



## **Microlit India**

629 Pakramau, Kursi Road, Lucknow 226026, India  
Phone: +91 9918625629, Email: [info@microlit.com](mailto:info@microlit.com)  
[www.microlit.com](http://www.microlit.com)

## **Microlit USA**

33 Wood Avenue South, Suite 600, Iselin, NJ 08830, USA  
Phone: +1 732 321 0852, Email: [info-usa@microlit.com](mailto:info-usa@microlit.com)  
[www.microlit.us](http://www.microlit.us)

## **Microlit LATAM**

Business Place Ibirapuera, Alameda dos Jurupis, 1005,  
Indianópolis, São Paulo, Brasil  
Phone: +55 11 93269-5932,

# MICROLIT KENO PRO/MINI

Multi-Purpose Vacuum Aspirator  
for Laboratory Waste Handling



OPERATION MANUAL

EXPERIENCE PRECISION

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## General Safety Instructions

Read this manual carefully before operating the instrument and comply with all safety instructions provided herein.

- Only trained and authorized personnel are permitted to operate the instrument.
- Ensure that the power outlet is properly grounded before switching on the instrument.
- Always wear appropriate personal protective equipment (PPE) while operating the instrument.
- Place the instrument on a stable, clean, dry, non-slip and fire-resistant surface in a well-ventilated indoor area.
- Do not operate the instrument outdoors, near water or in proximity to hazardous or explosive substances.
- Use only safe, suitable, and compatible containers for liquid aspiration.
- Ensure that the supply voltage matches the rating specified on the product label before connecting the instrument to the power supply.
- Inspect the instrument, power adapter, tubing, and accessories for visible damage before each use. Do not operate the instrument if any damage is detected.
- Use only the original KENO vacuum aspirator mains adapter supplied or approved by the manufacturer.
- Check that all accessories are correctly installed and securely connected before operation.
- Do not touch valves, pumps, tubing or internal components during operation.
- Do not move or relocate the instrument while it is operating.
- In the event of liquid spillage, immediately switch off the instrument, disconnect it from the power supply, clean the spill thoroughly and remove any organic solvents before resuming operation.
- Unplug the instrument only after it has completely powered down.
- Only qualified service personnel authorized by the manufacturer may open the instrument housing.
- Do not place heavy objects on the instrument.

## Operating Limitations & Restrictions

The KENO Vacuum Aspirator shall be operated only within the limits specified in this section. These limitations define the permissible environmental, installation, electrical, and operational conditions necessary to ensure reliable performance and prevent equipment damage.

### Environmental & Installation Limits

- Maximum operating altitude: 2000 m above sea level
- Operating temperature: 0°C to 40°C
- Storage temperature: 5°C to 40°C
- Maximum relative humidity: 80% (non-condensing)
- Installation category: Indoor use only
- Minimum clearance from walls or adjacent surfaces: 100 mm

## Electrical Limits

Supply voltage fluctuation shall not exceed  $\pm 10\%$  of the nominal voltage.

## Operational Restrictions

The device shall not be operated under the following conditions:

- In residential or domestic environments
- In hazardous or explosive (ATEX-classified) environments
- With flammable, explosive or highly volatile substances
- For continuous unattended operation
- Without properly installed filters or with damaged components
- Using non-approved accessories or with unauthorized modifications

## Material Compatibility

Liquids incompatible with device materials, including strong solvents, shall not be aspirated unless compatibility has been verified with the manufacturer.

## Storage Conditions

The KENO Vacuum Aspirator shall be stored in a clean, dry and dust-free indoor environment to prevent damage and ensure continued performance.

The following storage conditions shall be observed:

- Storage temperature: 5°C to 40°C
- Maximum relative humidity: 80% (non-condensing)

The instrument shall be stored on a stable surface and protected from direct sunlight, moisture, corrosive atmospheres and mechanical shock. Packaging or protective covers should be used during storage and transportation to prevent contamination or physical damage.

## Intended Purpose

The KENO Vacuum Aspirator is designed to generate controlled negative pressure for the aspiration, transfer and collection of liquid samples in laboratory environments. The device supports the safe handling of biological and chemical liquids by providing a closed aspiration system with appropriate filtration and containment.

