



## Instruction manual

# LKB 2002 Colony Counter

**Before using the device, it is absolutely necessary to read the instruction manual!**

Ver. 1.99

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**SPIS TREŚCI**

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## 1 SAFETY PRECAUTIONS

To guarantee your security and the longest efficiency of the unit, please comply with the following rules:

1.	<p><b><u>The unit cannot be installed:</u></b></p> <ul style="list-style-type: none"> <li>• outside</li> <li>• in damp places or places which can be easily flooded</li> <li>• near flammable or volatile substances</li> <li>• near acids or in corrosive environments</li> </ul>
2.	<p><b><u>It is forbidden to:</u></b></p> <ul style="list-style-type: none"> <li>• touch live parts of the unit</li> <li>• operate the unit with wet hands</li> <li>• climb or put any objects on the unit</li> </ul>
3.	<p><b><u>You should:</u></b></p> <ul style="list-style-type: none"> <li>• use only mains with earth to avoid electric shocks</li> <li>• unplug the power cable holding the protective cover and not the cable itself</li> <li>• disconnect the unit from the mains before undertaking any repairs or maintenance works</li> <li>• protect the power cable and the plug from any damage and do not use the plug if it is improperly plugged in or if the cable is laid incorrectly</li> <li>• disconnect the power plug before moving the unit</li> <li>• disconnect the power plug if you are not going to use the unit for a longer period of time</li> <li>• disconnect the unit and protect it from reconnecting if it has any visual faults</li> </ul>

	<p><b>All warnings included in this instruction manual, especially these which appear next to the warning or informative symbols, should be obeyed at all times to ensure the safety of the user and to maintain the proper operation of the unit!</b></p> <p><b>The manufacturer does not take any responsibility for any damage which results from disobeying the instruction manual and misuse!</b></p>
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	<p>This symbol indicates helpful tips.</p>
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## 2 ENVIRONMENTAL PROTECTION AND DISPOSAL OF THE UNIT

The packaging protects the unit from any damage during transportation. The packaging is harmless to the environment and can be recycled. Please handle it according to the environmental protection regulations or dispose it. The unit itself can be recycled in order to save the resources.



The unit is marked according to European Union directives on waste electrical and electronic equipment (WEEE). This directives determine the return and recycling conditions and are valid in all European Union member states.

**PLEASE HELP US PROTECT THE ENVIRONMENT!**



We would like to inform you that we have taken all the necessary steps to make sure that the unit will meet your requirements and will work reliably. Due to the fact that we constantly improve our products and extend their range, we invite you to provide us with any feedback. All opinions are welcome! Visit us at: [www.polekolab.com](http://www.polekolab.com)

### 3 GENERAL INFORMATION

Colony counter is an easy to use instrument for precise working with Petri plates of various dimensions. It is also possible to count the colonies outside the instrument thanks to the ZM 2002 marker (option). The surface is sensitive to touching, therefore every single mark with the pen is additionally indicated with sound and number. The controller is equipped with acoustic counting control and automatic compensation of weight of different Petri plates. Even illumination of the counting field is guaranteed by a ring light. The magnifying glass ensures clear view. Its position can be easily adjusted. Clear 3-digit LED display enables to work in different light conditions.

### 4 BEFORE FIRST USE

By default, the unit is sent in a cardboard box. It is necessary to transport it in the upright position and prevent it from any unintended movements.



**Once you receive the unit, please check its the technical condition and all accessories. Any claims regarding latent defects should be reported to the manufacturer, while any damage during transport or incomplete accessories need to be passed to the entities who are responsible for the transport and unloading.**

#### Standard equipment:

- colony counter (base)
- magnifying glass, optical power 3.25 dioptres
- glass plate
- tool for removing glass plate
- standard marker
- background plate (double sided: white and black background)
- wolfhuegel grid (fields area: 1 cm<sup>2</sup> and 1/9 cm<sup>2</sup>)
- adapting elements for different plate sizes (3 pcs.)
- power cable

