement

**Table 3:** Steps of a typical measurement cycle

Step		refer to
A	Check that the <b>measurement system</b> is properly installed and in good working order, and that all conditions for a good measurement are met.	Section 3.1 [▶ 8], below
B	Perform a <b>zero alcohol check</b> to verify the instrument's accuracy before you start your daily routine measurements.	Section 8.1 [▶ 15]
C	1 Define the <b>measurement settings</b> : Select a <b>product</b> or define the settings on the fly. Specify additional measurement information (sample name, custom data fields).	Section 7.1.1 [▶ 13], Section 6 [▶ 11]
	2 <b>Prepare</b> your <b>sample</b> if required.	Section 7.4 [▶ 15]
	3 <b>Fill</b> the <b>sample</b> .	Section 7.1.2 [▶ 14]
	4 <b>Perform</b> the <b>measurement</b> .	Section 7.1.3 [▶ 14]
	5 <b>Clean</b> the measuring cell.	Section 9.1 [▶ 18]
D	Perform a <b>zero alcohol check</b> to verify the efficiency of your cleaning procedure after you have finished your daily routine measurements and the measuring cell has been cleaned.	Section 8.1 [▶ 15]



### WARNING

#### Risk of injuries and fire by liquids leaking

Filling samples and cleaning liquids that the wetted parts are not resistant to will corrode the wetted parts. Sample leaking from corroded parts may cause serious injuries.

Before you fill any sample or cleaning liquid into the instrument:

- Strictly follow all safety instructions concerning the use of chemicals and the use of flammable chemicals, refer to Section 1.1 [▶ 5].
- Make sure that all wetted parts are resistant to the filled-in liquid, refer to Appendix A.3 [▶ 22]. Consider also the wetted parts of installed options.  
The chemical resistance depends on the temperature and concentration of the liquid.
- Make sure that you have suitable cleaning liquids at hand for cleaning the measuring cell, refer to Section 9.1 [▶ 18].

#### Preparatory steps

Before you start a measurement, check that:

- the measuring cell is clean,
- hoses are connected correctly,
- hose connections are tight,
- the waste hose leads into the waste container,

- the volume of the waste container is large enough for the number of samples,
- suitable cleaning liquids are at hand.

#### To speed up measurements




- Use automatic sample names (refer to Section 5.4 [▶ 10]).
- Bring the sample to measuring temperature in advance.


## 7.1 Measurement with syringe filling

### 7.1.1 Starting a measurement

#### Product measurements


For routine measurements, define your measurement settings as a product. You can add your routine product measurements to the home screen as favorites in order to start measurements directly from there.

- **Setting a product measurement as favorite**
  - a. Select  *Products* in the menu, then open the specific product.
  - b. Verify that the product settings are correct, then tap Create measurement *Create measurement* .
  - c. Add the spot with the measurement setup as favorite (tap ).  
From here you can start a measurement by tapping *MEASURE*.



- **Starting a product measurement from the home screen:**  
The favorite on the home screen combines two links.
  - Tap *Measure*  on the favorite to directly start a quick or routine product measurement that requires no sample details.  
If you have activated a mandatory sample name or mandatory custom data fields, you will not be able to start a measurement directly. Tap on the product name instead.
  - Tap on the product name to start a measurement from the measurement setup.  
There you can add a sample name or verify the product settings (tap *Details...*).
  - To start a measurement, tap *MEASURE*.

### Measurements without predefined product

You can also perform a measurement without predefined product and define all measurement settings on the fly:

1. Select  *Measurement* in the menu.
2. Define the measurement settings.
3. To start a measurement, tap *MEASURE*.

### Additional measurement information on the measurement setup

- *Sample name:*  
The name entered here may be included in the pattern of an automatic sample name as *User input* (Section 5.4 [▶ 10]).  
**Sample names** can be declared as **mandatory**:
  - Select  *Settings* in the menu, then under *System* select  *Custom data fields*.
  - Switch *Sample name mandatory* to *Yes*.  
In this case, you cannot start a measurement before you have entered a sample name.
- *Custom data fields* (if defined, refer to Section 6.2.3 [▶ 12]):  
Text entered in a custom data field will be included in the measurement report.
- *External density input*  
Switch *External density* to *Yes* and specify a density value determined by an external density meter if the instrument shall calculate output quantities which require a density input (e.g. extract).