## Intended Users

This device is intended for use by trained laboratory personnel, including research scientists, laboratory technicians and diagnostic staff who are familiar with laboratory safety practices and the handling of potentially hazardous liquids.

## Intended Environment

The KENO Vacuum Aspirator is intended for indoor use in controlled laboratory environments, including but not limited to:

- Research laboratories
- Diagnostic laboratories
- Educational laboratories
- Industrial quality control laboratories

## Uses Not Intended

The device is not intended for:

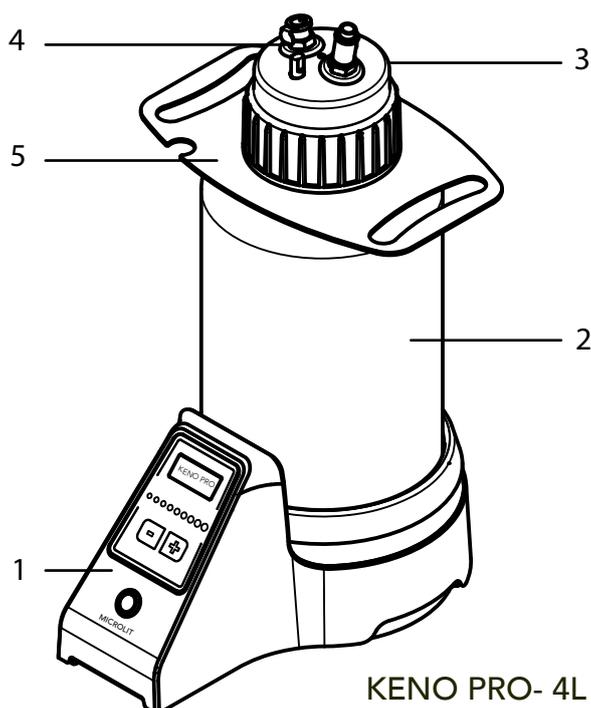
- Direct patient aspiration or clinical suction procedures
- Use with flammable, explosive or highly volatile substances
- Operation in hazardous or explosive (ATEX-classified) environments
- Continuous unattended operation

## Overview

The KENO Vacuum Aspirator is designed to generate controlled negative pressure for the aspiration, transfer and collection of liquid samples in laboratory environments. The device supports the safe handling of biological and chemical liquids by providing a closed aspiration system with appropriate filtration and containment.

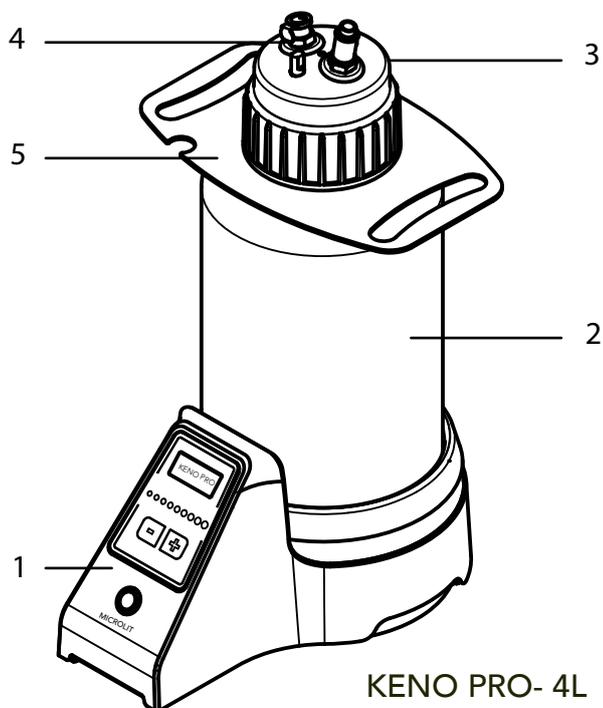
### KENO PRO - 4L (Premium)

1. Vacuum Aspirator
2. Collection Bottle (Polypropylene) - 4 L
3. Cap with Built-in CPC Valve Connectors
4. Self-Closing Couplings (PVDF)
5. Bottle Lifter for 4 litre bottle
6. Silicone Tubes
7. Power Adapter
8. Level Sensor Cable
9. Adapter Kit Box