#### Optional equipment

- ZM 2002 external marker for outside counting
- 5 times magnifying glass Ø 50 mm

The place of installation of the unit should meet the following conditions:

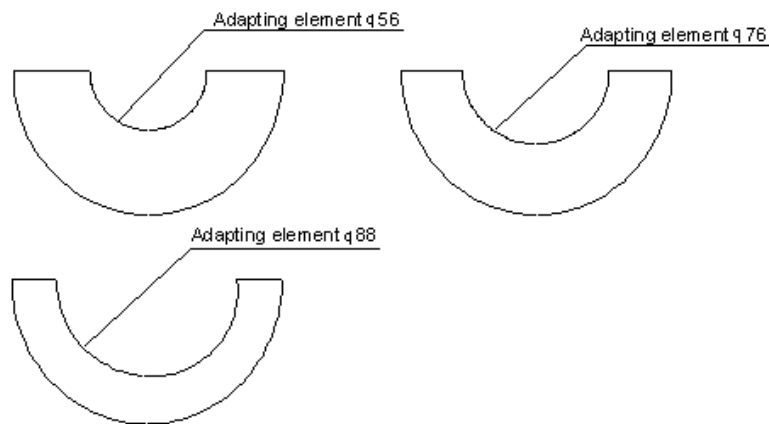
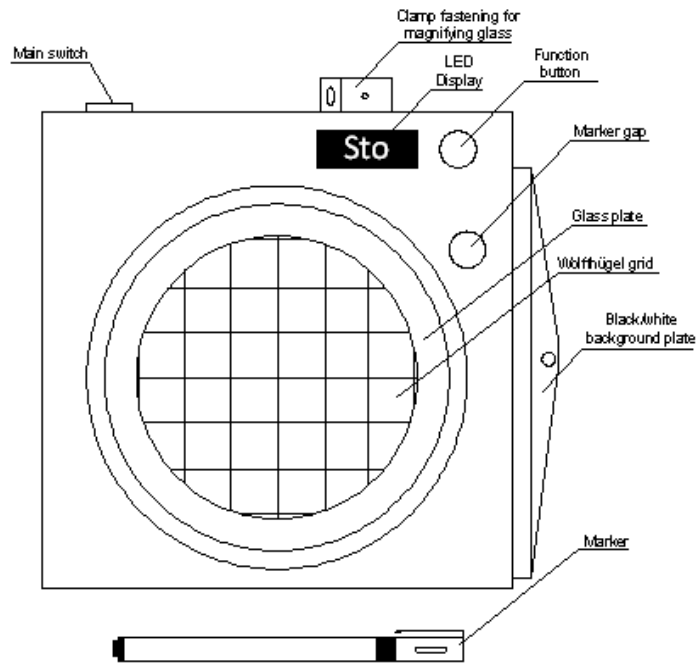
- Ambient temperature 0°C...+40°C
- Low relative humidity of the ambient air to 70%
- The unit has not been designed to work in highly dusty environments
- The unit should be put on a hard and stable substrate
- The unit should be placed at least 50mm away from the wall
- This unit may not be exposed to direct sunlight
- The unit should be kept away from any heat sources

#### 4.1 Before You start working with the counter

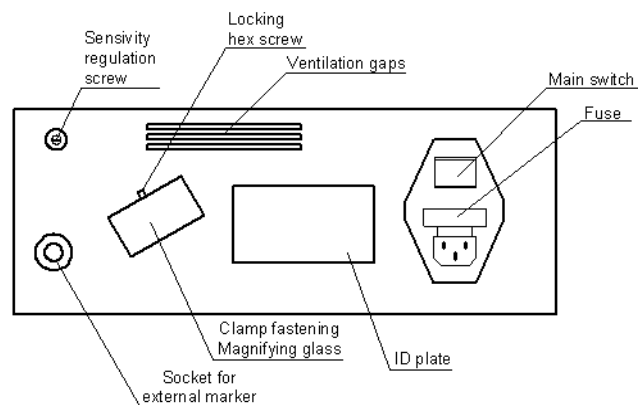
1. Remove the foil from both sides wolfhuegel grid.
2. Put the glass plate into the counting field.
3. Put the background plate into the slot in the right lower part of the housing.
4. Put the Wolfhuegel grid on the counting sensitive field (if needed).
5. Install magnifying glass to the mounting clam in the rear part of the device using hex key.

