

# User Manual

Climatic chamber  
**PKK-50**

SAMPLE



**Kambic**

## WARRANTY

Kambic d.o.o. guarantees that the product delivered has been thoroughly tested to ensure that it meets its published specifications. The warranty is valid only if the product has been installed and used in accordance to the instructions supplied by Kambic d.o.o.

Kambic d.o.o. shall in no event be liable for incidental or consequential damages, including without limitations, lost profits, loss of income, loss of business opportunities, loss of use, and other related exposures, caused by incorrect use of product.

Warranty is valid for **13 months** from date of shipping and includes spare parts and labor.

Type: **PKK-50**

Serial number:

Date of shipping:

Signature/Stamp:

**Manufacturer:**

**Kambic d.o.o.**

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Thank you for your trust and for buying this device. We hope it will successfully serve the purpose for many years.

**CAREFULLY READ THESE INSTRUCTIONS  
BEFORE USING THE DEVICE!**

SAMPLE

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**EN**

## 1.0 WARNINGS AND SAFETY PRECAUTIONS

Always keep this manual in close reach for reference. This product should only be used and operated by skilled and trained personnel familiar with technical capabilities and potential safety hazards.

Always follow and obey the national regulations related to technology and labor laws.

To avoid injuries and equipment damage study and follow the safety instructions and warnings.

### Legal:

The content of the manual is subject to change without notice.

Understanding and following this operating manual is first step to hazard-free and safe use of the equipment.

This user manual can not reach out to all application that might even develop in the future. If you find information unclear or you are not sure about safe use of the product in your specific case, do not hesitate to contact your dealer or us via [info@kambic.com](mailto:info@kambic.com) for further information or opinions.

In no event shall Kambic d.o.o. be held liable for any damages, direct or incidental related to the use of this product and manual.

Product can be equipped with variety of accessories and options. This warning list might include elements that are applicable only with certain models and accessories.

**READ ALL INSTRUCTIONS BEFORE USE!**

Reduce the possibility of injury and failure.

**WARNING**

Before you perform any kind of maintenance, disconnect all electrical power to the unit! DO NOT operate this unite without a properly grounded, properly polarized power cord. DO NOT connect this unite to a non-grounded, non-polarized outlet.

**DANGER**

Appliance must not be installed in a room where the possibility of explosive atmosphere is present!

**DANGER OF BREAKDOWN**

Service only allowed to authorized personnel!



**DANGER OF FIRE**

Heating of flammable materials is not allowed!



**WARNING**

Use only distilled or demineralized water for humidity maintenance system!  
Close the doors tightly before start! Do not open doors during the cycle!



**DANGER OF BURNS**

Use safety gloves when operating with high/low temperatures!



**EXPLOSION HAZARD**

Do not process any materials that could generate explosive hazardous Atmosphere!



**EXPLOSION HAZARD**

Do not operate the equipment in explosive hazardous atmosphere!



**ELECTRIC HAZARD**

Do not operate the equipment in wet and condensing environment!



**STABILITY HAZARD**

Do not load or affect product stability with heavy loads or climbing the product!



**TRANSPORT HAZARD**

Transport the chamber only in original packing!  
Always secure the chamber stability during reposition!  
Never use doors or handles or accessories for holding point during reposition!



**FREEZING HAZARD**

Do not store or transport product if charged with water!  
All water needs to be drained and dried from system elements prior to exposing to freezing conditions!



**OVERHEATING HAZARD**

Do not install the equipment in non ventilated environments!  
Ensure appropriate space and volume around the chamber!  
Ensure sufficient heat dissipation for product cooling!

## WARNUNGEN UND SICHERHEITSVORKERUNGEN

Halten Sie dieses Handbuch zum Nachschlagen stets griffbereit. Dieses Produkt darf nur durch befähigtes und trainiertes Personal verwendet werden, dass mit den technischen Eigenschaften und potentiellen Sicherheitsrisiken vertraut ist.

Befolgen Sie stets die nationalen technischen und Arbeitsrechtsvorschriften.

Um Verletzungen sowie Schäden am Gerät zu vermeiden, lesen und befolgen Sie die Sicherheitsanweisungen und Warnungen.