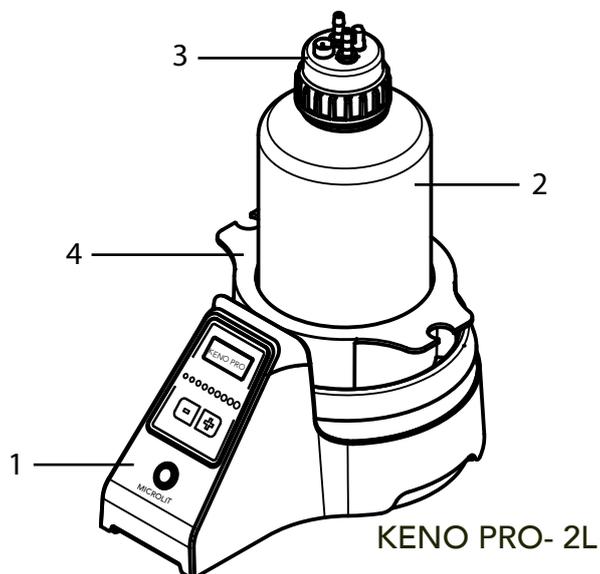
### KENO PRO - 4L (Economy)

1. Vacuum Aspirator
2. Collection Bottle (Polypropylene) - 4L
3. Cap with Built-in Connectors
4. Bottle Lifter for 4 litre bottle
5. Silicone Tubes
6. Power Adapter
7. Level Sensor Cable
8. Adapter Kit Box



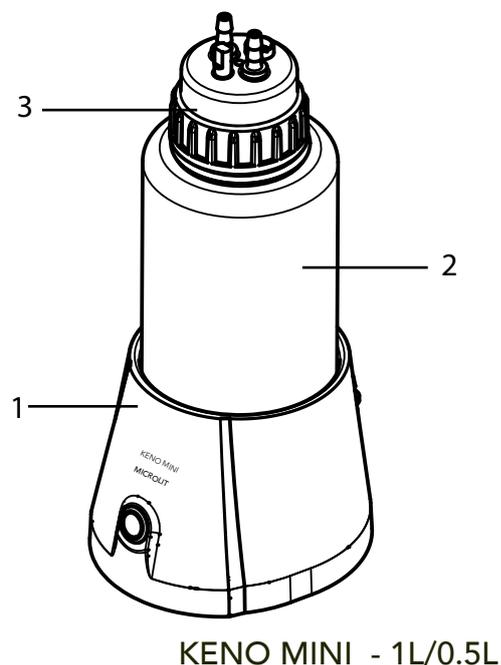
### KENO PRO - 2L

1. Vacuum Aspirator
2. Collection Bottle (Polypropylene) - 2L
3. Cap with Built-in Connectors
4. Bottle Holder
5. Silicone Tubes (2 pcs)
6. Power Adapter
7. Level Sensor Cable
8. Adapter Kit Box



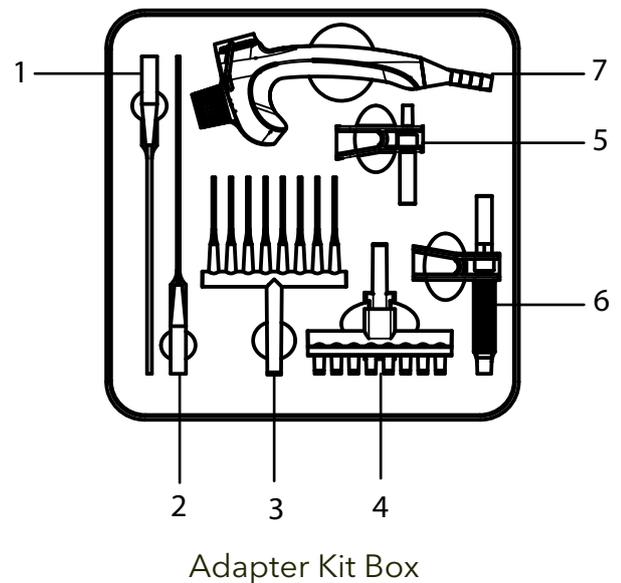
### KENO MINI - 1L/0.5L

1. Vacuum Aspirator
2. Collection Bottle (Polypropylene) - 1L/0.5L
3. Cap with Built-in Connectors
4. Silicone Tubes (2 pcs)
5. Power Adapter
6. Adapter Kit Box