## 5 APPEARANCE OF THE DEVICE

### Front view



### Rear view

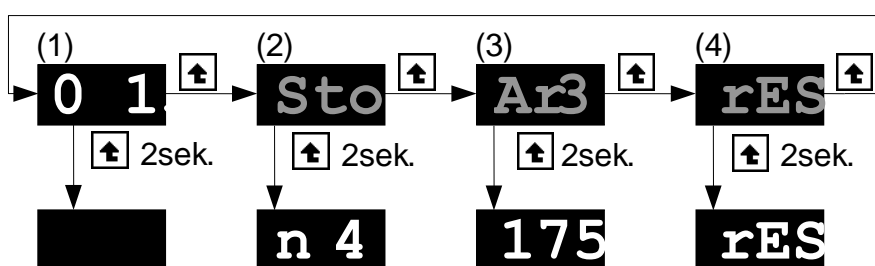


element name	function
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power switch	turns the counter on/off
display	shows the number of counted colonies
sensitivity regulation	pressure force on the counting plate can be changed using sensitivity regulation screw, placed on the rear part of the device. LKB has been factory set to the middle pressure force. More experienced users can change it to more sensitive setting by turning the sensitivity regulation screw counterclockwise.
zeroing button	when pressed, makes the display goes to zero value
counting plate	when pressed makes the display value grows by one
background plate	double – sided plate, the color of background depends on the type of bacteria

## 6 OPERATION

### 6.1 Menu



The dark signs in the above picture symbolize pulsing.

To switch between the windows, quickly press

- (1) Counting window – number of counts
- (2) Series window – when pressed and held down for about 2 secs. the count number is save as another series, on the display the series number is indicated
- (3) Average value window – it shows the number of saved series out of which the average value is calculated
- (4) Reset window – when pressed and held down the button for about 2 secs. all previously saved series are reset

### 6.2 Working without use of average value function

1. Turn on the counter with the power switch (fluorescent ring lamp will light up).
2. Put a Petri dish on the glass plate. If necessary use the appropriate adapter for different dish sizes to place the dish in the centre of the counting plate
3. Press the function button for about 2 seconds to zero the display, zeroing will be confirmed with a long audible signal.
4. To count the colonies, mark them with a marker. The glass plate is sensitive to pressure, so each mark will be counted and acknowledged with an audible sign.





In case of power failure, the value is reset. Please redo the counting.



5. The LED display shows the current number of colonies.
6. To count the colonies from another Petri dish follow points 2-4 once again.
7. After finishing work, turn the device off with the power switch.

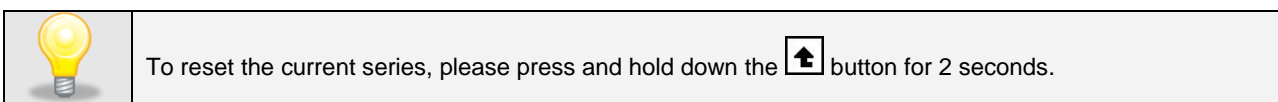
## 6.3 Working with use of average value function



The final reading for each single analysis (single Petri dish) can be stored in memory. Then those stored values can be used for calculating an average value of counted colonies.

1. Take the first Petri dish and count the colonies. To store the reading in memory press the function button  lightly. Option **Sto** (store) will flash on the display. To confirm hold the function button  for 2 seconds and storage in the memory will be confirmed with audible signal and **n 1** will flash on the display.
2. Take another count for further dishes and their values can also be stored in the memory. Up to 9 results of counting may be stored in this way and then an average value can be calculated.



