User manual
L234 IVF CellTouch
Class II Workstation

Version 59090-1

Dear Customer

Congratulations with your new K-SYSTEMS product.

Before installation, please check the product for obvious damage, which may have happened during transport.

K-SYSTEMS encourage you to register your product on our homepage. This will enable us to inform you about important updates and safety issues directly.

Please go to http://www.k-systems.dk/product-registration.html for registration

For further information on installation and validation of your new product - Please read and follow carefully the instructions in the User Manual.

If you need further assistance, please contact your local K-SYSTEMS supplier or K-SYSTEMS directly.

Best regards,

Kivex Biotec Ltd. - K-SYSTEMS

Content

Safety

The following safety symbols may appear in this manual:

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

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

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE is used to address practices not related to personal injury.

General safety

WARNING

- Use only suitable premix gas. Use of other gasses could result in serious injury, depending on the gas connected.

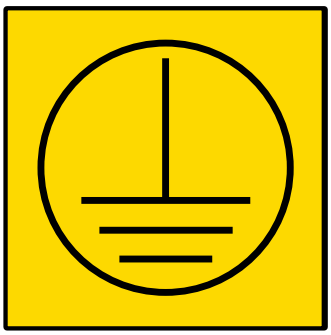
CAUTION

- Read and understand the manual completely before use.
- Do not use the workstation if the outer packaging is damaged.
- Never use and handle this unit in other ways than specified in this manual. Your safety may be at risk and the unit may be damaged.
- Do not perform repairs, disassembles, assembly operations, extensions, re-adjustments or modifications on this unit. This must be carried out only by K-SYSTEMS or by persons authorized by K-SYSTEMS.
- Do not work in the workspace area, when the fans are switched off.
- Never use the device without the front windows correctly attached.
- Always wear full protective equipment and clothing i.e. gloves, masks and general clean room clothing.
- Always have the hatch closed when using the unit
- Never use the workstation without original K-SYSTEMS HEPA filters.
- Do not expose filters to liquids. Change filters that have been exposed to liquids.
- Never try to lift or move the unit alone.
- Always wear protective shoes while moving the unit.
- Protect the power cord.
- Always use a grounding-type plug. If the plug does not fit into your outlet, consult an electrician for replacement of the outlet.
- Unplug the unit during lightning storms or when unused for a long period of time.
- Reduce the risk of fire or electric shock. This equipment should not be exposed to rain or moisture and large objects filled with liquids (>500ml).

NOTICE

- **Do not** change the calibration value your self. This should be done only by an authorized K-SYSTEMS service technician, as described in the service manual.
- **Do not** use the workstation at room temperatures exceeding 30° C. The relative humidity must not exceed 75% (non-condensing).

Safety symbols on the unit



Warning: This equipment must be protectively earthed

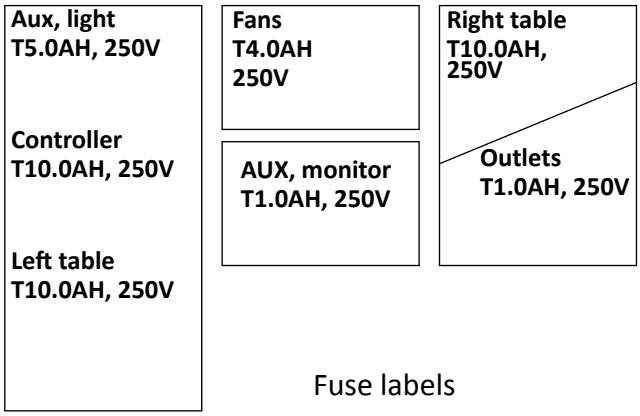
Biohazard

Consult instructions for use

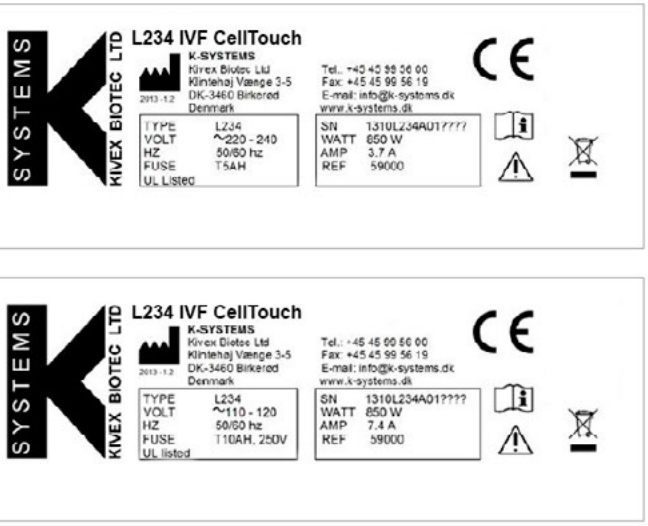
Specific warning or precaution

ESD warning

Other symbols on the unit



Fuse labels

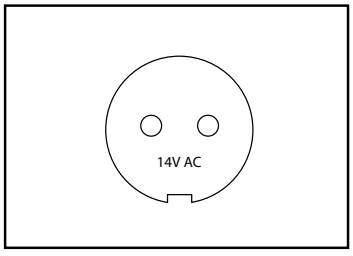


Main product label, K-Systems brand logo and address.

LOCK	Lock label
MAIN SWITCH	Switch label
MAINS	Mains label
GAS INLET (MAX 1 BAR)	Gas label
GAS OUTLET	Gas label
CAUTION SAMPLE PORT KEEP SILICONE CAP ON	Label for sample port
ETHERNET	Ethernet label
HDMI	HDMI label
ALARM OUTPUT	Alarm label
WARRANTY VOID IF BROKEN	Warranty label
O I	On / Off
WARNING USE ONLY SUITABLE PREMIX GAS	Gas warning label

L234 IVF CellTouch

Product model label



Power outlet for low-voltage accessories.

Intended use

Intended use definition

The intended use of the L234 IVF CellTouch is to establish a single workplace with a laminar flow hood for manipulations of embryos and blastocysts.

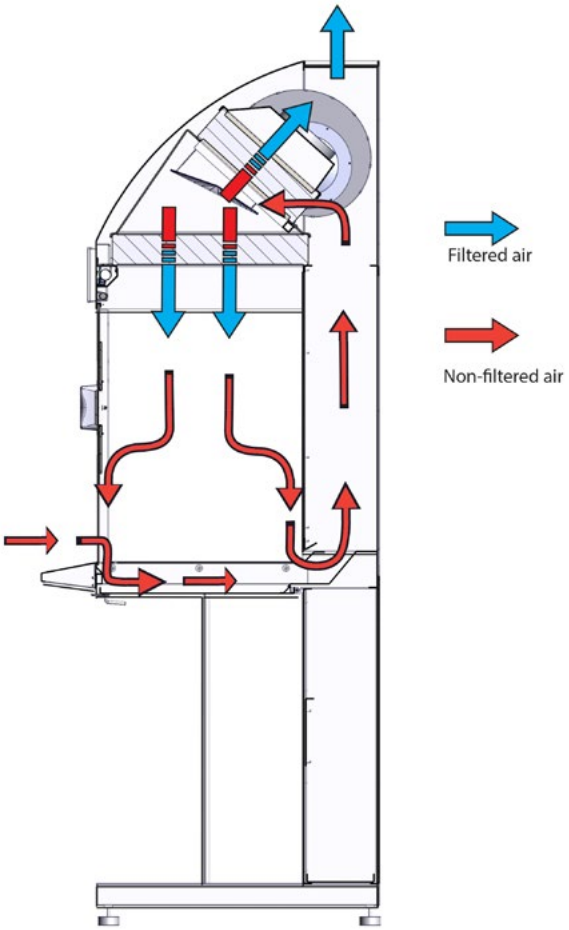
Significant performance characteristics

The K-Systems L234 IVF CellTouch is devices for maintaining temperature and clean air conditions for gametes and/or embryos. The L234 IVF CellTouch are designed as a biological safety cabinet to protect both the embryos and the operator.

Operating principles

The idea is to achieve the best possible environment for gametes and embryos during the various procedures. A single aseptic workplace created by the controllable laminar flow (with two HEPA filters) and a recirculation of air flow through HEPA filters (app. 70% recirculation – app. 30% exhaust).

The average air speed inside the work area is approximately 0.30 m/s and the velocity is measured via an anemometer placed inside the work area. Any deviation from safe conditions will be indicated visually and acoustically. The HEPA filters are H14 grade filters having an efficiency of 99.995% regarding particles size < 0.3µm.



Incorporating a heated area together with the option of having humidified premixed gas helps in keeping correct pH-levels, required in various ART techniques.

The gas used for these workstations is a suitable premixed gas.

The workstations are prepared for the mounting of a stereo microscope, on the right hand side or on the left hand side. The workstation will be operated from a touchscreen, and is available with an integrated monitor as an option.

The L234 IVF CellTouch typically works the following way:

- The unit is connected, the gas is attached and the unit is turned on - after 30 minutes the unit will be at a constant working temperature and air flow. An antiseptic work environment has been reached.
- Put on required personal protective gear, e.g. hand, face, or body protection.
- Place samples only within the defined work area of the workplate.
- Do not place unnecessary items in the sample chamber.
- Use only disinfected and cleaned accessories for the work process.
- Do not cause air turbulence, by quick hand, arm or body movement in the sample chamber or in front of the work opening.
- Do not place accessories into the sample chamber that cause air turbulence or emit excessive heat.
- Do not block air circulation at the ventilation slots of the workplate.
- Clean and disinfect sample chamber surfaces at regular intervals.
- Do not use the workstation if the alarm system has issued a failure message and the cause for the failure has not been addressed.

