



PAL24 or PAL96 Pipettor Atmosphere Lid

USER MANUAL

Version Number 1

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GENERAL INFORMATION

Safety - for Use with Multiwell-MEA-System and MEA Xpress

Important Safety Advice



Warning: Make sure to read the following advice prior to installation or use of the device and the software. If you do not fulfil all requirements stated below, this may lead to malfunctions or breakage of connected hardware, or even fatal injuries.



Warning: Always obey the rules of local regulations and laws. Only qualified personnel should be allowed to perform laboratory work. Work according to good laboratory practice to obtain best results and to minimize risks.

The product has been built to the state of the art and in accordance with recognized safety engineering rules.

The device may only be used when in a perfect condition. Improper use could lead to serious, even fatal injuries to the user or third parties and damage to the device itself or other material damage.



Warning: The device and the software are not intended for medical uses and must not be used on humans. Warner Instruments assumes no responsibility in any case of contravention.

Malfunctions which could impair safety should be rectified immediately.

Grounding

This product is grounded through the grounding conductor on the power cord. To avoid electric shock, the grounding conductor must be connected to earth.

Orient the Equipment Properly

Do not orient the equipment so that it is difficult to manage the disconnection device.

High Voltage

Electrical cords must be properly laid and installed. The length and quality of the cords must be in accordance with local provisions. Only qualified technicians may work on the electrical system. It is essential that the accident prevention regulations and those of the employers' liability associations are observed.

- Each time before starting up, make sure that the power supply agrees with the specifications of the product.
- Check the power cord for damage each time the site is changed. Damaged power cords should be replaced immediately and may never be reused.
- Check the leads for damage. Damaged leads should be replaced immediately and may never be reused.
- Do not try to insert anything sharp or metallic into the vents or the case.
- Liquids may cause short circuits or other damage. Always keep the device and the power cords dry. Do not handle it with wet hands.

Requirements for the Installation

Make sure that the device is not exposed to direct sunlight. Do not place anything on top of the device, and do not place it on top of another heat producing device, so that the air can circulate freely.

Explanation of the Symbol used



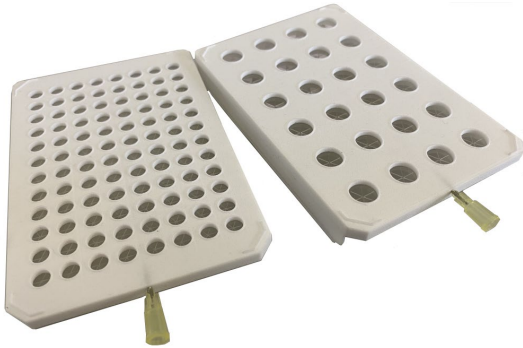
Caution / Warning



DC, direct current

INTRODUCTION

INTRODUCTION



PAL24 or PAL96

The PAL “Pipettor Atmosphere Lid” is a helpful tool to maintain physiological conditions in a 24- or 96-well plate. It helps to keep humidity in each well constant, and allows to superfuse pre-mixed, tempered, and moistened gas across the multiwell plate. With that, salinity and pH value are kept constant at physiological conditions for longer experimental runs.

A star-slitted foil is penetrated by the pipette tip during compound application into the wells, and fully reseals after the retraction of the pipette tip to maintain humidity and salinity in each well. With this helpful accessory, long term recordings are doable within the pipettor — under perfect physiological conditions.

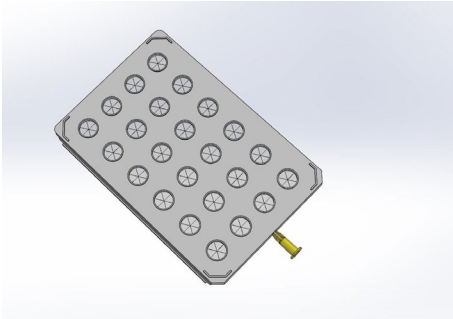
The “Pipettor Atmosphere Lid” converts the 24- or 96-well plate in a kind of climate chamber for Multiwell-MEA-Systems handled together with the MEA *Xpress* robot. Via 6-channel gas outlet you can create, for example, carbogen or if mixed before a 5 % CO₂ atmosphere (humid or non-humid) around the biological probe in each well.