### Rechtliche Hinweise:

Der Inhalt dieses Handbuchs kann ohne vorherige Benachrichtigung geändert werden.

Das Benutzerhandbuch zu verstehen und zu befolgen, ist der erste Schritt zur gefahrenfreien und sicheren Verwendung dieses Geräts.

Dieses Benutzerhandbuch kann nicht alle Geräte, einschließlich zukünftiger Entwicklungen abdecken. Wenn Sie Informationen als unklar empfinden oder sich über die sichere Verwendung des Gerätes in Ihrem spezifischen Fall unsicher sind, zögern Sie nicht, Ihren Händler oder uns über [info@kambic.com](mailto:info@kambic.com) zu weiteren Informationen oder Stellungnahmen zu kontaktieren.

Keinesfalls kann Kambic d.o.o. für Schäden jeglicher Art durch Verwendung dieses Produktes oder Handbuchs, direkt oder indirekt, verantwortlich gemacht werden.

Das Produkt kann mit verschiedenen Zubehörteilen und Optionen ausgestattet sein. Die Warnungsliste kann Punkte enthalten, die nur auf bestimmte Modelle und Zubehörteile zutreffend sind.



#### **LESEN SIE VOR DER VERWENDUNG ALLE ANWEISUNGEN!**

Reduzieren Sie die Verletzungs- und Schadensmöglichkeiten.



#### **WARNUNG**

Vor jeglichen Wartungsarbeiten alle Netzversorgungsanschlüsse zum Gerät trennen! Das Gerät NICHT ohne ordnungsgemäß geerdetes und gepoltes Netzanschlusskabel verwenden. Das Gerät NICHT an eine Steckdose ohne Erdung oder mit falscher Polung anschließen.



#### **GEFAHR**

Das Gerät darf nicht in Räumen mit möglicherweise auftretender explosionsfähiger Atmosphäre betrieben werden!



#### **GEFAHR DES GERÄTEAUSFALLS**

Wartung nur durch autorisiertes Personal zulässig!



**BRANDGEFAHR**

Beheizung von entzündlichen Materialien ist nicht zulässig!



**WARNUNG**

Nur destilliertes oder entionisiertes Wasser für die Luftfeuchtigkeitsregelung verwenden! Türen vor dem Start dicht schließen und im Betrieb nicht öffnen!



**GEFAHR VON VERBRENNUNGEN**

Verwenden Sie bei hohen/niedrigen Temperaturen Sicherheitshandschuhe!



**EXPLOSIONSGEFAHR**

Verwenden Sie keine Materialien, die eine explosionsfähige Atmosphäre erzeugen könnten!



**EXPLOSIONSGEFAHR**

Das Gerät nicht in explosionsfähiger Atmosphäre betreiben!



**GEFAHR ELEKTRISCHER SCHLÄGE**

Das Gerät nicht in feuchter oder kondensierender Umgebung betreiben!



**GEFAHR DER SCHWERPUNKTVERLAGERUNG**

Keine schweren Lasten laden oder Stabilität durch Zuladung oder Besteigen des Produktes beeinflussen!



**GEFAHR DURCH TRANSPORT**

Transportieren Sie die Kammer nur in der Originalverpackung!  
Bei Positionsveränderung stets die Kammerstabilität absichern!  
Niemals Türen, Griffe oder Zubehörteile zum Tragen des Gerätes nutzen!



**FROSTGEFAHR**

Nicht einlagern oder transportieren, wenn Wasser im Produkt ist!  
Vor Exposition gegenüber Temperaturen unter dem Gefrierpunkt muss das gesamte Wasser abgelassen und das ganze System trocken sein!



**GEFAHR DER ÜBERHITZUNG**

Das Gerät nicht in unbelüfteter Umgebung installieren!  
Stellen Sie genug Abstand und Raumvolumen um die Kammer sicher!  
Stellen Sie ausreichend Wärmeabfuhr zur Kühlung des Produktes sicher!



**FR**

## MISES EN GARDE ET MESURES DE SÉCURITÉ

Veillez toujours garder ce manuel à proximité en cas de besoin. Ce produit ne doit être utilisé et manié que par du personnel formé et compétent étant au fait des capacités techniques et des risques potentiels d'accident.

Veillez toujours suivre et respecter les réglementations nationales en matière de technologie et de code du travail.