Requirements to the operator/ Intended User Profile

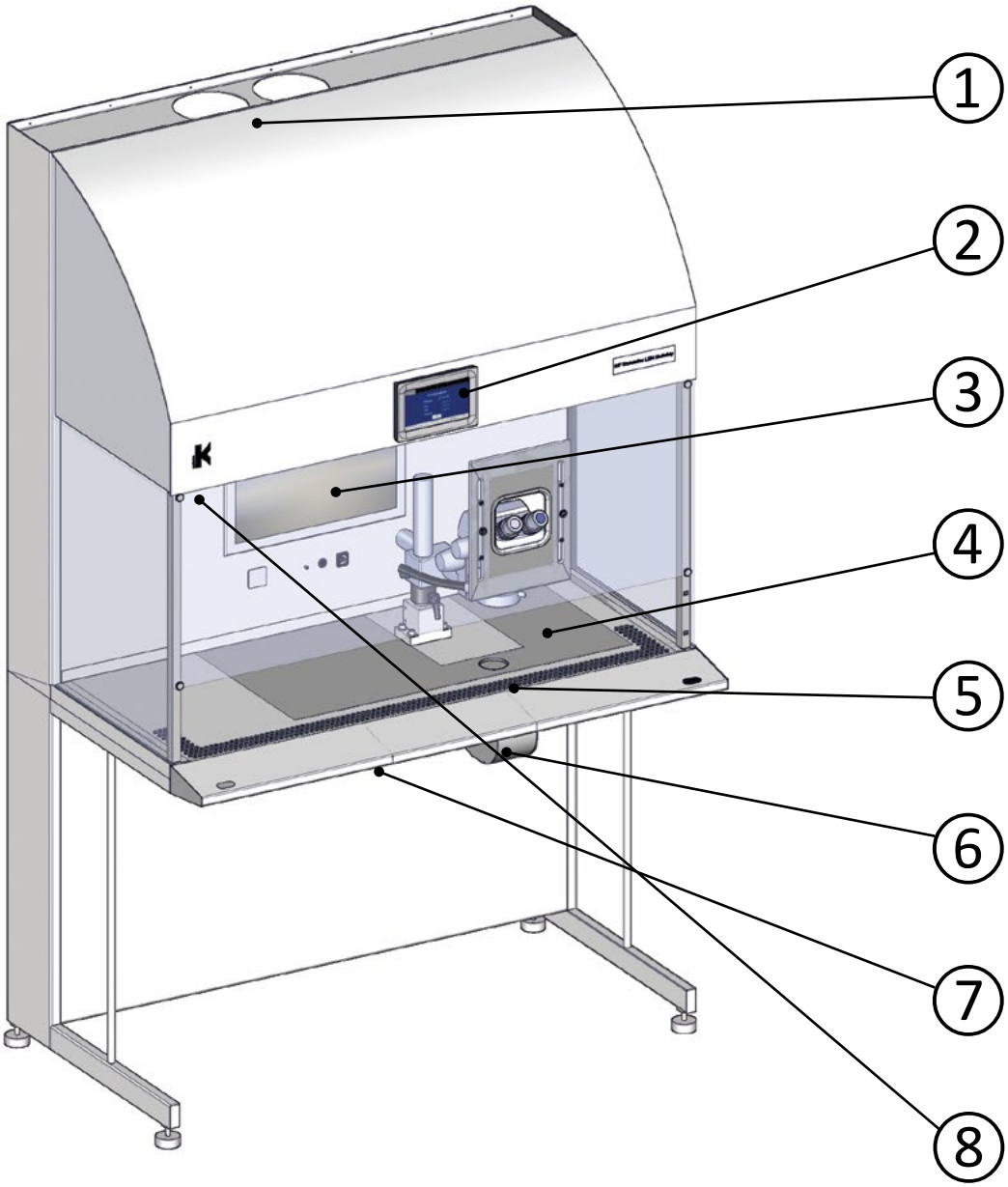
The L234 IVF CellTouch shall be used by skilled personnel trained in use of biological safety cabinet IVF work-stations (Class II LAF benches).

The user profile is trained health professional, who as a qualified person perform the functions of fertilizing the human egg.

Operating environment

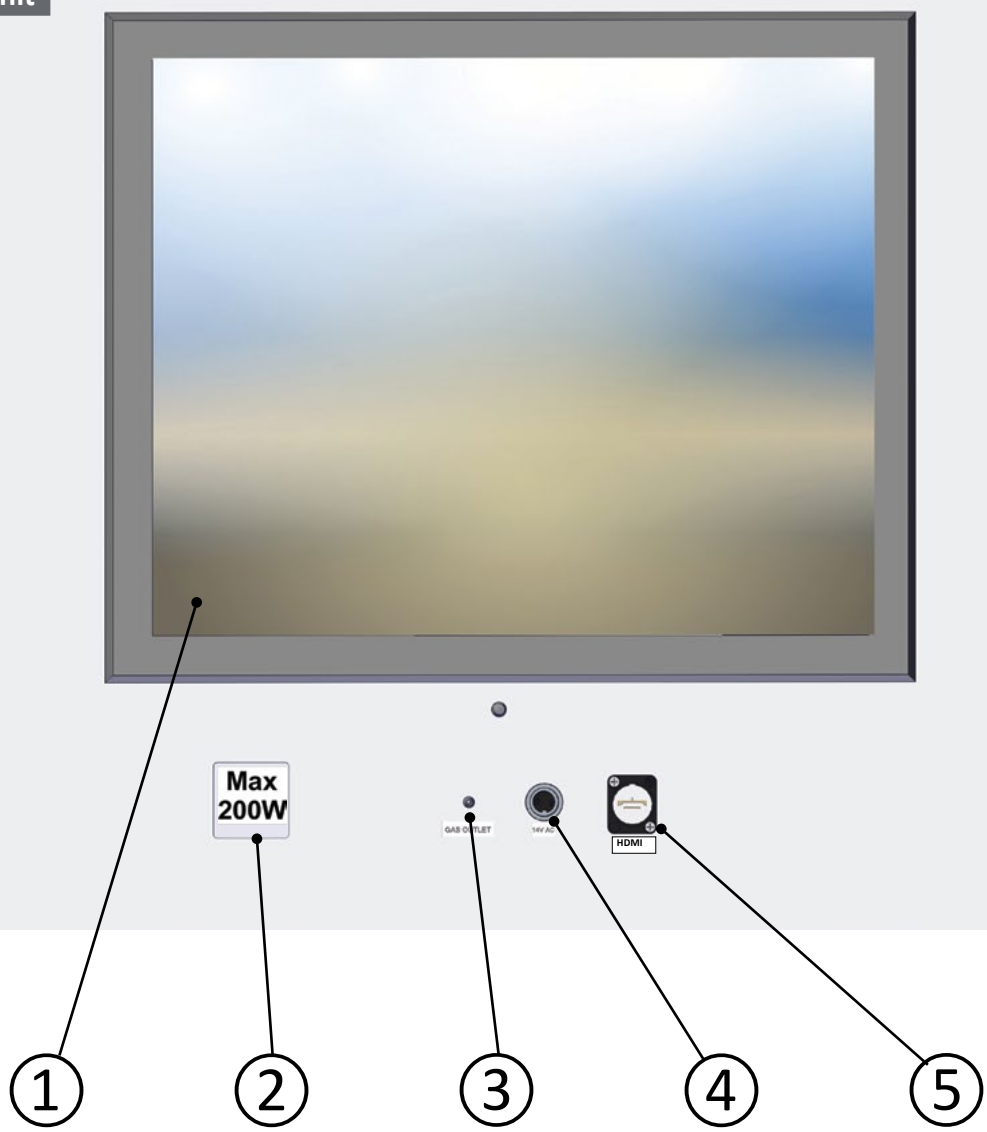
The L234 IVF CellTouch is intended to be used at room temperature (20-30°C), in a clean room at medical clinics and hospital laboratories under steady conditions.

Main components



Component	
1	Airflow outlet
2	Touch screen /Android unit
3	Monitor (optional)
4	Heat zones
5	Airflow inlet
6	Microscope light
7	Hatch
8	Air velocity sensor

Inside of unit



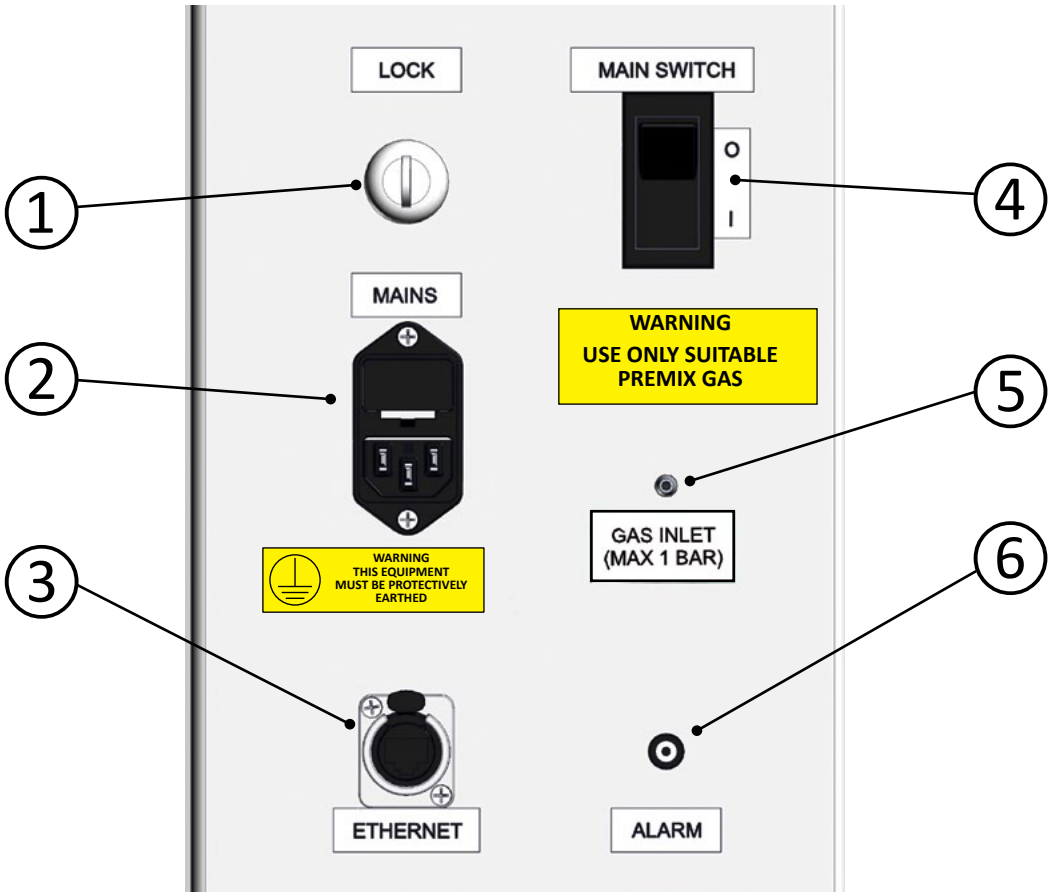
	Component
1	Monitor (optional)
2	Power outlet 230 VAC / 115 VAC
3	Gas hose connector
4	Power outlet for video camera
5	HDMI connector for monitor

External computing devices connected to the Ethernet and HDMI connector of IVF Workstation must only be Limited Power Source and SELV circuit according to the standards IEC/UL 60950-1.