## 7.1.2 Filling sample

To achieve highly accurate measuring results, fill the sample into the measuring cell steadily and without bubbles.

**IMPORTANT:** *For high accuracy measurements, be sure to apply exactly the same filling procedure for checks, adjustments, and measurements.*

### Sample amount

If the measuring cell is clean, you need approx. 20 mL of sample

### Filling with a syringe (Luer tip)

**IMPORTANT:** *Do not use syringes that contain lubricants. The lubricants can dissolve into your sample and lead to a systematic measuring error.*

1. Connect the syringe (filled with sample) to the adapter Luer 1/4" UNF on the syringe holder.
2. Push the plunger of the syringe slowly and steadily until a drop emerges from the sample outlet adapter.
3. Leave the syringe in the filling position during the measurement.

**TIP:** *For high accuracy measurements, inject the entire sample volume.*

## 7.1.3 Actual measurement procedure

- When you have verified that all measurement settings are correct, and the sample has been filled, tap *MEASURE*.

The measurement will be performed according to your settings. The progress bar shows the progress of the measurement.

When the measurement is finished, the results are displayed.

The results together with the camera image and a time stamp are automatically saved in the data memory.

Saved data can be accessed in the data explorer.

- Tap
  - *DONE* to close the results and finish or
  - *REMEASURE* to perform another measurement with the same settings.

## 7.2 Filling automatically with Xsample

(only *Alcolyzer 7001*)


See the manual of the Xsample for instructions on its installation and use.

**TIP:** *When you use the measurement system for the first time, rinse the measurement system thoroughly before you start a measurement. This is due to the inner surface tension of new Tygon hoses, which decreases after a few rinsing cycles. If bubbles are visible in the hoses, rinse the whole measurement system with ethanol before you start the next measurement. Do not dry the system after rinsing.*

### 7.2.1 Measuring with Xsample 3100




Start a product measurement as described in Section 7.1 [▶ 13].

## 7.2.2 Measuring with Xsample 5100

1. Select  *Job list* in the menu and select a job list, which you have previously defined. Refer to the documentation of Xsample 5100 for information on how to define job lists.
2. Tap *CREATE JOBS*.
3. Fill the vials with sample as described in the documentation of Xsample 5100 and according to your job list.
4. Specify a sample name for each job position or use automatic sample names, refer to Section 5.4 [▶ 10].  
You can also define a vial position for each job if the order of vials differs from the job sequence.
5. Tap *MEASURE* to start processing the job list. Also refer to Section 7.1.3 [▶ 14].
6. Measurement results can be accessed in the data explorer.
7. After the last measurement clean the measuring cell as described in Section 9.1 [▶ 18].

## 7.3 Data management

Saved data can be accessed in the data explorer:

- Measurements
  - Checks
  - Adjustments
  - Products
1. Select  *Data explorer* in the menu, then select one of the available data categories.
  2. Select one of the saved data sets to see it. Tap  to export a report, tap  to print it.

## 7.4 Degassing samples

Pay attention to always treat all samples the same way in order to get reproducible measuring results.

### Degassing samples according to the MEBAK regulations

1. Fill a 1 L glass flask one third with sample. The sample temperature has to be between 20 °C (68 °F) and 25 °C (77 °F).
2. Seal the flask with a glass stopper.
3. Shake the flask and release the pressure until there is no more built-up pressure.
4. Filter the degassed sample through a fluted paper filter.
5. Immediately cover the funnel with a watch glass to prevent loss of alcohol.
6. Fill the filtered sample into glass containers and seal the containers, or analyze the sample immediately.

7. Keep the sample containers sealed and at a temperature of approximately 20 °C (68 °F) before use.
8. Before filling the sample into the vials of the sample changer, swirl the sample gently. This is to bring any condensations of alcohol back into the solution.

**IMPORTANT:** *Do not use any anti-foaming agent.*

### Using an ultrasonic bath

Put your sample for approx. 5–10 minutes into an ultrasonic bath until bubbling ceases.

# 8 Checking, adjusting and calibrating

## 8.1 Checks

By checks, carried out in regular intervals, you can ensure that your measurements consistently deliver results of high accuracy.

With an alcohol check, you fill a medium of known alcohol concentration into the measuring cell and compare the measured alcohol concentration with the target value.

- Use **zero alcohol checks** to verify the validity of the zero point of alcohol.