Afin d'éviter tout dommage corporel et matériel, veuillez étudier et suivre ces consignes de sécurité et mises en garde.

### Clause légale:

Le contenu de ce manuel est sujet à modifications sans préavis.

La compréhension et le respect de ce manuel d'utilisation est le premier pas vers une utilisation sûre et sans danger de l'équipement.

Ce manuel d'utilisation ne peut s'étendre à l'ensemble des applications susceptibles de se développer à l'avenir. Si vous trouvez certaines informations peu claires ou si vous avez des doutes concernant une utilisation sûre dans votre cas précis, n'hésitez pas à contacter votre vendeur ou nous-mêmes via [info@kambic.com](mailto:info@kambic.com) pour plus d'informations ou de conseils.

En aucun cas Kambic d.o.o. ne pourra être tenu responsable pour quelques dommages directs ou accidentels que ce soient liés à l'utilisation de ce produit ou de ce manuel.

Le produit peut être équipé de nombreux accessoires et options. Cette liste de mises en garde est susceptible de contenir des éléments n'étant applicables qu'à certains modèles et accessoires.



### **LISEZ TOUTES LES CONSIGNES AVANT UTILISATION!**

Limitez le risque d'accidents et de pannes.



### **ATTENTION**

Déconnectez toute alimentation électrique de l'appareil avant de réaliser quelque type de maintenance que ce soit!

N'utilisez PAS cet appareil sans câble électrique correctement relié à la terre et correctement polarisé. Ne connectez PAS cet appareil à une prise non reliée à la terre ou non polarisée.



### **DANGER**

L'appareil ne doit pas être installé dans une pièce présentant un risque d'atmosphère explosive!



### **RISQUE DE PANNE**

Utilisation uniquement autorisée au personnel habilité!



**RISQUE D'INCENDIE**

Interdiction de chauffer des matériaux inflammables!



**ATTENTION**

N'utiliser que de l'eau distillée ou déminéralisée pour le système de maintien d'humidité ! Fermez les portes fermement avant de démarrer ! N'ouvrez pas les portes pendant le cycle!



**RISQUE DE BRÛLURES**

Portez des gants de sécurité lors d'une utilisation à hautes/basses températures!



**RISQUE D'EXPLOSION**

N'utilisez aucuns matériaux pouvant générer une atmosphère présentant des risques d'explosion!



**RISQUE D'EXPLOSION**

N'utilisez pas l'équipement dans une atmosphère présentant des risques d'explosion!



**RISQUE D'ÉLECTROCUTION**

N'utilisez pas l'équipement dans un environnement humide et présentant de la condensation!



**RISQUE D'INSTABILITÉ**

N'affectez pas la stabilité du produit avec de lourdes charges ou en montant sur celui-ci!



**RISQUES LIÉS AU TRANSPORT**

Ne transportez la chambre que dans son emballage d'origine!  
Assurez toujours la stabilité de la chambre pendant son déplacement!  
N'utilisez jamais de portes, de poignées ou d'accessoires comme point d'appui pendant un déplacement!



**RISQUE DE GEL**

N'entreposez ou ne transportez pas le produit si celui-ci est chargé d'eau!  
Toute eau doit être évacuée des composants du système et ces derniers séchés avant d'être exposés à des conditions de gel!



**RISQUE DE SURCHAUFFE**

N'installez pas l'équipement dans un environnement non ventilé!  
Assurez suffisamment d'espace et de volume autour de la chambre!  
Assurez suffisamment de dissipation thermique pour le refroidissement du produit!

**ES**

## ADVERTENCIAS Y PRECAUCIONES DE SEGURIDAD

Mantenga siempre este manual al alcance de la mano para su posterior consulta. Sólo el personal cualificado y capacitado que conoce capacidades técnicas y posibles riesgos de seguridad debe usar y manipular este producto.

Observe y cumpla siempre con las reglamentaciones nacionales relativas a la tecnología, igual que con la legislación laboral.

Para evitar heridas y daños en el equipo, revise y siga las instrucciones y advertencias de seguridad.

### **Aviso legal:**

El contenido de este manual está sujeto a cambio sin previo aviso.