The unit may have an optional extra power outlet.

Max load is 100 W per power outlet.

Connections panel



Component	
1	Lock
2	Mains connection with fuse
3	Network connection
4	Main switch
5	Gas system connector
6	Alarm output (normally closed)

External computing devices connected to the Ethernet and HDMI connector of IVF Workstation must only be Limited Power Source and SELV circuit according to the standards IEC/ UL 60950-1.

Airflow and filter

The airflow keeps particles away from the operator. The air is filtrated through the HEPA filters to ensure it is clean when leaving and circulating the unit.
See chapter **Intended Use**.

Touch screen

With the exception of the microscope light, all functions and adjustments are accessed via the touch screen.
See chapter **Use**.

Microscope light

The microscope light is adjustable.
See **Microscope light units manual**.

AluHeat Technology

The units are equipped with adjustable heat zones. The heat zones are marked on the tabletop.
See chapter **Temperature setpoint**.

Tray hatch

The hatch allows access to the tray.
See chapter **Maintenance.**

Lock

The unit has a lock with a set of keys. It is only possible to switch the unit on/off when it is unlocked and the key is in place.
For more information see chapter **Unit Lock**.

Network connection

RJ45 network connector for optional data logger. For more information see the **Data logger manual**.

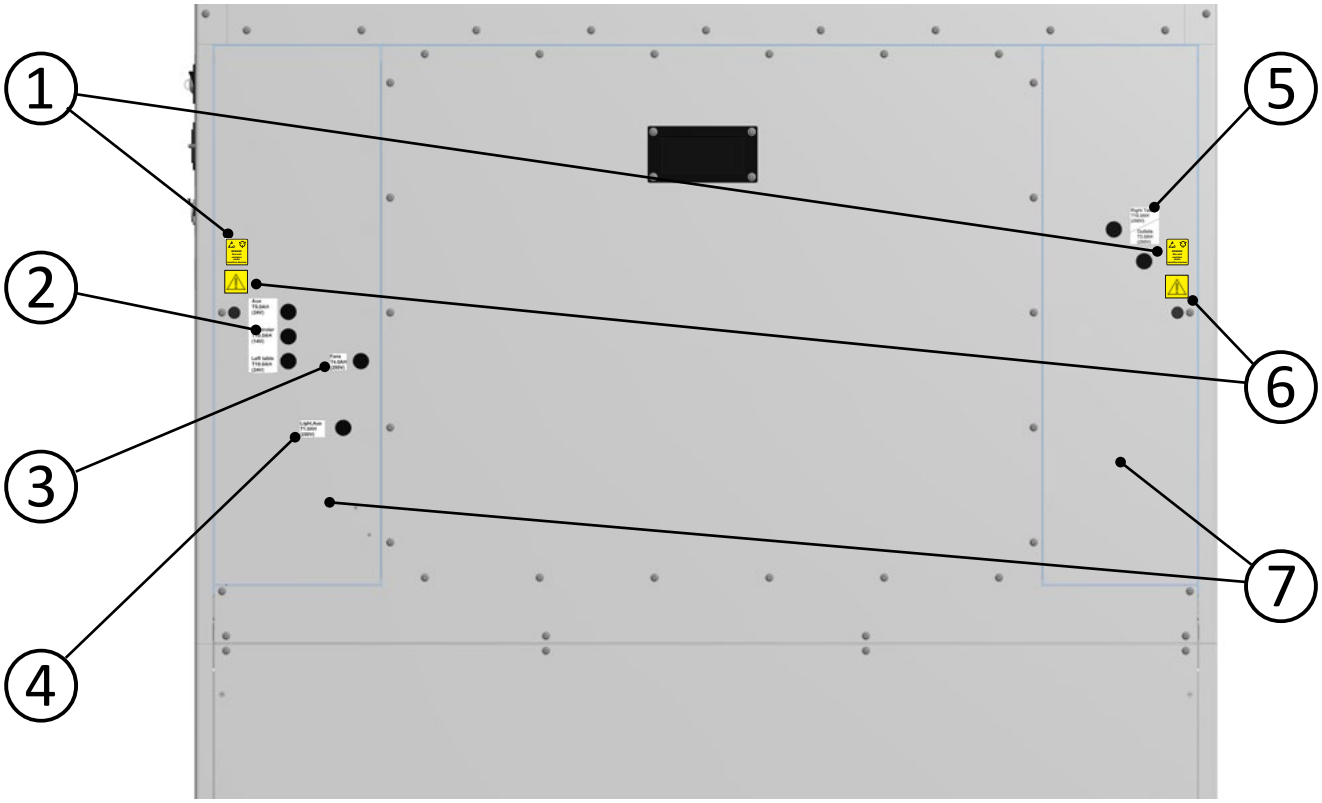
Gas system connector

Gas hose connector for optional premix gas system GH01. For more information see the **Gas equipment manual**.

Alarm output

Output for external alarm system (e.g. sms alarm system).
For more information, contact an authorized **K-systems service representative**.

Backside of unit



Feature	
1	ESD label
2	Left table, controller and auxiliary fuses
3	Fan fuses
4	Right table and outlets fuses
5	Light and AUX fuses
6	Warning labels (Shock hazard)
7	Technique hatches

Setup

For installation and assembly of the unit, consult an authorized K-systems service representative.

Before use, see the chapters **Settings** and **Calibration**.

CAUTION

- Make sure that the device is correctly earthed using grounding-type plug
- Never place other heat generating equipment under the tabletop.
- Never attempt to block any of the air flow holes on the tabletop and on top of the unit.
- Make sure that all devices emitting electromagnetic radiation are kept at a reasonable distance from L234 IVF workstation in order to avoid any potential electromagnetic or other interferences.
- Make sure there are separate power circuits that are intended for use with medical equipment only.
- Never try to move the unit without consulting K-Systems or a person authorized by K-System.

Environment

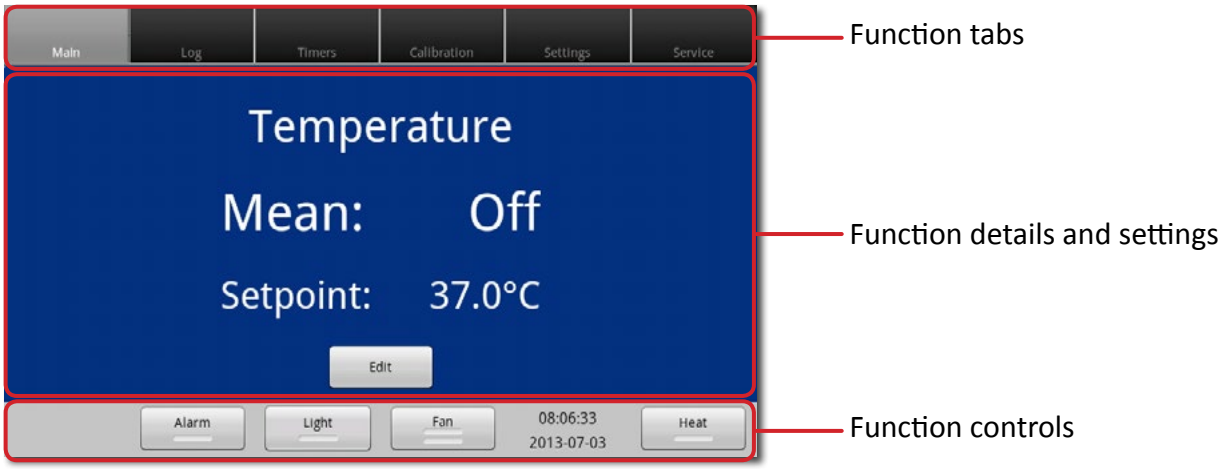
Temperature	20 – 30 °C
Humidity	Less than 75% (non-condensing)
Placement	On a flat, hard and stable surface. Unit must be kept away from heating and cooling devices.
Clearance	Allow at least 2 cm clearance from the rear, 30 cm from the top and 20 cm from left and right for proper ventilation.
Environment	**Indoor use only**. Avoid high temperature, moisture, water and dust. This unit must not be exposed to dripping or splashing. This unit is designed for use at altitudes under 2000 m.