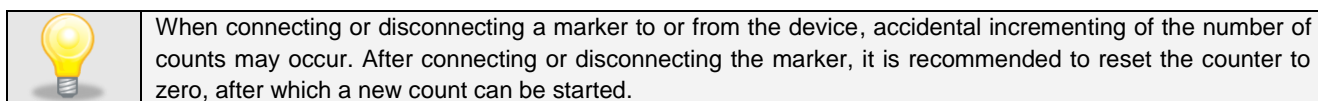
3. To calculate an average of saved values, press the function button  lightly twice (until **Ar** is flashing on the display) and then hold the button  again for 2 seconds. The calculated average value will appear on the display. This information **Ar4** indicates that to calculate the average value, the information of 4 series are taken into account.  
**Note!** New counts can be saved (up to 9 maximum) and a new average can be calculated after each count or after all values are stored as required.



4. To clear the memory press the function button  3 times lightly (until **rES** is flashing on the display). In order to confirm resetting press the function button  for 2 seconds. The memory is then cleared and an audible signal will be heard. After finishing work, turn the device off with the power switch.

## 6.4 Counting with an external marker (optional)

If the Petri plate does not fit in the counter's counting field, then bacterial colonies can be counted using an external marker ZM 2002. The marker plugs into the back socket of the device.

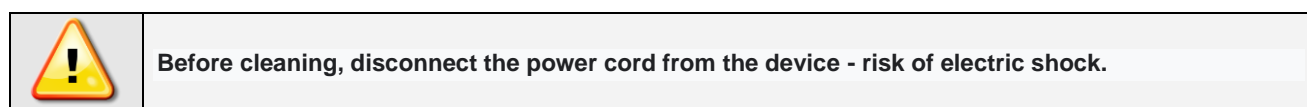


A single ticking or selecting a colony increases the value of the counter by one and a beep sounds.

**Note:** the average count function is also available when working with an external marker.

## 7 CLEANING AND MAINTENANCE

LKB colony counter is almost maintenance –free device, and shall be only cleaned with a soft cloth. To remove the glass plate use special tool for removing it. The unit can be cleaned by wiping with ethanol.



### Sterilization

An ethylic alcohol shall be used to sterilize LKB colony counter.

## 8 TROUBLESHOOTING

Problem	Cause	Solution
Fluorescent ring lamp and display don't work	Power fuse damaged Main fuse damaged	Check and replace the fuse (20x5, fuse value of 1.0A / 230V)
Fluorescent ring lamp does not work	Ring lamp damaged	Contact authorised service, to change ring lamp.
Display does not work	Electronics failure	Contact authorised service
Fluorescent ring lamp and display work properly, but counting is not possible	Counting elements damaged	Contact authorised service
Pressure on the counting plate is not uniform during counting	Counting sensor failure	Contact authorised service
Double counting	Sensitivity is too high	Adjust sensitivity using screwdriver

## 9 TECHNICAL DATA

Nominal voltage	<b>230V ± 15%, 50-60 Hz</b>
Power consumption	<b>Max. 22 W</b>
Protection	<b>fuse 1.0 A (Ø 5× 20 mm, 2pcs.)</b>
Dimensions	<b>300 × 325 × 90 mm</b>
Counting field dimensions	<b>Ø 120 mm</b>
Weight	<b>4,9 kg</b>
Fluorescent ring lamp	<b>8000 hours at 2 hours switching cycle</b>

## 10 WARRANTY

POL-EKO warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of the invoice. If a defect is present, POL-EKO will, at its option and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid.

The device that is being returned must be secured by the customer in the event of any damage or loss. The warranty will be only limited to the situations listed above. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.



All complaints should be reported using the form available on the website <http://www.pol-eko.com.pl/en/service>

### Compliance with local laws and regulations

The user is responsible for obtaining any approvals or authorizations required to launch and use the product. POL-EKO shall not be liable for any negligence in the above matter except when the refusal to obtain authorization is caused by a product defect.