Entender y seguir las instrucciones de este manual de funcionamiento es el primer paso para el uso del equipo sin riesgos y de una manera segura.

Este manual de usuario no puede cubrir todas las aplicaciones que puedan desarrollarse en el futuro. Si considera que alguna información no está clara o tiene dudas en cuanto al uso seguro del producto en su caso particular, contacte con su distribuidor o escribanos a [info@kambic.com](mailto:info@kambic.com) para obtener información adicional u opinión.

Sociedad limitada Kambic d.o.o. en ningún caso será responsable de ningún tipo de daños directos o incidentales resultantes de la utilización de este producto y manual.

El producto puede ser provisto de una variedad de accesorios y opciones. Esta lista de advertencias puede incluir elementos aplicables sólo a algunos modelos y accesorios.



### **¡LEA TODAS LAS INSTRUCCIONES ANTES DE USAR EL PRODUCTO!**

Reduzca la posibilidad de heridas y averías.



### **ADVERTENCIA**

Antes de cualquier mantenimiento, idesconecta todo el suministro eléctrico de la unidad! NO manipule esta unidad sin un cable de alimentación debidamente polarizado y puesto a tierra. NO conecte esta unidad con un enchufe no polarizado y sin puesta a tierra!



### **PELIGRO!**

¡El Aparato no se debe instalar en el lugar en el que existe la posibilidad de presencia de atmósfera explosiva!



### **PELIGRO DE FALLO**

Uso permitido sólo para el personal autorizado!

**PELIGRO DE INCENDIO**

Mantener alejado de fuentes de calor, chispas, llama abierta o superficies calientes!  
No fumar!

**ADVERTENCIA**

¡Utilice sólo agua destilada o desmineralizada para el sistema de mantenimiento de la humedad!  
¡Cierre la puerta ajustadamente antes de comenzar! ¡Durante el ciclo no abra la puerta!

**PELIGRO DE QUEMADURAS**

¡Al manipular el producto en temperaturas altas o bajas, utilice los guantes protectores!

**RIESGO DE EXPLOSIÓN**

¡No procese ningún material que pueda generar una atmósfera explosiva peligrosa!

**RIESGO DE EXPLOSIÓN**

¡No manipule el equipo en una atmósfera explosiva peligrosa!

**RIESGOS ELÉCTRICOS**

¡No manipule el equipo en un ambiente húmedo y de condensación!

**RIESGO DE INESTABILIDAD**

¡No aplique carga ni desestabilice el producto con cargas pesadas!  
¡No subir al producto!

**RIESGOS AL TRANSPORTAR**

¡Transporte la cámara sólo en su empaque original!  
¡Proporcione siempre estabilidad a la cámara al reposicionarla!  
¡Nunca la agarre por las puertas, asideros o accesorios durante el reposicionamiento!

**RIESGO DE CONGELAMIENTO**

¡No almacene ni transporte el producto si está lleno de agua!  
¡Antes de exponer el producto a las condiciones de congelamiento hay que eliminar y secar el agua por completo de los elementos del sistema!

**RIESGO DE SOBRECALENTAMIENTO**

¡No instale al equipo en los ambientes sin ventilación!  
¡Proporcione suficiente espacio y volumen alrededor de la cámara!  
¡Proporcione la disipación del calor suficiente para enfriar el producto!

**RU**

## ПРЕДУПРЕЖДЕНИЯ И МЕРЫ ПРЕДОСТОРОЖНОСТИ

Всегда держите данное руководство в непосредственной близости для справки. Данное изделие должно использоваться и эксплуатироваться только квалифицированным и подготовленным персоналом, ознакомленным с техническими возможностями и потенциальными угрозами безопасности.

Всегда последовательно соблюдайте национальные правила, касающиеся технологий и трудового законодательства. Во избежание травм и повреждений оборудования изучите и следуйте инструкциям по технике безопасности и предупреждениям.

### Правовая информация:

Содержание данного руководства может быть изменено без предварительного уведомления.

Понимание и следование данной инструкции по эксплуатации является первым шагом на пути к безопасности и безопасному использованию оборудования.

Данная инструкция по эксплуатации не может охватить все приложения, которые могут развиваться в будущем.