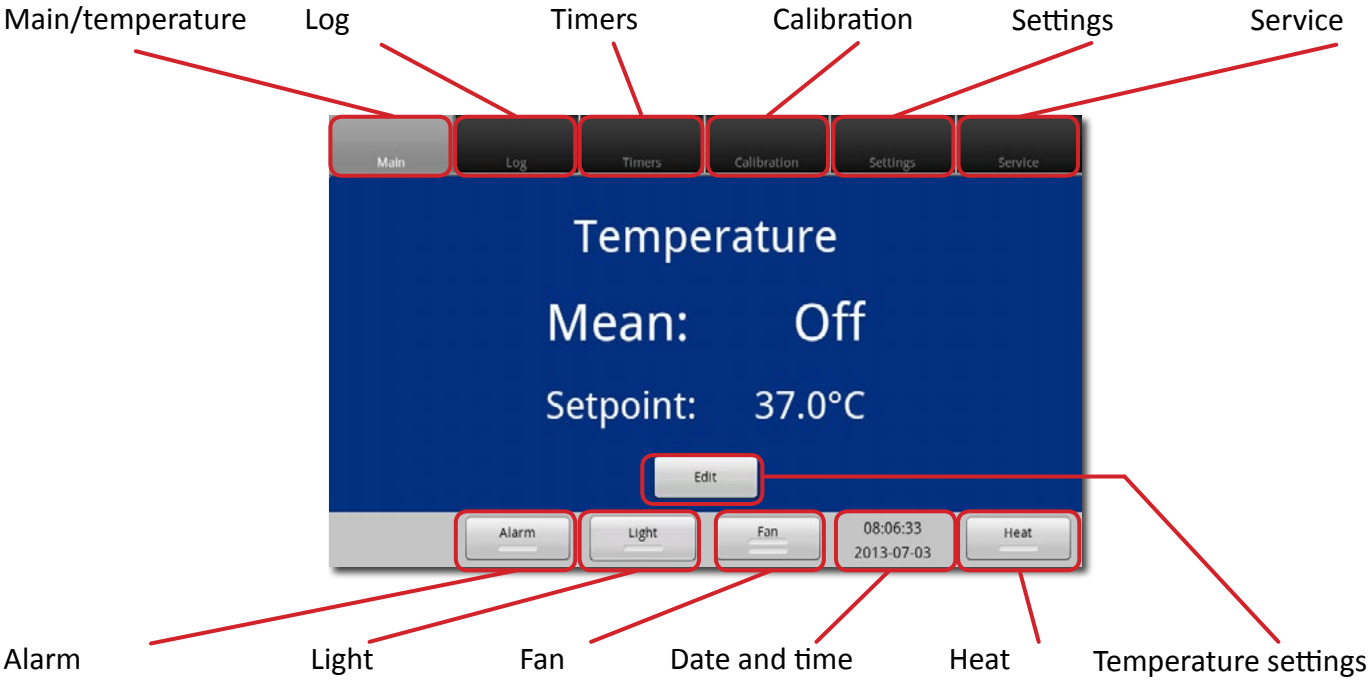
Calibration

Changing the calibrations values should only be done by an authorized K-Systems service engineer according to the description in the service manual.

Touch screen menu

You can control all the unit's functions and settings (except the microscope light) by touching the areas on the touch screen.

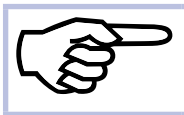




Heat	Alarm	Light	Fan
Heat Left **Off**	Alarm **Not set**	Light **Off**	Fan **Off**
Heat Left **Warming up**	Alarm **Set**	Light **On**	Fan **Half speed**
Heat Left **On**			Fan **Full speed**

Time settings

During startup check system time and date, and correct if needed.



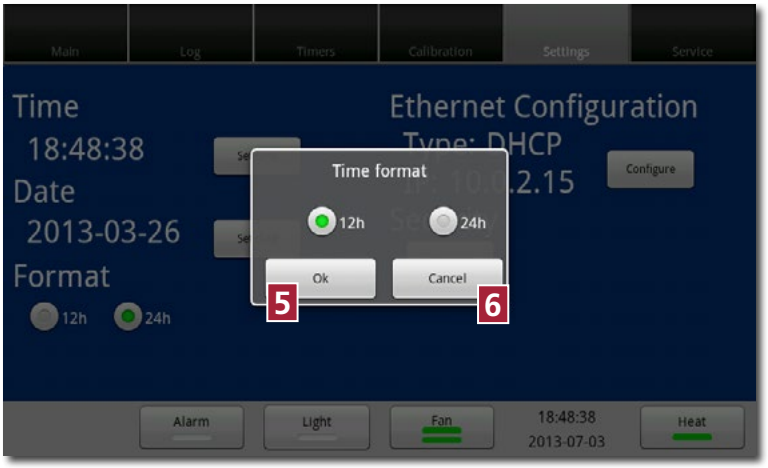
Several of these settings require login. See **Access control**.

Press the **Settings** tab 1.

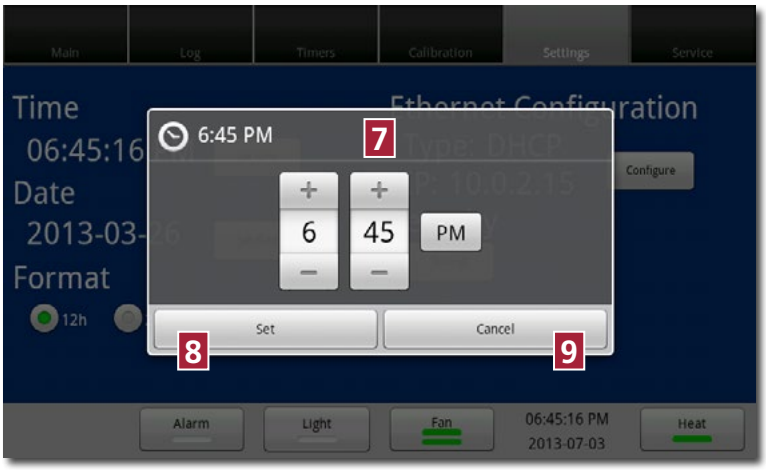
To adjust the time press **Set time** 2.

To adjust the date press **Set date** 3.

Select 12h or 24h time settings under **Format** 4.



Select either 12h or 24h time settings, and press **Ok** 5 to save the setting or **Cancel** 6 to return to the previous screen.



Press the + or - buttons 7 to adjust the time.

Press **Set** 8 to save the setting or **Cancel** 9 to return to the previous screen.Press the + or - buttons 10 to adjust the date.

Press **Set** 11 to save the setting or **Cancel** 12 to return to previous screen.

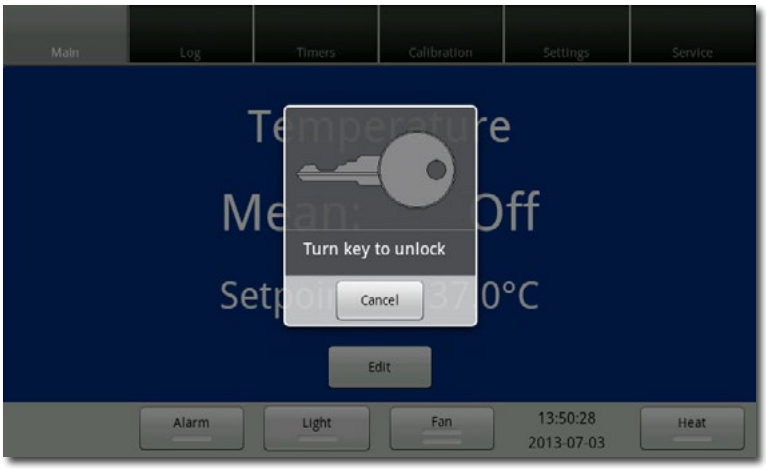
Ethernet configuration

Select usb0, Dhcp or static IP.

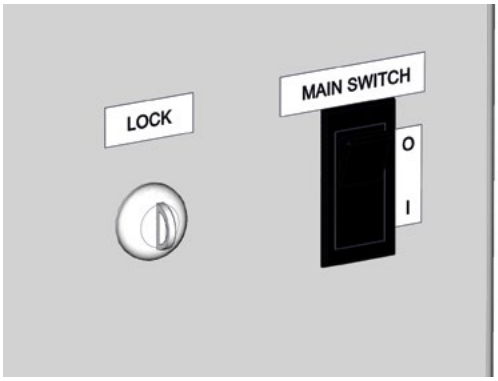
If you choose static ip, enter the static IP adress 1.

Press **Save** 2 to save the setting or **Cancel** 3 to return to the previous screen.

Unit lock



The unit cannot be switched on while it is locked. It is only possible to switch the unit on when it is unlocked and the key is in place. Turn the key on the units' side to unlock.



Safety Level

The L234 IVF CellTouch has two safety levels

Standard:

- it is possible to operate all features in the workstation individually.

High: *(Safety Level High is optional and only available in selected countries)*

- The fan will be at Full speed at all times when turned on
- Settings /features can only be operated when the fan is turned on.
- Lights and microspore lights cannot be operated unless the fan is turn on.
- In the time menu the fan timer changes so that it can only be set to: on / off
- All preprogramed Fan settings in Timer menu will be changed to Full speed
- Two flow-sensors are placed in the L234, one to monitor the down flow in work area and one to monitor the exhaust flow. Flow alarm will sound if any of the sensors detect flow disturbance.

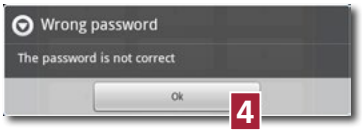
Access control

In order to prevent unauthorized changes to setup parameters, the unit provides different access levels.

When changing a parameter that requires authorization, the login window will pop up on the touch screen. If you leave the topic that requires login, you will automatically be logged out.

The popup only shows users possessing a valid access level. Press your user name 1 and press **OK** 2.

Enter your password and press **OK** 3.



If you enter a wrong password, a message will be displayed. Press **OK** 4 and try again.

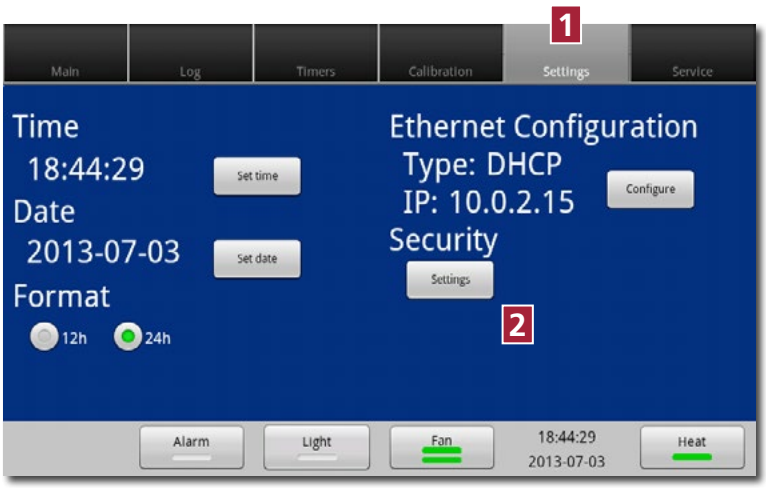
Access levels

The unit supports 3 access levels: **User**, **Advanced user** and **Super user.** Their characteristics are shown below:

User (no login required)	Advanced user (login required)	Super user (login required)
•Switch heat and light on/off •Switch fan on/off/reduced •Move between the different tabs •See the alarm log •See the security log and users	Same as **User** and •Change setpoint •Change timers •Change settings •Change own password	Same as **Advanced user** and •Safety Level* •Calibration •Create new users •Edit users •Delete users

** Only in Safety Setting High.*

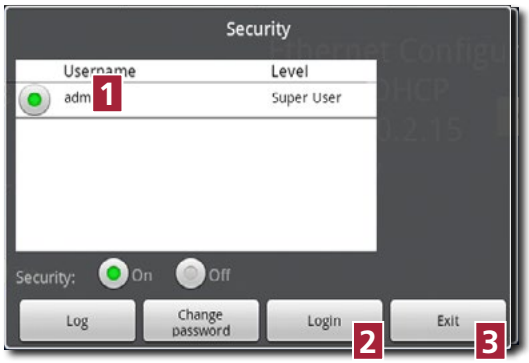
Access control settings



Press the **Settings** tab 1.