We recommend to perform a zero alcohol check every day before you start your measurements and after cleaning at the end of the day.


Perform additional zero alcohol checks as required and at your own discretion, e.g. when you get unexpected results.

- Use **alcohol concentration checks (beer checks, wine checks, spirits checks) and custom checks** to verify that the instrument is measuring with satisfactory accuracy.

We recommend to perform an alcohol concentration check weekly.

Perform additional alcohol concentration checks or custom checks as required and at your own discretion, e.g. when you get unexpected results.

### 8.1.1 Performing a check

1. Select  *Checks* in the menu, then select one of the available checks.
2. Observe all hints on the screen and fill the check medium.  
For a *zero alcohol check*, use freshly degassed ultra-pure water.
3. Tap *START CHECK*.
4. The summary of the check will show the check results and a recommendation if the check has failed and an adjustment is necessary.

All results are also saved in the data memory.

5. Tap *DONE* to close the summary.

**IMPORTANT:** We advise you to follow the recommendations.

### If the zero alcohol check has failed

We recommend taking corrective actions until the check is valid again:

- Check the quality of the water.
- Clean the measuring cell thoroughly.
- If above actions do not help, perform an alcohol zero adjustment.

## 8.2 Adjustments

With an adjustment, a sample of exactly known measurement properties (standard) is measured, and the instrument constants are adjusted in a way that the instrument delivers the known correct results.

### 8.2.1 Alcohol adjustments

#### When to perform adjustments

Always perform a check measurement with the clean measurement system before performing an adjustment.

- Perform an alcohol zero adjustment, refer to Section 8.2.1.1 [► 16] if a zero alcohol check has failed and corrective actions have not helped.
- Perform an alcohol concentration adjustment, refer to Section 8.2.1.2 [► 16]
  - if a custom check has failed and corrective actions have not helped;
  - after changing the temperature mode.

**Table 4:** Recommended alcohol concentration adjustments

Alcohol range of measurements	Low	High <sup>a</sup>
0 % v/v to 20 % v/v <sup>b</sup>	•	-
35 % v/v to 65 % v/v	-	•

<sup>a</sup> After you have performed a special multipoint adjustment, high concentration adjustments will use it as baseline.

<sup>b</sup> If you use the product “Cognac”, use alcohol concentration adjustment “High”, irrespective of the alcohol range of your measurements.

- Perform an **alcohol special multipoint adjustment**, refer to Section 8.2.1.3 [► 17] only if you need to analyze samples with different alcohol contents (differing by more than 10 % v/v) in the high concentration range. No new alcohol zero adjustment is required.

**Repeat** the special multipoint adjustment:

- if monthly checks at both ends of your alcohol range show deviations > 0.1 % v/v;

- at least once per year.

### Before the adjustment

Before the adjustment, the system has to be turned on for at least one hour. However, after transport full stabilization may even take up to one day. The ambient temperature has to be stable within a maximal variation of  $\pm 3$  °C ( $\pm 5.4$  °F).


- Before the adjustment, prepare the required solutions.

For binary ethanol solutions use the concentration calculator on the device:

- *Menu > Concentration Calculator*
- Enter the specific ethanol concentrations of the solutions, the required final solution concentration and the required final volume. The calculator calculates the required volumes of each solution to reach your specific concentration.

#### 8.2.1.1 Alcohol zero adjustment

**IMPORTANT:** Before you start the adjustment, make sure that the measuring cells are clean.

1. Prepare freshly degassed ultra-pure water for filling:
  - a. Boil ultra-pure water for several minutes to remove dissolved gas.
  - b. Fill up a clean glass flask with the freshly degassed ultra-pure water, and cover it.
  - c. Wait until the water has cooled down to approx.  $20 \pm 3$  °C ( $68 \pm 5.4$  °F).
  - d. Pour the water into a container suited for filling with your filling device (see documentation of the filling device).
2. Select  *Adjustments* in the menu, then select *Zero alcohol*.
3. Follow the instructions on the screen. The adjustment routine is carried out, and the results are shown.
4. Apply or reject the adjustment. The signal level compared to factory adjustment decreases mainly due to coating of the measuring cell.
  - If the level goes below 80 %, clean the measuring cell thoroughly and repeat the alcohol zero adjustment.