Если информация для вас является неясной или вы не уверены в безопасном использовании изделия в вашем конкретном случае, рекомендуем обращаться к вашему дилеру или к нам через [info@kambic.com](mailto:info@kambic.com) за дополнительной информацией или мнением. Ни при каких обстоятельствах Kambic d.o.o. не несет ответственности за любые повреждения, прямо или косвенно связанные с использованием данного изделия и руководства.

Изделие может быть оснащено разнообразными аксессуарами и опциями. Этот список предупреждений может включать элементы, которые применимы только к определенным моделям и аксессуарам.



### **ПРОЧИТАЙТЕ ВСЕ ИНСТРУКЦИИ ПЕРЕД ИСПОЛЬЗОВАНИЕМ!**

Уменьшите вероятность травм и сбоев.



### **ПРЕДУПРЕЖДЕНИЕ!**

Прежде чем выполнять какое-либо обслуживание, отключите все электропитание к устройству! НЕ используйте это устройство это устройство без правильно заземленного, правильно поляризованного шнура питания. НЕ подключайте это устройство к незаземленной, неполяризованной розетке.



### **ОПАСНОСТЬ**

Прибор не должен устанавливаться в помещении, где присутствует взрывоопасная атмосфера!



### **ОПАСНОСТЬ ПОВРЕЖДЕНИЯ**

Обслуживание разрешается только уполномоченному персоналу!

**ОПАСНОСТЬ ВОСПЛАМЕНЕНИЯ**

Нагревание воспламеняющихся материалов запрещено!

**ПРЕДУПРЕЖДЕНИЕ**

Используйте только дистиллированную или деминерализованную воду для системы поддержания влажности! Плотно закройте двери перед запуском! Не открывайте двери во время цикла!

**ОПАСНОСТЬ ОЖОГОВ**

При работе с высокими / низкими температурами используйте защитные перчатки!

**ОПАСНОСТЬ ВЗРЫВА!**

Не обрабатывайте любые материалы, которые могут создавать взрывоопасную атмосферу!

**ОПАСНОСТЬ ВЗРЫВА!**

Не используйте оборудование во взрывоопасной среде!

**ЭЛЕКТРИЧЕСКАЯ ОПАСНОСТЬ**

Не используйте оборудование во влажной и конденсационной среде!

**ОПАСНОСТЬ НЕСТАБИЛЬНОСТИ**

Не перегружайте и не влияйте на стабильность изделия тяжелыми нагрузками или подъемом на изделие!

**ТРАНСПОРТНАЯ БЕЗОПАСНОСТЬ**

Транспортируйте камеру только в оригинальной упаковке!  
Всегда сохраняйте стабильность камеры во время перемещения!  
Никогда не используйте двери или ручки или аксессуары для Удерживания во время перемещения!

**ОПАСНОСТЬ ЗАМЕРЗАНИЯ**

Не храните и не перевозите изделие, если оно заполнено водой!  
Вся вода должна быть слита и высушена из элементов системы до воздействия условий замерзания!

**ОПАСНОСТЬ ПЕРЕГРЕВА**

Не устанавливайте оборудование в невентилируемых помещениях!  
Обеспечьте необходимое расстояние и пространство вокруг камеры!  
Обеспечьте достаточную теплоотдачу для охлаждения изделия!

## 2.0 INTRODUCTIONS

### Appliance description

exfixiation

Climatic chambers indicated with PKK-... are designed and build for many testing purposes or sample storage at required temperature and humidity.