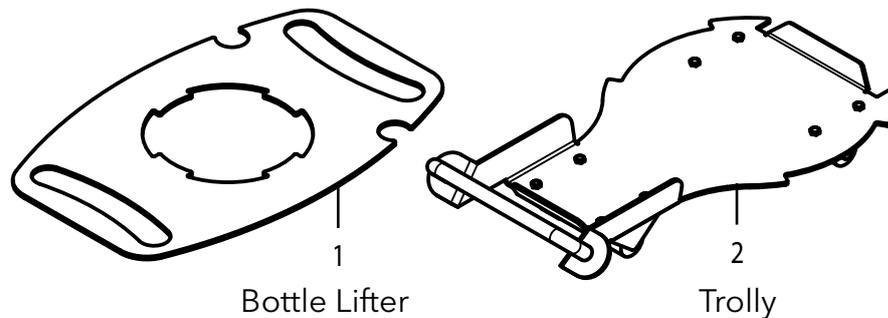
## Adapter Kit Box

1. Needle - Single Channel, Ø2.5mm, 120mm, Stainless Steel
2. Needle - Single Channel, Ø1.5mm, 120 mm, Stainless Steel
3. Needle - Eight Channel, Ø1.5mm, Stainless Steel
4. Needle - Eight Channel for 200µL tip, with Ejector
5. Needle - 1 Channel for 200µL tip, with Ejector
6. Needle - 1 Channel for 1000µL tip, with Ejector
7. Hand Controller



## Accessories

1. Bottle Lifter
2. Trolley
3. Foot Pedal



## Installation Requirements

### Location

Install the device on a clean, dry, stable laboratory bench away from heat sources, corrosive vapors and direct sunlight.

### Environmental Conditions

Operate only within the specified ambient temperature and humidity range. Condensation must be avoided.

## Installation & Setup

### Unpacking & Inspection

Verify that all components supplied with the KENO Vacuum Aspirator are included in the packaging and are free from visible damage. The exact contents may vary depending on the model and configuration ordered.

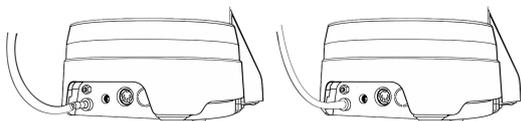
The packaging may include, but is not limited to, the following items:

- Vacuum aspirator main unit
- Liquid collection bottle(s) with appropriate capacity
- Bottle cap or lid with integrated connectors
- Tubing, couplings and filtration components as applicable
- Bottle holder or lifter (model dependent)
- Level sensor and associated cable (if applicable)
- Power adapter
- Adapter kits and accessories (as applicable)
- Instruction manual and related documentation

If any component is missing, damaged or does not correspond to the ordered configuration, do not connect the instrument to the power supply and report the issue to the supplier or manufacturer.

## Power Supply

Insert the mains adapter cable into the power socket of the vacuum aspirator and connect it to a suitable grounded power outlet.



## Connecting the Air Outlet Tubing

If the air outlet connector is not pre-installed, screw it onto the pump outlet and tighten it securely.

Insert the silicone tubing fully into the push-in (push-fit) connector or push the tubing firmly onto the outlet connector, as applicable, to ensure a secure and leak-free connection.

## Bottle and Hand Operator Connection

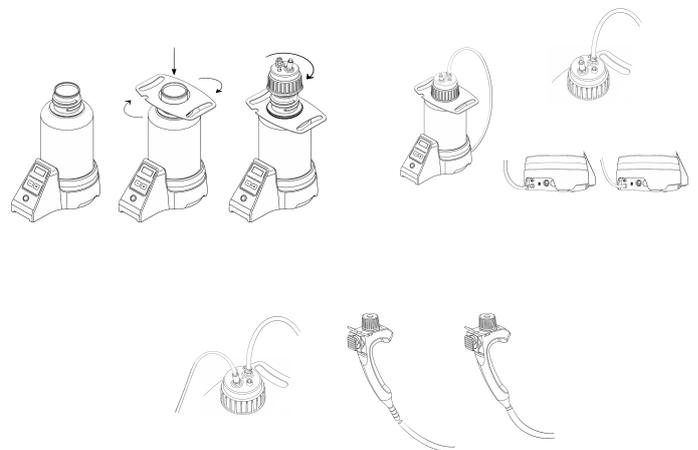
Place the collection bottle into the instrument base.