#### 8.2.1.2 Alcohol concentration adjustment

**IMPORTANT:** Always perform an alcohol zero adjustment before alcohol concentration adjustments.

**IMPORTANT:** All water/ethanol solutions have to be prepared at least 12 hours before use. This period starts again if you perform small corrections like adding water or ethanol to a solution.

**IMPORTANT:** Use only freshly degassed ultra-pure water, refer to Section 8.2.1.1 [► 16] and high-proof ethanol without denaturant for the water/ethanol solutions.

**IMPORTANT:** Before you start the adjustment, make sure that the measuring cells are clean.

1. Prepare the water/ethanol solutions for your instrument model with defined concentrations in the range given in the below table.

**Table 5:** Recommended alcohol concentration ranges for the alcohol low/high concentration adjustment

Application	Low	High
Low concentrations	8–15 % v/v	–
High concentrations	–	40 % v/v
Beer	8–12 % v/v	–
Wine, Sake	8–15 % v/v	–
Spirits, liqueurs	–	40 % v/v


As a guideline, mix the volumes given in the table below to get 1 L solution of the specified ethanol concentration.

Ethanol concentration	Volume ethanol 96 %	Volume water
10 % v/v	104 mL	fill up to 1 L
40 % v/v	417 mL	

**NOTE:** We recommend to determine the accurate concentration by reference measurement at the required temperature.

- a. Mix the volumes of water and ethanol in a flask. Shake gently.
- b. Cover the flasks and leave the solutions for 12 hours at 20 ±3 °C (68 ±5.4 °F). Before filling the solutions must be free of gas bubbles (e.g. use an ultrasonic bath).
- c. Pour the solutions into containers suited for filling with your filling device (refer to the documentation of the filling device).

**TIP:** Improve measurement performance by adjusting the instrument at an alcohol concentration close to that of your samples.

2. Select  *Adjustments* in the menu, then select the appropriate adjustment: *Low concentration alcohol* or *High concentration alcohol*.
3. Follow the instructions on the screen.
4. When asked to select measurement products (low concentration adjustment):  
The instrument can be adjusted for both *Beer & Wine* products (recommended selection). The selection has an influence on the wavelengths used.
5. When asked for the ethanol concentration of your adjustment medium, enter the exact concentration and tap *Confirm*.
6. When the adjustment results are shown, apply or reject the adjustment.

### 8.2.1.3 Alcohol special multipoint adjustment

**IMPORTANT:** All binary solutions have to be prepared at least 12 hours before use. This period starts again if you perform small corrections like adding water or ethanol to a solution.

**IMPORTANT:** Use only freshly degassed ultra-pure water, refer to Section 8.2.1.1 [► 16] and high-proof ethanol without denaturant for the water/ethanol solutions.

**IMPORTANT:** Before you start the adjustment, make sure that the measuring cells are clean.

1. Prepare water/ethanol solutions with defined concentrations as given in the below table (±1 % v/v).


**Table 6:** Alcohol concentrations of adjustment solutions

Solution	Recommended concentration
Solution 1	ultra-pure water
Solution 2	18 % v/v
Solution 3	45 % v/v
Solution 4	55 % v/v
Solution 5	64 % v/v

As a guideline, mix the volumes given in the table below to get 1 L solution of the specified ethanol concentration.

Ethanol concentration	Volume ethanol 96 %	Volume water
18 % v/v	188 mL	fill up to 1 L
45 % v/v	469 mL	
55 % v/v	573 mL	
64 % v/v	666 mL	

**NOTE:** We recommend to determine the accurate concentration by reference measurement at the required temperature.

- a. Mix the volumes of water and ethanol in a flask. Shake gently.
  - b. Cover the flasks and leave the solutions for 12 hours at 20 ±3 °C (68 ±5.4 °F). Before filling the solutions must be free of gas bubbles (e.g. use an ultrasonic bath).
  - c. Pour the solutions into containers suited for filling with your filling device (refer to the documentation of the filling device).
2. Select  *Adjustments* in the menu, then select *Multipoint alcohol*.
  3. Follow the instructions on the screen.
  4. When asked for the ethanol concentration of your adjustment medium, enter the exact concentration and tap *Confirm*.
  5. When the adjustment results are shown, apply or reject the adjustment.