## 11 DECLARATIONS OF CONFORMITY

 <b>DEKLARACJA ZGODNOŚCI UE</b> <b>EU DECLARATION OF CONFORMITY</b>		 <b>POL-EKO</b>	
<b>Produkt:</b>	Licznik kolonii bakterii	<b>Product:</b>	Colony counter
<b>Model:</b>	LKB 2002		<b>Model:</b>
<b>w wersjach:</b>	-		<b>in version:</b>
<b>Nazwa i adres producenta:</b>	POL-EKO A.Polok-Kowalska sp.k. ul. Kokoszycka 172 C 44-300 Wodzisław Śląski Polska/Poland		
<b>Niniejsza deklaracja zgodności wydana zostaje na wyłączną odpowiedzialność producenta.</b>	<b>This declaration of conformity is issued under the sole responsibility of the manufacturer.</b>		
<b>Wymieniony powyżej przedmiot niniejszej deklaracji jest zgodny z odnośnymi wymaganiami unijnego prawodawstwa harmonizacyjnego:</b>	<b>The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:</b>		
LVD 2014/35/UE		LVD 2014/35/EU	
EMC 2014/30/UE		EMC 2014/30/EU	
RoHS 2015/863		RoHS 2015/863	
WEEE 2012/19/UE		WEEE 2012/19/EU	
<b>Odniesienia do odnośnych norm zharmonizowanych, które zastosowano lub do innych specyfikacji technicznych, w stosunku, do których deklarowana jest zgodność:</b>	<b>References to the relevant harmonised standards used or references to the other technical specifications in relation to which conformity is declared:</b>		
LVD		PN-EN 61010-1:2011	
EMC		PN-EN IEC 61326-1:2021-10	
RoHS		PN-EN IEC 63000:2019-01	

Wodzisław Śl. 02.01.2023

W imieniu producenta podpisał:

  
 Małgorzata Szafarczyk  
 Dyrektor Generalny (CEO)

Manufacturer of control and measurement equipment  
for laboratory tests and technological processes,  
distributor in Poland of the following companies:  
HAMILTON, THERMO SCIENTIFIC, WTW, Xylem.

### We produce:

- thermostatic cabinets
- laboratory refrigerators
- laboratory incubators
- devices with photoperiod and phytotron system
- drying ovens and sterilizers
- drying ovens with nitrogen blow
- laboratory freezers
- ultra-low freezers
- climatic chambers
- Caldera fluid and blanket warmers
- colony counters
- laboratory shakers
- stationary samplers
- Hydromat water dispensers
- Eurodrop stations
- FEKO+ waste water receipt station
- heating ovens
- cooled incubators
- fume hoods

### We offer portable, laboratory and on-line equipment:

- pH-meters
- ionmeters
- dissolved oxygen meters
- conductivity meters
- photometers and spectrophotometers
- thermo reactors
- turbidity metres
- pH electrodes
- conductivity sensors
- oxygen probes
- heavy metals trace analyzers
- water baths
- autoclaves
- pH buffer solutions
- conductivity standards
- photometric tests
- laboratory accessories
- consumables

### We organize:

- regional trainings
- individual trainings
- seminars

### We provide:

- warranty and post-warranty service
- consultancy in the selection, maintenance and operation of laboratory equipment

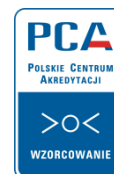
**POL-EKO LAB is Accredited by the Polish Centre for Accreditation (a member of ILAC) and provides accredited calibration of:**

- thermostatic and climatic chambers (incubators, drying ovens, thermostatic cabinets, climatic chambers, freezers)
- water baths and thermo reactors
- autoclaves
- electric and electronic thermometers
- data loggers
- high temperature laboratory furnaces
- thermohygrometers
- laboratory sieves

Calibration is confirmed with the issue of 'Calibration Certificate'.

### **Services outside the scope of accreditation:**

- checking equipment for physicochemical measurements (meters and probes),
- carrying out IQ, OQ, PQ qualification procedures,
- mapping of temperature and humidity in the rooms



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Perfect Environment

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