Secure the bottle lifter by screwing it firmly onto the bottle neck.

Close the bottle with the lid and ensure it is tightened securely.

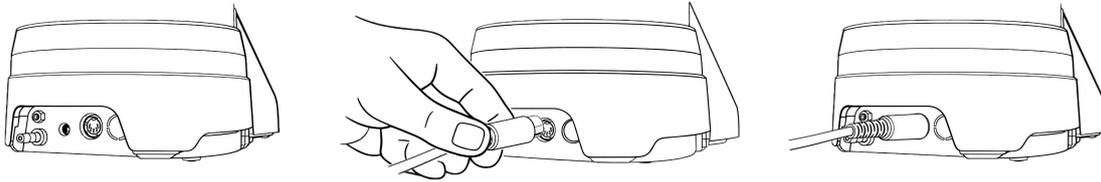
Connect the tubing between the pump outlet and the bottle lid port marked PUMP.

Connect the transparent tubing to the bottle lid port and attach the hand operator to the free end of the tubing.



## Level Sensor Connection

Connect the level sensor cable to the designated socket at the rear of the instrument. Connect the other end of the level sensor cable to the bottle lid. Ensure that the sensor pins and connectors are clean and dry before connection.



## Operation

- Switch on the instrument; the indicator lamp will illuminate.
- Allow a few seconds for the vacuum to build up in the collection bottle.
- Adjust the aspiration speed using the vacuum control pad.
- Aspirate liquid by pressing the button on the hand operator fitted with a suitable tip.
- Monitor the liquid level in the collection bottle, especially when operating without a level sensor.
- Before opening the collection bottle, release the vacuum via the venting port on the lid or by aspirating air using the hand operator.
- Ensure that the bottle lid is tightly closed and the venting port is fully sealed during operation.

## Use of Level Sensors

When the collection bottle is full, the level sensor automatically stops the vacuum pump, activates an audible alarm, and causes the indicator lamp to blink. The level sensor can be deactivated by disconnecting the sensor cable.

## Cleaning, Disinfection and Sterilization

Proper cleaning, disinfection and sterilization are essential to ensure safe operation, prevent contamination, and maintain device performance. Always disconnect the instrument from the power supply before performing any cleaning, disinfection or maintenance activities.

## Cleaning

### External Cleaning

Clean the external housing using a soft, lint-free cloth dampened with a mild soap solution or mild laboratory detergent.

70% ethanol or isopropanol may be used for surface disinfection.

Do not allow liquids to enter the pump housing or electrical components.

Do not use bleach, abrasive cleaners or aggressive solvents.

### Internal / Liquid-Contact Parts

Disassemble the waste collection bottle, tubing, connectors and hand operator.

Rinse thoroughly using water or compatible cleaning solutions approved for the materials of construction.

After handling hazardous materials, flush the tubing and hand operator with water followed by 70% ethanol.

## Disinfection

Use laboratory-approved disinfectants compatible with the device materials.

Follow the disinfectant manufacturer's instructions regarding concentration and contact time.

Use chlorine-free and non-corrosive disinfectants only.

Ensure all components are thoroughly rinsed and dried before reassembly.

## Sterilization

### Autoclaving

Only components explicitly identified as autoclavable may be autoclaved.

#### Autoclavable Components:

- Waste collection bottle
- Bottle lid
- Silicone tubing
- Hand operator

#### Autoclaving Conditions:

Polypropylene bottle: 121°C for  $\geq 60$  minutes

Glass bottle and hand operator: 121°C for  $\geq 20$  minutes

### Important Notes:

- Keep the bottle lid loosely fitted during autoclaving.
- Disconnect PVDF tubing couplings before autoclaving.
- Inspect tubing after sterilization and replace immediately if signs of brittleness, discoloration, or damage are observed.