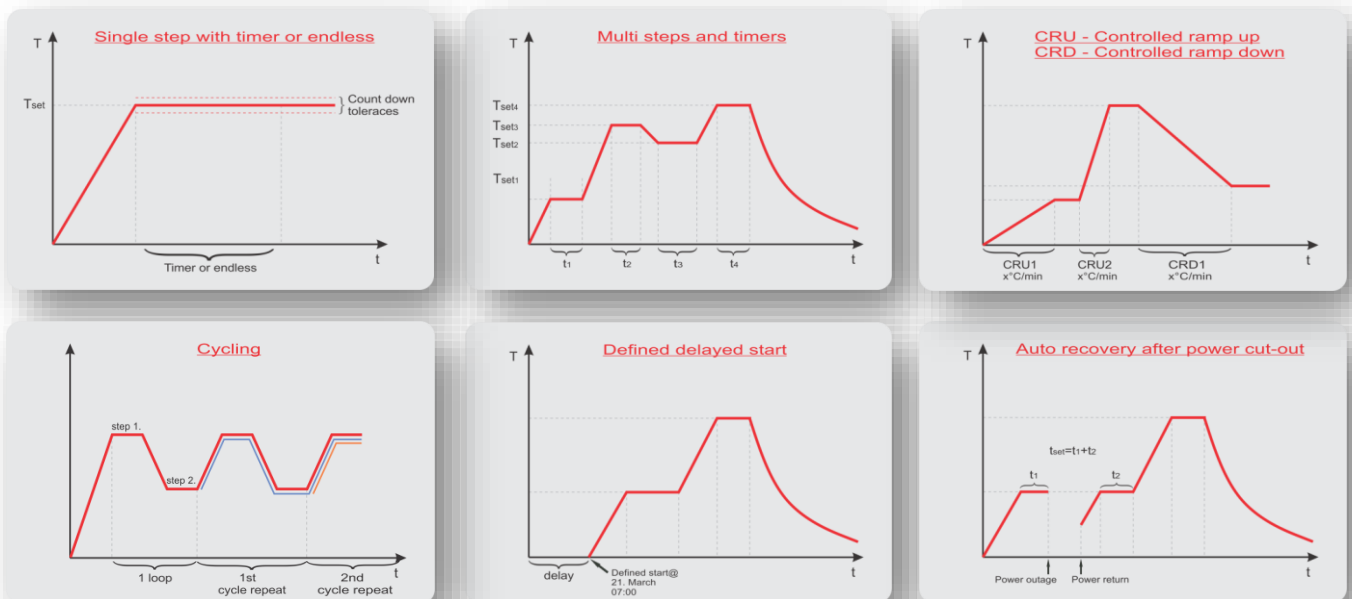
The interior chamber and inner side of the doors are made of high quality stainless steel material AISI 304 CrNi. Exterior housing is made of galvanized material coated with high quality varnish.

Removable shelves are made of stainless steel mesh and are electro polished.  
The seal between the chamber and the door is made of high quality silicon.

### Controller

Climatic chamber is equipped with microprocessor controller which is specially designed for simulation of climatic conditions. Controller enables 50 different programs. Each of these 50 programs has ability to set 50 different temperature humidity steps.