## 8.2.2 Color adjustments

(only Alcolyzer 7001 with Option Color 430 nm)

The light source for the color measurement undergoes a continuous aging process resulting in a drift of the color value measured. A drift of up to 0.5 EBC (0.25 SRM (ASBC)) per week can be considered normal.

We recommend to check the zero color value daily (include a color check in the zero alcohol check).


### When to perform adjustments

- Perform a **color zero adjustment** if a zero color check has failed and corrective actions have not helped.
- It is sufficient to perform a **color concentration adjustment** once a year.

#### 8.2.2.1 Color zero adjustment

**IMPORTANT:** Before you start the adjustment, make sure that the measuring cells are clean.

**Adjustment medium:** freshly degassed ultra-pure water


1. Select  *Adjustments* in the menu, then select *Zero color*.
2. Follow the instructions on the screen. The adjustment routine is carried out, and the results are shown.
3. Apply or reject the adjustment. The signal level compared to factory adjustment decreases by-and-by due to aging of the LED as well as coating of the measuring cell.
  - If the level goes below 80 %, clean the measuring cell thoroughly and repeat the color zero adjustment.
  - If the level stays low, aging of the LED is the cause. However, you need not worry as long as adjustments are carried out successfully.
  - If you don't get successful adjustments anymore, contact your local Anton Paar representative.

#### 8.2.2.2 Color concentration adjustment

**IMPORTANT:** Always perform a color zero adjustment before a color concentration adjustment.

**Adjustment medium:** color standard (tartrazine) with a color value between 1.00 EBC and 60.00 EBC (between 0.50 ASBC and 30.48 ASBC), preferably at approx. 50.00 EBC (25.40 ASBC)


**TIP:** Use the color adjustment set, mat. no. 12627 (shelf life of the tartrazine color standards and water standards: three months).

1. Select  *Adjustments* in the menu, then select *Concentration color*.
2. Follow the instructions on the screen.

3. When asked for the concentration of your adjustment medium, enter the color value of the color standard according to the appropriate scale (*unit*). The input field is preset with the value determined by Option Color 430 nm.
4. Tap *Confirm*.
5. When the adjustment results are shown, apply or reject the adjustment.



## 8.2.3 Viewing the adjustment history

You can access and manage adjustment reports, like all saved data, in the data explorer:

- Select  *Data explorer* in the menu, then select the data category *Adjustments*.

You will see a list of adjustments performed.

Alternatively, there is a shortcut from the adjustments spot to the data explorer:

- Select  *Adjustments* in the menu, then tap  below any of the defined adjustments.

You will see the adjustment history already filtered for the specific adjustment.

# 9 Upkeep and cleaning

- The instrument requires periodical upkeep to ensure error-free operation as well as reliable and accurate measuring results.
- Employ a regular and effective cleaning routine and store the instrument under the recommended conditions.
- Reorder consumables from Anton Paar.
- If the repeatability of your color measurements (only Alcolyzer 7001 with Option Color 430 nm) is not satisfactory any more, even after a thorough cleaning, the light source for the color measurement may have come to the end of its life. In this case contact your Anton Paar representative.

**Table 7:** Regular upkeep routines

What	When
Regular cleaning	Refer to Section 9.1 [▶ 18]
Regular checks	Refer to Section 8.1 [▶ 15]
Color concentration adjustment	once a year Refer to Section 8.2.2.2 [▶ 18]
Exchange hoses (same material, same length)	– every 2 years – immediately if heavily colored Refer to Section 3.2.1 [▶ 8]

## 9.1 Cleaning the measuring cell

Clean immediately after the end of your measurements to avoid sample residues in the measuring cells after a measurement cycle.

Also clean the measuring cell before you perform adjustments.

### 9.1.1 Between series of measurements on the same day

- Clean the measuring cells with ultra-pure water. The ultra-pure water can stay in the measuring cells until the next measurement.
- **With Xsample:** Always perform two measurements of ultra-pure water at the end of a series.

Before starting a new measurement, rinse the measuring cells with an approx. 10 % ethanol/ water solution (for example, your adjustment solution) to decrease the surface tension. This avoids air bubbles.

### 9.1.2 At the end of the day

- Clean the measuring cells with
  - a laboratory cleaner

**Leave** the cleaner in the measuring cell for **approx. 5 minutes**.

#### Suitable laboratory cleaners:

e.g., Mucosol<sup>®</sup>, Alconox<sup>®</sup>, Tergazyme<sup>®</sup>, Extran, and RBS 50 concentrate.