Featuring 24- and 96-well plates with up to 288 electrodes, the Multiwell-MEA-System in combination with the MEA-*Xpress* robot is the perfect tool for medium and high throughput electrophysiology. Integrated heating as well as a connection to CO₂ supply enable full climate control of the recording chamber. Please see the [Multiwell-MEA-System](#) manual.

HARDWARE COMPONENTS

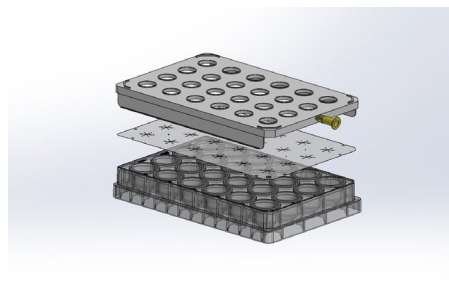
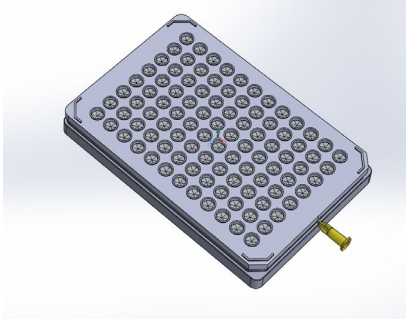
HARDWARE COMPONENTS

Animated Graphics of PAL24

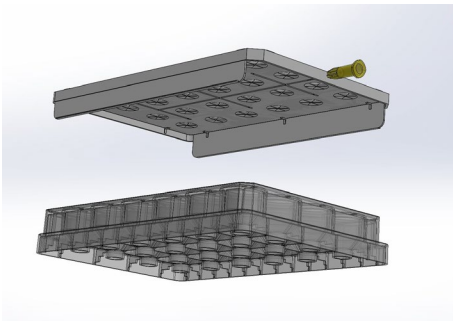
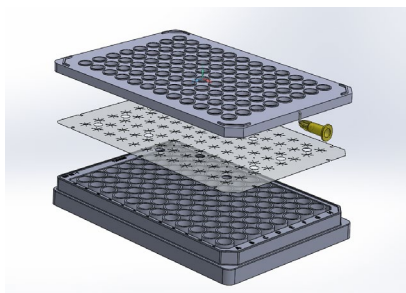


Top view of the lid

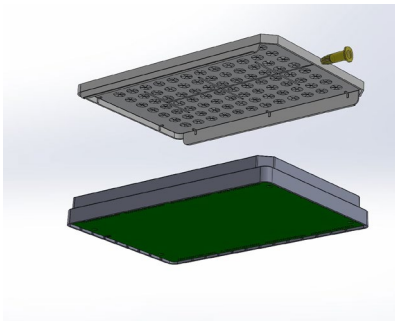
PAL96



Modular Setup: PAL lid, foil and multiwell plate



Bottom view with CO₂ manifold



HARDWARE COMPONENTS

Lid



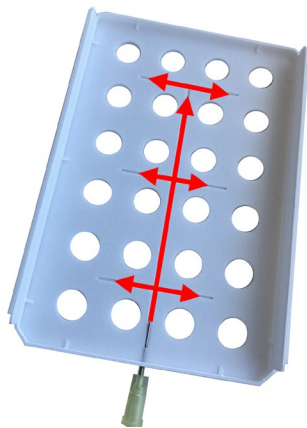
Multiwell plates are not symmetrically, so the shape of the PAL 24/96 cover lid is built in the exact same manner as the respective well plate, to guarantee a close contact between plate and lid. To prevent confusion regarding the orientation of the lid, please look out for the triangular edges of the plate and the lid.

The brackets of the Multiwell-MEA headstage keep the lid in place together with the respective multiwell plate.



Gas Manifold

Additionally, a gas manifold at the bottom of the lid is included. Please see the arrows on the picture. To apply for example, carbogen, connect a tube via injection needle to the inflow.



The air manifold for the well plates has been specially designed for use with CO₂ gases, which must be mixed before application. Medical grade gases are recommended. Other than to replace the CO₂ line, do not open the manifold by removing fittings as this may introduce contaminants into the CO₂ cleaned environment.

HARDWARE COMPONENTS

Foil



The foil is made of Polyurethan. The self-adhesive foil is glued to the bottom of the lid and fits perfectly.



Precisely above the openings of the wells you find a small crosswise cuts in the foil to allow pipette penetration.