### Non-Autoclavable Components:

- Pump unit
- Hydrophobic filters
- Electrical and electronic components

### Chemical Sterilization

- Add a compatible disinfectant solution to the waste collection bottle.
- Allow adequate contact time as specified by the disinfectant manufacturer.
- Ensure the disinfectant is chlorine-free and non-corrosive.
- Rinse thoroughly after sterilization to remove residual chemicals.

## Maintenance & Service

### Preventive Maintenance

To ensure reliable operation, the following preventive maintenance schedule is recommended:

#### Daily

Perform a visual inspection for leaks, cracks, loose connections, or contamination.

#### Weekly

Clean waste collection bottles, tubing, hand operator, and external surfaces.

#### Monthly

Inspect hydrophobic filters, tubing elasticity, connectors, and seals. Replace worn or damaged components as necessary.

### Consumables & Replacement Parts

The following components are consumables and may require periodic replacement:

Hydrophobic filters  
Aspiration tubing  
Collection bottles

Replace the hydrophobic filter at least once per year or immediately if liquid ingress occurs.

Use only KENO-approved consumables and replacement parts to ensure safety, performance, and regulatory compliance.

## Service & Repairs

All servicing and repairs must be performed by authorized KENO service personnel. Unauthorized servicing, modification, or repair of the instrument is strictly prohibited and may result in equipment damage, personal injury, or loss of warranty.

## Technical Specification

### KENO PRO/MINI

Certifications	CE Certificate
IP Rating	IP41 Protection
Model No.	K-P4, K-E4, K-P2, K-M1 & K-M0.5
Input Voltage (for KENO-PRO)	DC 24V, 1.2A
Adapter Voltage (for KENO-PRO)	100-240 VAC
Power Source (for KENO-MINI)	Built-in Rechargeable Lithium Battery
Vaccum Range	0 to -850 mbar (Adjustable)
Max flow rate in Air	15 L/min
Flow rate of liquid	23 mL/sec - 40 mL/sec
Noise at 1 meter distance	< 65 dB at maximum vacuum
Motor type	Brushless DC Motor
Collection bottle	0.5/1L/2L/4L Polypropylene
Auto Shut Offt	Yes

## Troubleshooting

Problem	Possible Causes	Solution
Device not running	Level sensor has been activated	Empty the bottle.
	No electrical power	Plug the mains adapter in the power source and in the device
	Device is switched off	Switch indicator lamp must be lit.
Aspiration is very low and/or the pump never stops running	Aspiration speed is set to minimum.	Turn the knob for vacuum control clockwise to increase speed.
	Leak in the vacuum system	<p>Close the venting port by closing the sealing screw or sealing cap.</p> <p>Close the bottle lid tightly. Check tubing and filter for leaks.</p> <p>Reduce the residual flow of the hand operator by closing the screw opposite the operator button</p>

Problem	Possible Causes	Solution
Aspiration is very low and/or the pump never stops running	Liquid overflowed thereby blocking filter	Empty the bottle and exchange the filter
	Tubing is blocked	Clean or exchange the tubing
Level sensor activated erroneously (Bottle is not full)	Sensor cable is connected incorrectly	Fully insert the sensor cable with the correct orientation in the lid and base sockets
	Foam activates the level sensor	Use an anti-foaming agent
	No or incorrect calibration	Calibrate following the instructions (see section: Connection and calibration of the level sensor)
	Soiled sensor pins	Clean pins inside the lid and recalibrate
	Electromagnetic interferences disturb level sensor	Eliminate or inactivate the source of electromagnetic interference

## Warranty

The vacuum aspirator comes with a limited one-year warranty that commences from the date of purchase. Coverage is limited to repair or replacement at the manufacturer's discretion, provided the product is used solely in accordance with the provided instructions and under normal operating conditions.

## Guidelines for Return

Follow these guidelines, before sending the instrument for repair:

- Please clean the instrument carefully.
- On no account should the sent instrument contain any reagent.
- The sent instrument can only be checked and repaired if it has been carefully cleaned and decontaminated, beforehand.
- Forcefully opening the instrument invalidates any warranty claim.
- While packing the instrument for return, please enclose a detailed description of the trouble that has occurred and the reagents that were used with the instrument

## Equipment Disposal

The instrument must not be disposed of with unsorted municipal waste. Dispose the instrument in accordance with the laws and regulations in your area governing disposal of devices.