Press Settings 2 under Security.

Login



The user “admin” (Factory setting) is the only active user upon delivery of the workbench. The admin's password is 1234. The user "admin" cannot be deleted. However, the password is editable and should be changed. See **Change Password**.

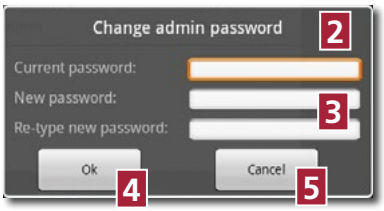
Press the "admin" user name 1 and press **Login** 2, or press **Exit** 3 to return to the previous menu.

Enter the password. The default password is 1234.

Press **OK** 4 to proceed, **Cancel** 5 to abort or **Back** 6 to return to the previous menu.

Change password

Press **Change password** 1.



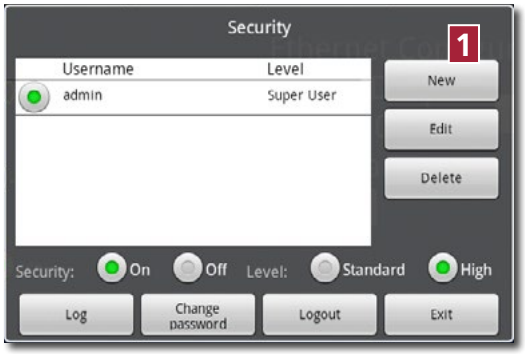
Enter the current password 2. Enter the new password twice 3.

The password must be between 4 and 10 digits long.

Press **Ok** 4 or **Cancel** 5 to abort.

If you don't enter the same password twice, this warning appears.

Create new user



In the main window, Press **New** 1.

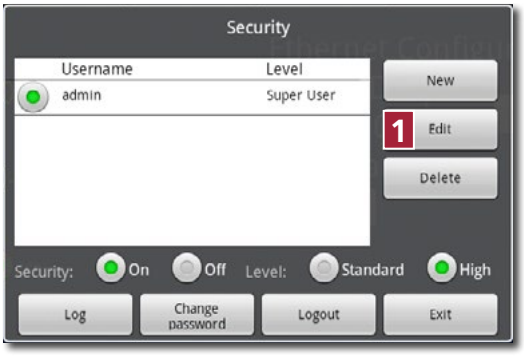
Select **Advanced** or **Super user** level 2.

When you press the buttons for the user's name 3, a key-board pops up.

Enter **Surname**, **First name** and **User name**. Press **Next**.

When pressing the buttons for the password 4, the numeric keyboard pops up. Enter a password between 4 and 10 digits. Press **OK** 5.

Edit user

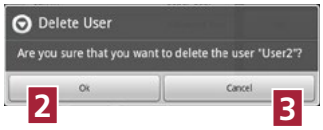


Select a user in the main window, and press **Edit** 1.

The security level, names and password can be edited here. Press **Save** 2 when done.

Delete user

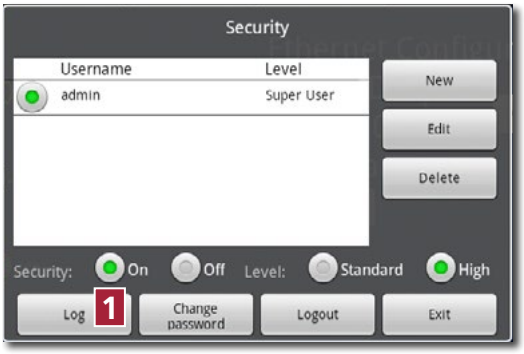
Select a user in the main window, and press **Delete** 1.



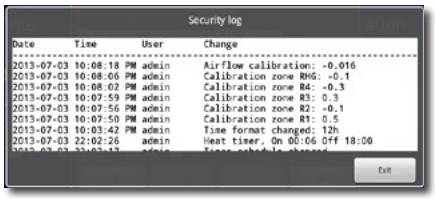
Press **OK** 2 to delete the user or **Cancel** 3 to return to the previous menu.

It is not possible to delete the "admin" user.

Log

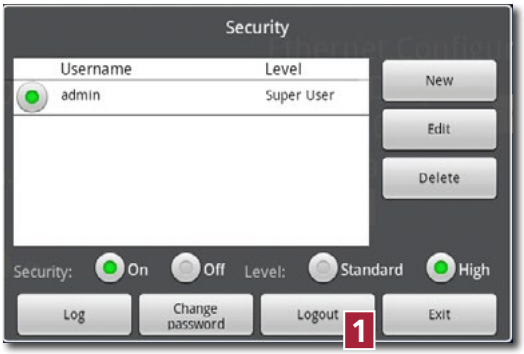


In the main window press **Log** 1.



The log shows the last 100 changes including their date, time and user. You can slide the screen up and down.

Logging out



In the main window press **Logout** 1.

Super users will be automatically logged out after 5 minutes without activity.

Lost password

If all super user passwords become lost, please contact your local K-System distributor to acquire a special login that is calculated from the unit's serial number.

Operation

Clean the unit
The work chamber must be carefully cleaned and/or disinfected. Use only 70% ethanol or similar. NEVER use ammonia or chlorinated cleaners. It is recommended to use special lint-free wipes. Remember to clean the gas hose connector sitting inside and outside of the unit.

DANGER

Ethanol is highly flammable. Keep it away from open flames. Unplug all electrical equipment. Use only in well-ventilated room.

Personal protection
During cleaning the operator must wear full protective gear.

Clean the tools
Objects and tools must be carefully cleaned and/or disinfected before bringing them into the unit.

Switch the heat on if needed
Allow the unit to reach the set point temperature. The temperature is shown on the touch screen display.

Start the fan
The fan must run at normal speed for at least 30 minutes prior to working inside the unit.

Avoid movement
Tools and objects must be placed within reach to avoid unnecessary movement inside the unit.

Do not overfill the working area
It is important to keep the air flow as undisturbed as possible. Therefore, never overload the work chamber - insert only tools and objects necessary for the actual work.

Wear protective clothing
Wear protective clothing to reduce particle emissions from the operator (i.e. gloves, masks and general clean room clothing). Special attention should be given to hands and the lower parts of the arms.

Use premix gas

Use only suitable premix gas. Always use appropriate in-line filters for input gas to the unit. Make sure that the gas supply pressure is kept at a stable level, typically at 0.5-0.7 bar.

CAUTION

- Always have the hatch closed when in operation.
- Never use the device without the front windows correctly attached.
- Always cover the air velocity sensor head before initiating any cleaning procedure on the working area.
- Never cover the air velocity sensor head when using the unit.

General workflow overview

1. Insert the key and unlock the unit
2. Turn the unit on
3. Turn on gas supply
4. Wait 30 minutes until the temperature and the air flow are constant

Do not use the workstation if the alarm system has issued a failure message and the cause for the failure has not been addressed.

Fans

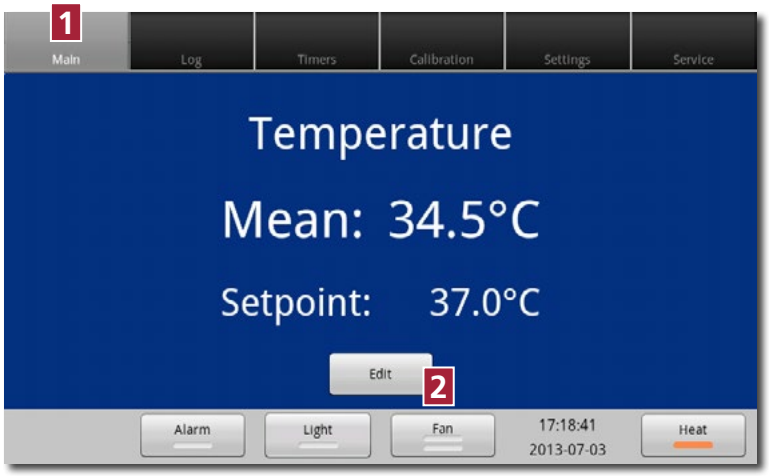
The fans of this unit are designed to run at all time. If you stop the fans, this warning appears.

Monitor

For setting up the optional monitor, please see the monitor user manual.

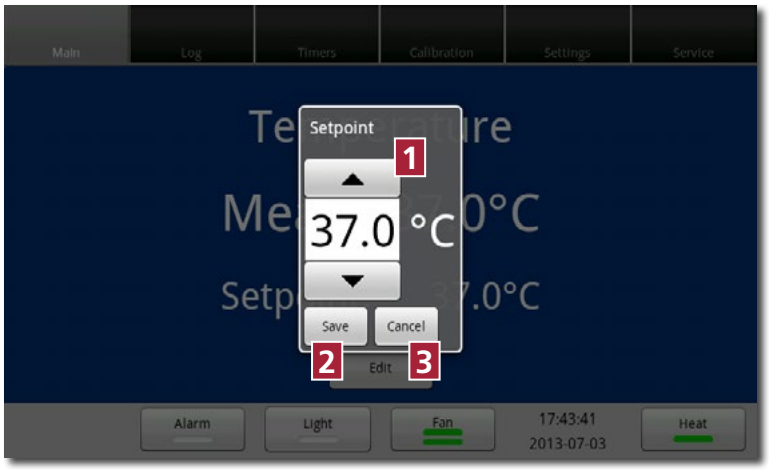
Temperature setpoint

Several of these settings require login. See **Access control**.



The temperature is displayed on the **Main** tab 1.

To adjust the temperature set point press **Edit** 2.