Attend to the product information concerning the cleaning agent's concentration (e.g., Mucosol<sup>®</sup> has to be used as a 3 % solution, Alconox<sup>®</sup> and Tergazyme<sup>®</sup> as a 1 % solution).

- ultra-pure water (at least 60 mL)
  - The ultra-pure water can stay in the measuring cell until the next measurement.
- **With Xsample:** At the end of the day, perform a measurement of laboratory cleaner followed by four measurements of ultra-pure water to remove it.

Before starting a new measurement, rinse the measuring cells with an approx. 10 % ethanol/ water solution (for example, your adjustment solution) to decrease the surface tension. This avoids air bubbles.

### 9.1.3 Once a week (preferably before the weekend)

- Clean the measuring cell with:
  - a cleaner containing NaOCl (chlorine bleach) and NaOH (sodium hydroxide) or KOH (potassium hydroxide)

Attend to the product information concerning the cleaning agent's concentration. The total NaOH (or KOH) and NaOCl concentration shall not exceed 1 % in the applied dilution.

**Leave** the cleaner in the measuring cell for **maximal 5 minutes**.

Suitable cleaners containing NaOCl and NaOH (or KOH):

“Winepress Cleaner PM Membrane Presses”, cat. no. 409004, by Wigol<sup>®</sup>

“TM Desana” by Thonhauser

Alternatively, you can prepare a cleaner by yourself: Prepare an aqueous solution of 0.5 % w/w NaOCl and 0.5 % w/w NaOH (or KOH).

- ultra-pure water (at least 4 measurements)

The ultra-pure water can stay in the measuring cell until the next measurement.

- **With Xsample:** Perform a measurement of the cleaner described above followed by four measurements of ultra-pure water to remove it.

Before starting a new measurement, rinse the measuring cells with an approx. 10 % ethanol/ water solution (for example, your adjustment solution) to decrease the surface tension. This avoids air bubbles.

## 9.2 Cleaning the instrument housing and the touchscreen



### WARNING

#### Risk of fire and explosion

Ethanol is a highly flammable liquid.

- Strictly follow all safety instructions concerning the use of flammable liquids, refer to Section 1.1 [► 5].

### NOTICE

#### Corrosion due to unsuited means of cleaning

Using substances for cleaning that are not suitable causes corrosion of the instrument housing.

Never use:

- any chemicals aggressive against glass,
- highly nonpolar solvents (e.g. toluene, hexane, solvent naphtha),
- strong acids or bases (e.g. nitric acid, sulfuric acid, hydrochloric acid, caustic soda),
- strong mechanical action (steel brush).

To clean the instrument housing or the touchscreen, use a soft tissue, which can be wetted with ethanol or warm water, if necessary with a mild cleaning agent added (pH < 10).

## 9.3 Storing the instrument

Clean the measuring cell before you store the instrument for more than one day. Otherwise algae may grow on the glass surface, which are difficult to remove.

**WARNING****Risk of fire and explosion**

Ethanol is a highly flammable liquid.

- Strictly follow all safety instructions concerning the use of flammable liquids, refer to Section 1.1 [▶ 5].

**IMPORTANT:** *Do not use denatured ethanol. The denaturing agent may stick to the surface of the measuring cell and cause measuring errors in subsequent measurements.*

**Storing for short periods (maximal 2 weeks)**

1. Clean the measuring cell according to the cleaning procedure at the end of the day, refer to Section 9.1.2 [▶ 19].
2. Fill ultra-pure water into the measuring cell and leave it filled up until the next measurement. If you have filled by syringe, leave the syringe mounted in the syringe holder to keep the liquid from running out.

**IMPORTANT:** *The storage temperature must be high enough so that the water in the measuring cell cannot freeze.*

**Storing for long periods or for transportation**

1. Clean the measuring cell thoroughly according to the weekly cleaning procedure, refer to Section 9.1.3 [▶ 19].  
Use highly concentrated ethanol as the last cleaning agent.
2. Blow air through the measuring cell once with a syringe to remove ethanol residues.

## 9.4 Transporting the instrument

**CAUTION****Risk of squeezing your fingers**

Do not hold the instrument by its bottom to avoid squeezing your fingers when you put down the instrument.