The foil is replaceable by the customer.

Note: Foils must be ordered separately!

Cleaning Instructions

Important: Do not use an autoclave! PAL24/96 is not heat stable and cannot be autoclaved. Please do not use an ultrasonic bath for cleaning. Do not soak the PAL lid in water longer than necessary.

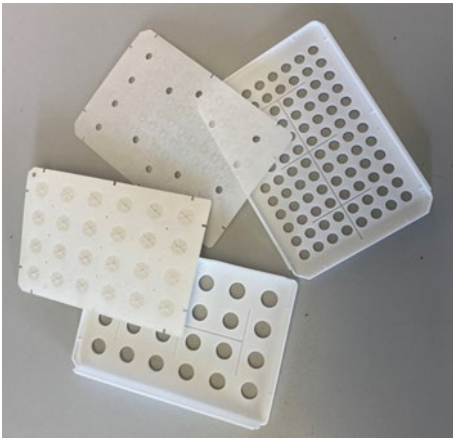
Please clean the PAL24/96 carefully manual with warm water and a mild detergent. Rinse the lid with distilled water and dry it with a clean lintless cloth or let it airdry.

Wipe the PAL24/96 lid with alcohol and rinse thoroughly with distilled water.

Use UV light for sterilization.

HARDWARE COMPONENTS

Replacement of the Foil of the PAL24/96

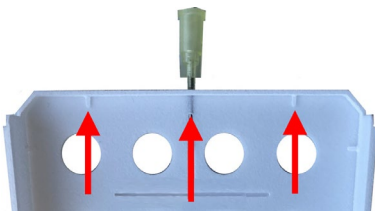


Important: Please follow the mounting instructions for the replacement of a foil with great care!

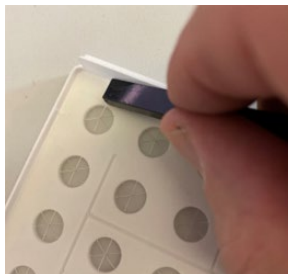
1. Remove the old Polyurethan foil from the PAL24/96 lid.
2. Clean the PAL24/96 lid with warm water and a mild detergent. Dry the lid completely.
3. Provide the new foil for the respective lid, PAL24 or PAL96. The foil has to be fixed at the bottom of the lid.



4. Subtract the protective sheet for 2 cm from the foil. Crimp the protective sheet as shown on the picture above.
5. Locate the foil precisely that the slots of the foil meet the noses of the lid. Please see the picture below.



6. Subtract the complete protective sheet. All slots of the foil have to meet the noses of the lid. Fix the foil carefully with a weak shim.



TECHNICAL SPECIFICATION

TECHNICAL SPECIFICATION: Pipettor Atmosphere Lid PAL24 and PAL96

General Characteristic:	
Operating temperature	4 °C to 40 °C, (40 °F to 104 °F)
Storage temperature	0 °C to 40 °C, (0 °F to 104 °F)
Shipping temperature	0 °C to 40 °C, (0 °F to 104 °F)
Operating humidity	20 % to 80 % RH, non-condensing
Storage humidity	20 % to 80 % RH, non-condensing
Shipping humidity	20 % to 80 % RH, non-condensing
Altitude	2000 m
For indoor use only!	
Dimensions of the Pipettor Atmosphere Lid (W x D x H)	PAL24: 84.0 mm x 126.2 mm x 13.4 mm PAL96: 84.2 mm x 126.5 mm x 9.3 mm
Weight of the Pipettor Atmosphere Lid	PAL24: 20 g PAL96: 19 g
Number of covered wells	PAL24 = 24 wells, PAL96 = 96 wells
Inlet connection for CO ₂ tube	0.9 mm luer connector (Braun sterican cannula)
PAL Foil	
Dimension (W x D x H)	85.48 x 127.76 x ? mm
Foil element	Polyurethan
Number of cross cuts for the pipettor	24 or 96
Number of holes for the spacers	14
Glue for fixing the foil	20040 KIWOPRINT D 142 (Manufacturer: Kiessel + Wolf)

CONTACT INFORMATION

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Local retailer

Please see the list of official MCS distributors on the MCS web site.

Mailing list

If you have subscribed to the Newsletter, you will be automatically informed about new software releases, upcoming events, and other news on the product line. You can subscribe to the list on the MCS web site.

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