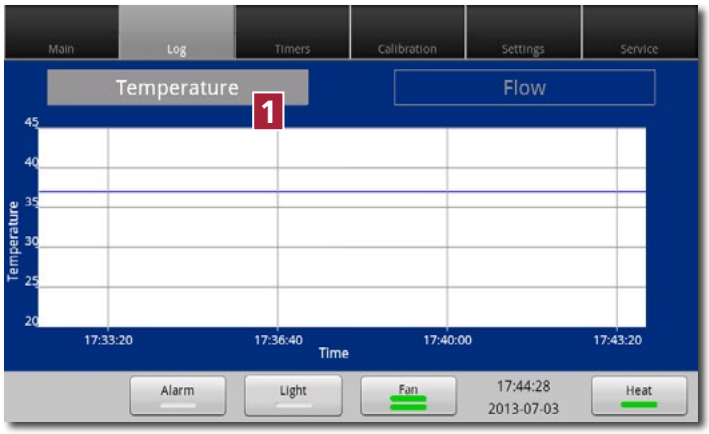
Press the arrow buttons 1 to adjust the temperature from 25 - 42°C.

When you keep your finger on the button, the temperature will change in steps of 0.1 °C at a time within a range of 2 °C.

After that, the temperature will change in steps of 1 °C at a time.

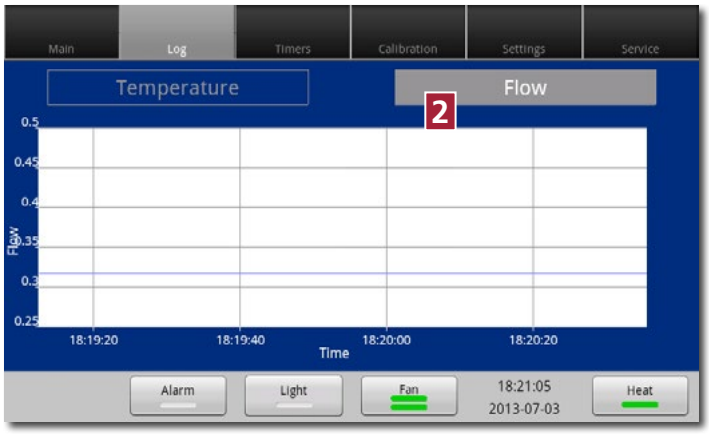
Press **Save** 2 to save the setting or **Cancel** 3 to return to the previous screen.

Logs



The temperature log is displayed on the **Log** tab 1.

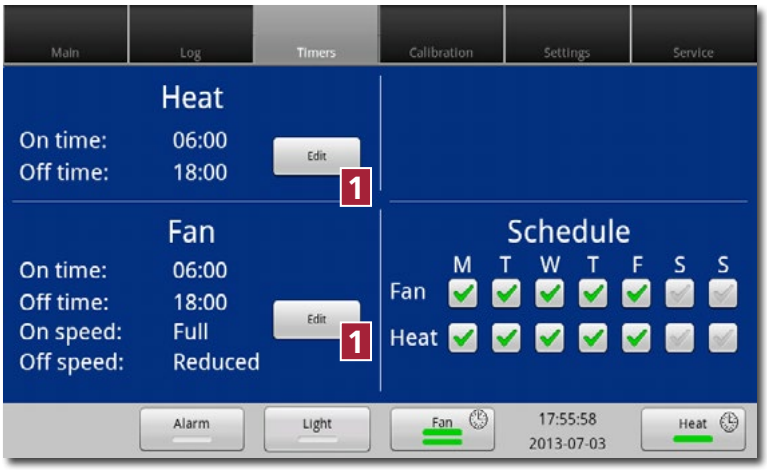
The log interval is 30 seconds and the graph shows the last 3 hours.



The flow log is displayed on the **Log** tab 2.

The log interval is 30 seconds and the graph shows the last 3 hours.

Timers schedule



The timers schedule lets users give the timers different settings on different days during the week.

Press the **Edit** buttons 1 to set up a weekly schedule for the fan timer and the heat timer.

Press the day buttons for the fan and / or the heat. Press **Ok** 2 to save the setting or **Cancel** 3 to return to the previous screen.

In this example the fan and heat timer is set weekdays.

When one or more timers are set, a clock icon 4 is displayed on the relevant button.

If you set a timer that turns the fan completely off, this warning appears.

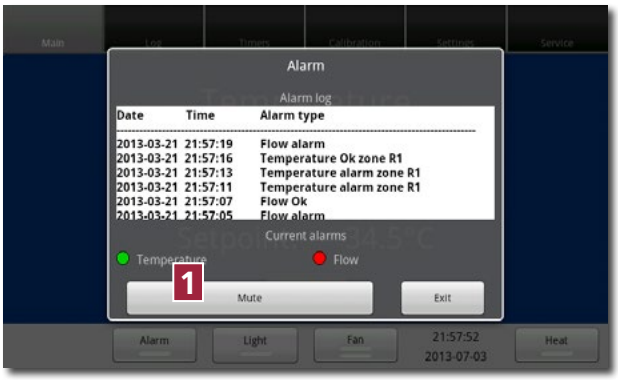
When option High is selected in security settings, only High speed for the Fan 5 is an option

Alarm

The alarm will be activated:

- If the heat zone's temperature is too high or too low
- If the airflow is too low
- When the HEPA filter must be checked
- When there is a hardware error

A flashing red light on the alarm button indicates that an alarm has been activated. An audio alarm will be heard. Press the alarm button to open the alarm message box.



The alarm box shows information about the current alarm. Press **Mute** 1 to turn off the audio alarm's sound.

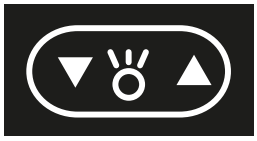
In case of a hardware error a message and an error code will be shown.

- The unit is equipped with an external alarm connector, which can be connected to a monitoring device. The connector can be connected to either a voltage source or a current source.

For more information about alarms, see the chapter **Troubleshooting**.

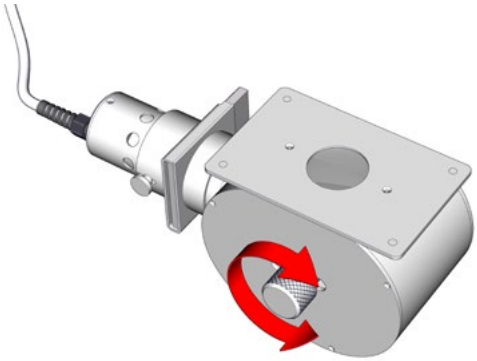
For more information about the external alarm connector, see the chapter **Technical data.**

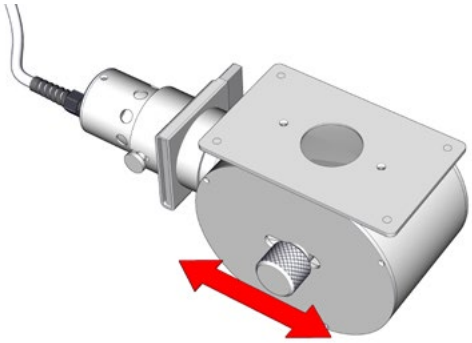
Microscope light

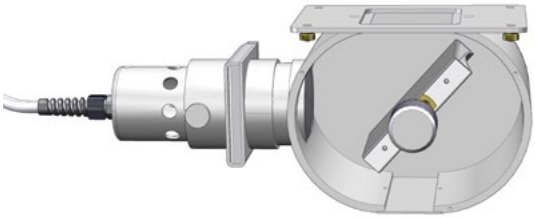
Microscope light		
	Turn on	▼ or ▲
	Increase light	▲
	Decrease light	▼
	Switch off	▼ and ▲

Microscope light unit

The microscope light units are equiped with an adjustable dual-sided mirror with a plane side and a concave side. The plane mirror is often used for high magnifications, and the concave mirror is used for lower magnifications. Turn the mirror knob 180° to switch between the two mirrors. Position the mirror almost vertical to use **dark field illumination**.

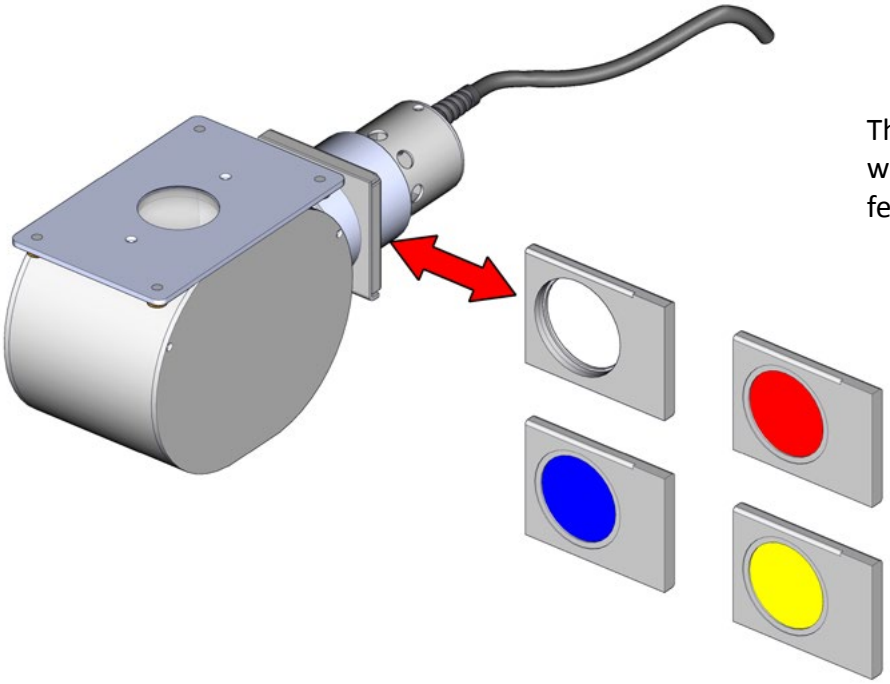






The mirror knob can be turned and moved horisontally to adjust the light.

Filters



The filter holder can be equipped with colored filters for creating different light effects.