- Before you move or lift the instrument, prepare it for transportation as described in Section 9.3 [▶ 19] (empty the measuring cell and dry it).
- To carry the instrument, put one hand into the recessed grip below the front, and grasp the metal ledge on the rear with the other hand.

- Carry the instrument in front of you and keep it close to your body.

## 10 Maintenance and repair

### 10.1 Maintenance performed by an authorized Anton Paar representative

The product does not require a periodic maintenance by an authorized Anton Paar representative to retain warranty coverage.

However, optional services are available from your local Anton Paar representative upon request.

**Following parts are generally excluded from the warranty (wear and tear parts)**

- syringes
- hoses
- adapters, connectors, fittings
- pump diaphragms
- filters
- O-rings, seals, gaskets
- cables
- fuses
- batteries
- desiccants
- protection foils and covers

All parts damaged in consequence of a fall of the product are generally excluded from the warranty as well.

### 10.2 Repair performed by an authorized Anton Paar representative

In case your product needs repair, contact your local Anton Paar representative, who will take care of the necessary steps. If your product needs to be returned, request an RMA (Return Material Authorization Number). It must not be sent without the RMA and the filled "Safety Declaration for Instrument Repairs". Please make sure it is cleaned before return.

**TIP:** *Find the contact data of your local Anton Paar representative on the Anton Paar website (<https://www.anton-paar.com>) under "Contact".*

**IMPORTANT:** *Do not return products that are contaminated by radioactive materials, infectious agents or other substances that cause health hazards.*

# Appendix A Technical data

## Appendix A.1 Specifications

	Alcolyzer 5001	Alcolyzer 7001
<b>Alcohol</b>		
Measuring range		
Beer products	0 % v/v to 12 % v/v	
Wine products	0 % v/v to 20 % v/v	
Sake products	0 % v/v to 20 % v/v	
Whiskey products	35 % v/v to 65 % v/v	
Cognac products	0 % v/v to 65 % v/v	
Vinegar products	on request	
Typical deviation from distillation (all products)	<0.1 % v/v	
Repeatability s.d.	0.03 % v/v	0.01 % v/v
<b>Color (optional)</b>		
Measuring range	-	0 EBC to 120 EBC / 0 SRM (ASBC) to 60.96 SRM (ASBC)
Repeatability s.d.	-	0.1 EBC / 0.05 SRM (ASBC)
<b>Temperature</b>		
Displayed temperature <sup>a</sup>	15 °C or 20 °C (59 °F or 68 °F)	
Repeatability s.d.	0.01 °C (0.018 °F)	
Sample temperature	18 °C to 25 °C (64.4 °F to 77 °F)	
<b>Typical measuring time</b>	1 to 3.5 minutes	
<b>Sample volume</b>	20 mL	20 mL (syringe filling) 40 mL (Xsample filling)

<sup>a</sup> The sample is actually measured at 25 °C (77 °F) to minimize condensation problems. Results are calculated according to the set temperature mode (15 °C or 20 °C).

Product <sup>a</sup>	Typical sample
Beer products	beer, non-alcoholic beer, beer mixed drinks, RTDs, melasses, wash, kombucha, hard seltzer 0.0 % beers on request <sup>b</sup>
Wine products	sake, cider, wine, fortified wine non-alcoholic wines on request <sup>b</sup>
Sake products	sake, cider, wine, fortified wine non-alcoholic wines on request <sup>b</sup>
Whiskey products	whiskey, tequila, spirits with <5 g/L extract
Cognac products	cognac, rum, spirits with 5 g/L to 20 g/L extract non-alcoholic spirits (<0.5 % v/v ethanol content) on request <sup>b</sup>
—	vinegar on request

<sup>a</sup> For measuring ranges refer to the table above.

<sup>b</sup> Please raise an application request for customized settings.