Maintenance

Daily maintenance

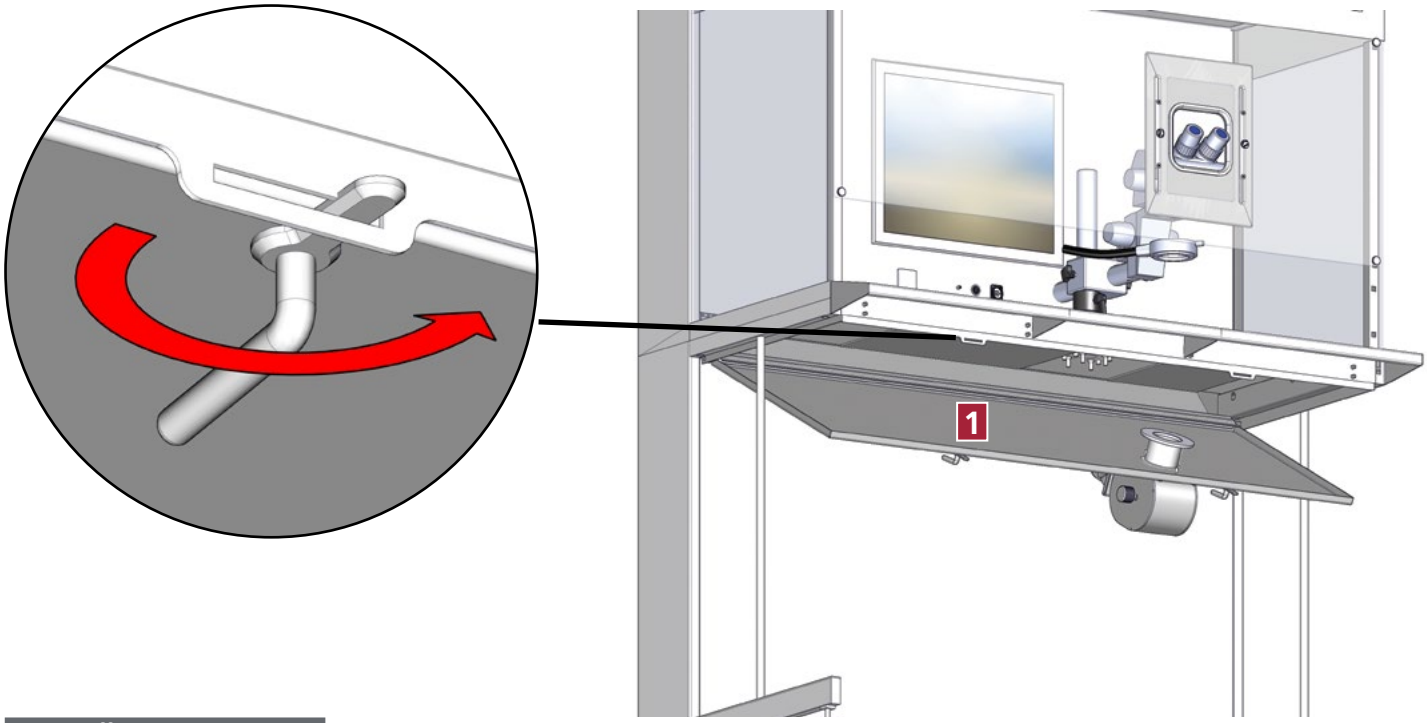
- Clean all surfaces using 70% ethanol or similar on a clean cloth or lint free paper towel.
- Do not use water.

DANGER

Ethanol is highly flammable.
Keep away from open flames.
Unplug all electrical equipment.
Use only in a well-ventilated room.

Weekly maintenance

- Wipe the exterior with a mild detergent of house-hold type.
- Antistatic spray can be used for cleaning the front window.
- Clean the tray. Open the hatch 1 for access.



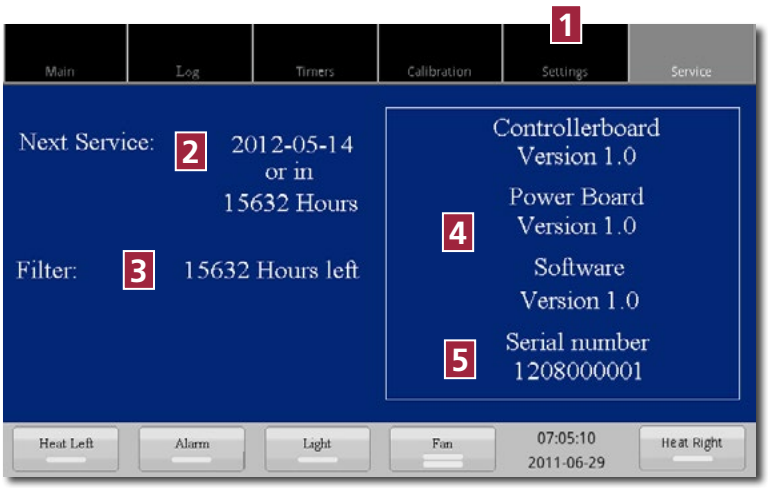
Annually maintenance

The HEPA filter and airflow should be tested after 17,000 hour of operation or once per year. (Whatever comes first). K-Systems recommends that testing should be be carried out by trained personnel. (i.e. a service technician authorized by K-Systems) using specialized testing equipment.

Additional maintenance

The HEPA filters should be replaced for every four year. K-Systems recommend that replacing should be carried out by trained personnel using specialized tools.

Service information



The **Service tab** 1 provides service information.

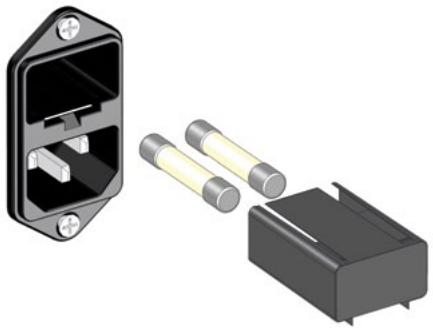
2 Hours to next service.

3 Hours to next filter change.

4 Version information.

6 Serial number.

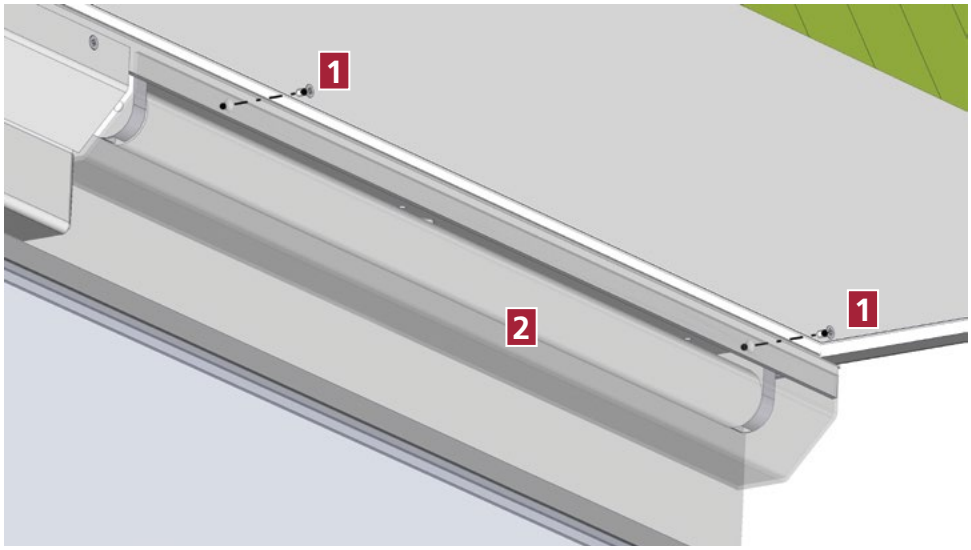
Fuses



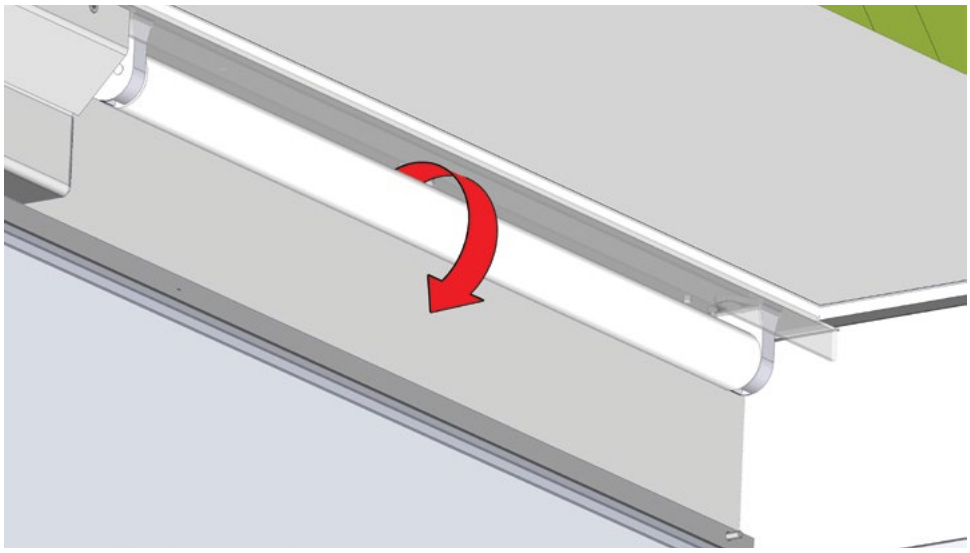
To gain acess to the main fuse pry open the fuse compartment lid with a screwdriver.

To gain acess to the fuses on the units backside unscrew the fuse top holder.