## Appendix A.2 Instrument data and operating conditions

<b>Data memory</b>	<ul style="list-style-type: none"> <li>– measurement data: up to 10,000</li> <li>– check results: up to 300</li> <li>– adjustment results: up to 300</li> <li>– products: up to 40</li> <li>– custom quantities: up to 50</li> <li>– images: up to 50</li> </ul>
<b>Display</b>	10.1" TFT WXGA (1280x800 px); PCAP touchscreen
<b>Controls</b>	touchscreen, optional keyboard, mouse, and barcode reader
<b>Interfaces</b>	4 x USB 2.0 (type A) <sup>a</sup> , 1 x USB OTG (Micro-A), 1 x RS-232, 1 x Ethernet (100 Mbit), 1 x CAN Bus
<b>RS-232C printer settings</b>	Baud rate: 9600; Parity: none; Stop bit: 1; Data bits: 8
<b>Environmental conditions (EN 61010)</b>	indoor use only
<b>Ambient temperature</b>	18 °C to 32 °C (64.4 °F to 89.6 °F)
<b>Air humidity</b>	non-condensing 20 °C: < 90 % relative humidity 25 °C: < 60 % relative humidity 30 °C: < 45 % relative humidity
<b>Altitude</b>	max. 3000 m (9800 ft)
<b>Maximal operating pressure</b>	ambient pressure
<b>Pollution degree</b>	2
<b>Overvoltage category</b>	II
<b>Voltage</b>	100 to 240 V~, 50/60 Hz, fluctuation ±10 %
<b>Power consumption</b>	90 VA
<b>Power inlet</b>	according to IEC/EN 60320-1/C14, protection class I
<b>Fuses</b>	ceramic tube fuses 5x20 mm; IEC60127-2; AC 250 V; T 5 AH
<b>Dimensions (L x W x H)</b>	526 mm x 347 mm x 230 mm (20.7 in x 13.7 in x 9 in)
<b>Weight</b>	17.6 kg (38.8 lbs)

<sup>a</sup> USB memory devices have to be formatted with FAT32 or exFAT file system.

## Appendix A.3 Wetted parts and housing surface materials

The following materials are in contact with the samples and cleaning agents:

### Instrument

Material	Part
EPDM (ethylene propylene diene monomer)	sensor system
Glass	sensor system
NBR (nitrile butadiene rubber)	internal connectors
PFAN (poly (α-fluoro acrylonitrile))	internal tubing
PTFE (polytetrafluoroethylene)	filling nozzle fitting
Stainless steel (1.4404, 1.4301)	sensor system, internal connectors

**Standard accessories**

<b>Material</b>	<b>Part</b>
HDPE (high-density polyethylene)	waste vessel
Polypropylene / polyethylene	syringe 20 mL Luer
PTFE (polytetrafluoroethylene)	hose
Stainless steel 1.4404	UNF filling adapter fitting with metal tube
Stainless steel 1.4571	tube
Tefzel	adapter Luer ¼" UNF, UNF filling adapter fitting with metal tube
Tygon	hose

**Instrument housing surface materials**

<b>Material</b>	<b>Part</b>
Front, top, sides, bottom cover	Durotect PUR Plus 2K texture paint
Back	aluminum
Extension slot cover plate	ABS (acrylonitrile butadiene styrene) + PC (polycarbonate)

# Appendix B Declarations of conformity

DocuSign Envelope ID: 34F67DE0-36B9-48A8-BAA3-3A503E6005DE

## EU Declaration of Conformity (original)



The Manufacturer **Anton Paar GmbH**, Anton-Paar-Str. 20, 8054 Graz, Austria – Europe hereby declares that the product listed below

Product designation: **ALCOLYZER 5001  
ALCOLYZER 7001  
ALCOLYZER 7001 VINEGAR**

Model: **Alcolyzer 5001  
Alcolyzer 7001**

Material number: 320420, 320421, 325645

is in conformity with the relevant European Union harmonisation legislation. This declaration of conformity is issued under the sole responsibility of the manufacturer.

### Low Voltage Directive (2014/35/EU, OJ L 96/357 of 29.3.2014)

Applied harmonised standard:

- EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019
- EN IEC 61010-2-010:2020

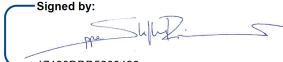
### Electromagnetic Compatibility (2014/30/EU, OJ L 96/79 of 29.3.2014)


Applied harmonised standard:

- EN 61326-1:2013

### RoHS Directive (2011/65/EU, OJ L 174/88 of 1.7.2011)

Place and date of issue: Graz, 2.4.2025

Signed by:  
  
 17130DD5260426...  
**Steffen Riemer**  
 Executive Director  
 Business Unit Measurement

DocuSigned by:  
  
 66833374CF4F464...  
**Dr. Wolfgang Baumgartner**  
 Head of Lab Density & Concentration  
 Business Unit Measurement