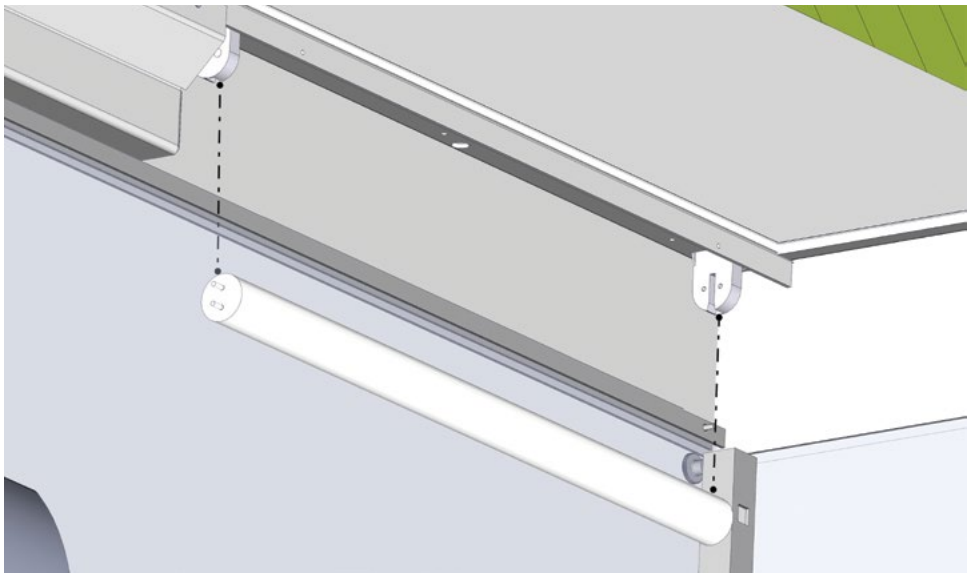
Replacing interior light



1 Remove the screws 1 holding the lamp cover 2.



2 Turn the fluorescent tube 90°.



3 Pull the tube gently down. Replacement is the reverse of removal.

Troubleshooting

Alarms			
Symptom	**Cause**	**Action**	**See chapter**
Alarm	The airflow is to low	Check HEPA filter and replace if necessary Check that both fans are running	Maintenance
	Airflow is blocked	Remove objects and tools from workspace	
	The temperature is more than 0.5 °C off	Calibrate the temperature	Calibration
	Hardware error	Contact K-SYSTEMS distributor for details.	

Heating system			
Symptom	**Cause**	**Action**	**See chapter**
No heat	The heat is turned off	Turn on the heat	Touch screen menu
Alarm	The temperature is more than 0.5 °C off	Check fuse for the heating system Check temperature setpoint	Maintenance
Low heat	Set point is to low	Raise the set point	See Temperature setpoint
No heat	Blown fuse	Check fuse for heating system	Maintenance

Laminar flow			
Symptom	**Cause**	**Action**	**See chapter**
Alarm	Too low or high airflow	Check HEPA filter and replace if necessary Defective airflow sensor	Maintenance
One or more fans not running	Blown fuse	Replace fuse	Maintenance

Microscope light			
Symptom	**Cause**	**Action**	**See chapter**
No light	Light is turned off	Turn on the light	Microscope light units
	Defective light bulb	Replace bulb	Maintenance
	Blown fuse	Replace fuse	Maintenance

Microscope light			
	Defective electrical connections	Contact K-SYSTEMS	

Monitor			
Symptom	**Cause**	**Action**	**See chapter**
No image	Monitor is turned off	Turn on the monitor	Monitor
	Brightness is too low	Adjust the brightness	
	Blown fuse	Replace fuse	
	Defective electrical connections	Check video connector	
	Wrong input selected	Select signal input	

Touch screen			
Symptom	**Cause**	**Action**	**See chapter**
No image	Blown fuse	Replace fuse	Service
No touch screen response	SW stopped	Restart unit	
Hardware error			Contact K-Systems

Disposal and recycling

Information on the recycling and handling of L234 IVF CellTouch as per the WEEE Directive (Waste Electrical and Electronic Equipment).

CAUTION

Contamination Hazard

Since this device might have been used for processing and treating infectious substances, it might be contaminated. Prior to disposal, the whole device (including light source) must be disinfected.

Environmental protection for disposal of the product

After cleaning and disenfection, the unit contains reusable materials. All components (with the exception of the HEPA filter) can be discarded after having been cleaned and disinfected.

Please note that the HEPA filters must be discarded in accordance with the applicable national regulations for special solid waste.

When disposing of the product, we recommend that it be disassembled and broken down into different waste groups for recycling or combustion.

The following table provides information on the recycling and handling of the product in accordance with the WEEE Directive:

Recyclable components

Component	Material
Table plate	Stainless steel
Exterior housing	Steel
Interior housing	Aluminium and steel
Device back panel	Aluminium
Printed circuit board	Enclosed electronic components mounted on a PCB board
Front window(s)	Polycarbonate
Light source	Aluminum

The following table provides information on the recycling and handling of the product in accordance with the WEEE Directive:

Material	Method of disposal or recycling
Aluminium	Aluminium is a superb material from the point of view of recycling; it requires only 5% of the energy used to produce primary aluminium and it retains its properties after re-melting. The quality of the metal is so high that it can be used again and again, even in the case of anodised products as the anodised layer is a natural part of the aluminium.
Steel	Steel can be recycled by being re-melted and included as a secondary material in the production of new steel.
Printed circuit board	Printed circuit boards as well as cables are removed and recycled through special handling.
Polycarbonate	Use plastic sorting and recycling systems where they are locally available, otherwise incinerating plastic has the added benefit of generating energy, which can be used for, for example, combined heat and power production.

Technical data

Workstation unit specifications	
	L234
Overall dimensions, (W x D x H)	1246x735x2020 mm - (49x29x80”)
Weight	250 kg
Table plate	1225x490mm - (48 x 19”)
Height from floor to table top	835mm - 860mm
Height from table plate to filter	700mm
Warmed surface	Optional. Left or right side
AluHeat Technology	Electrical controlled heating system with edge enhancement
Temperature range	Ambient to 42° C / 108° F
User interface	Touch screen
User interface functions	Digital temperature readout, datalogger, temperature setpoint, calibration, warning for next service
Connections	Main switch, mains, gas, Ethernet, alarm
Laminar flow	Vertical
Heating rate	1 °C ± 0.5 °C / minute
Alarms	Visual alarm for out of range temperature and air velocity.
Exhaust Filter (HEPA)	H14, 75PA, 99.995% T.EN 1822, 610 x 305 x 117 mm
Main HEPA Filter	Classification H-14 with resistance of 130 Pa and an efficiency of MPPS of 99.995%. Grid on the inlet. Distribution cloth on the outlet. Dimensions: 1214x464x69 mm.
Sound Level	57 ± 2 dB(A) (In conformity with EN 12469)
IP class	IP30
Interior light	T8 15W cool white
Air flow	In conformity with EN 12469 (0.25 to 0.5 m/sec)
Overvoltage category	Transient overvoltage II
Pollution degree rating for electrical equipment	2

Power specifications 220 – 240 VAC	
	L234
Max consumption	850 VA
Voltage	1/N/PE AC, 220 - 240VAC Class 1 type B
Frequency	50/60 Hz
Current	3.7 A
MAINS supply voltage fluctuations	Up to +/-10 % of the nominal voltage

Power specifications 110 – 120 VAC	
	L234
Max consumption	850 VA
Voltage	1/N/PE AC, 110 - 120VAC Class 1 type B
Frequency	50/60 Hz
Current	7.4 A

Fuses 230V (UL Listed)	
Mains connection	T5.0AH/250V
Aux, light	T5.0AH/250V
Controller	T10.0AH/250V
Left table	T10.0AH/250V
Fans	T4.0AH/250V
Aux, Monitor	T1.0AH/250V
Right table	T10.0AH/250V
Outlets	T1.0AH/250V

Fuses 115V (UL Listed)	
Mains connection	T10.0AH/250V
Aux, light	T5.0AH/250V
Controller	T10.0AH/250V
Left table	T10.0AH/250V
Fans	T4.0AH/250V
Aux, Monitor	T1.0AH/250V
Right table	T10.0AH/250V
Outlets	T2.0AH/250V

Materials	
Front and side windows	Polycarbonate/Glass
Workstation body	Mild Steel Plate EN 10130, DC01 (FePO1) / Aluminum AW-1050
Corrosion protection	60 µm polyester coating pretreated to corrosion class 1
Stand	Mild Steel Tube EN 10219-1 Stainless Steel Tube ST1203, ISO 127/ DIN 2462
AluHeat Technology	Aluminum heat zone with copper element
Tabletop	Stainless steel - AISI 304

Ambient conditions	
Working temperature and humidity	20 – 30 °C. Less than 75% RH (non-condensing)
Storage temperature and humidity	5 – 55 °C. Less than 95% RH (non-condensing)
Transport temperature and humidity	5 – 55 °C. Less than 95% RH (non-condensing)

Spare parts	
Windows	52199, 1 x Front window with cut out for microscope (for 4-foot model / 120 cm)
Light sources	59063, 2 x Fluorescent light tube T8 (for 4-foot models)
Cables	52758 Main cable - Schuko type 52773 Main cable - US type 53886 Main cable - UK type 52775 Special main cable, different than Type B (US), Type C (Schuko compatible), Type G (UK)

Warranty and product liability

Product liability

Because Kivex Biotec Ltd, K-SYSTEMS (here after called "The manufacturer") has no control or influence over the conditions under which this device is used, over its method of use or administration, or over handling of the product after it leaves its possession, the manufacturer takes no responsibility for the results, use and/or performance of the product. The manufacturer expects that use of the product will be confined to trained and expert users.

In no event shall the manufacturer be liable for any direct or indirect damages including incidental, consequential or special damages, arising out of or in connection with the use or performance of the product.

If the manufacturer provides you with technical documentation, this does not authorize you to perform repairs, adjustments or alterations on the device or accessories.

No representative of the manufacturer and no vendor of the product is authorized to change any of the foregoing terms and conditions, and the purchaser accepts the product subject to all terms and conditions herein, subject always to any contrary provisions which are necessarily implied by stature or law notwithstanding the within terms and conditions.

Limited Warranty & Replacement

The manufacturer warrants to the purchasers of all devices and products manufactured by the manufacturer, that the product was prepared and tested in accordance with good manufacturing practices and guidelines and are in compliance to the CE norms issued by the competent authority.

The decision whether to provide any remedy or whether to refund any portion of the purchase price shall be at the discretion of the manufacturer. Before returning a product for any reason, please contact your nearest distributor for assistance and instructions.

This limited warranty does not apply to products subjected to abnormal use or conditions, improper storage, damaged by accident, misuse or abuse, improper line voltage, products whose serial number has been altered, to products not shipped in accordance with the recommendations of the manufacturer, and/or to products altered or serviced by anyone other than the manufacturers authorized distributors.

The manufacturer reserves the right to change or discontinue this product without prior notice.

K-Systems / Kivex Biotec Ltd

Klintehøj vænge 3-5 – DK-3460
Birkerød – Denmark

T. +45 4599 5600 – F.+45 4599 5619 –
www.k-systems.dk