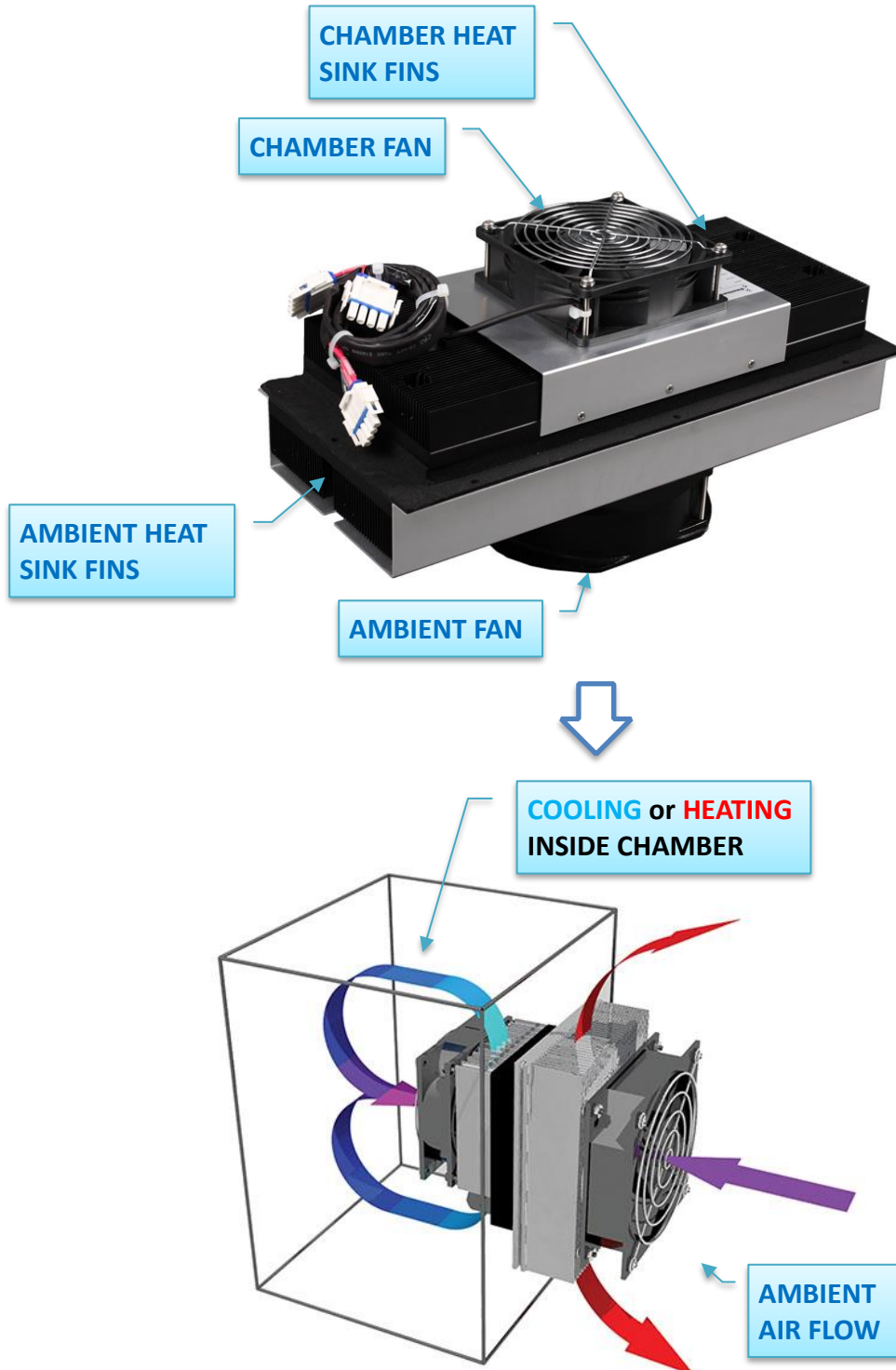
Controller functions:



### Temperature control

Cooling and heating for the chamber is provided by a Peltier System. Internal fan is used to circulate the air inside the chamber to provide temperature stability and uniformity. Temperature control is controlled via a central microprocessor controller with PID controller.

### Peltier System:



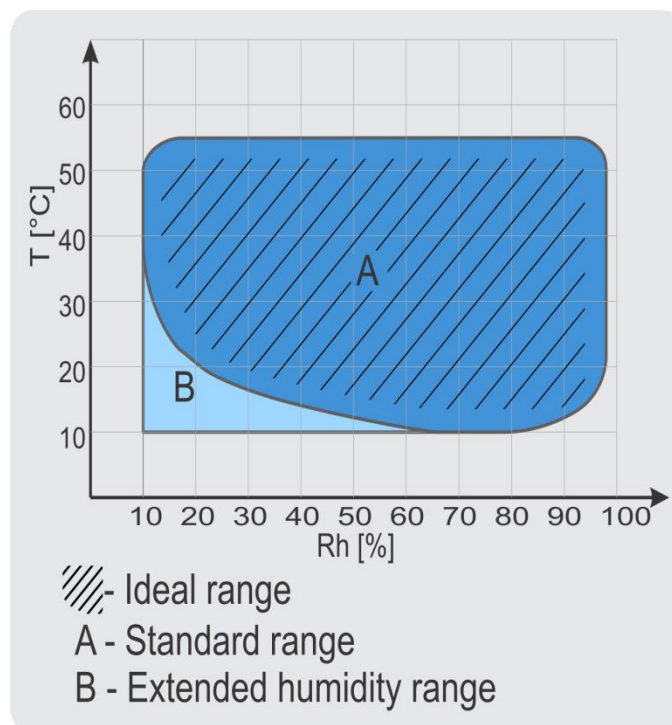


## Relative humidity control

The humidity control works on a principal of dew-point. This system ensures high Rh stability and uniformity. For this purpose water pool is made on the bottom of the chamber. Another Peltier System and all necessary parts are installed for maintaining water temperature in dew point pool.

Water pool is also equipped with automatic system for maintaining correct water level.

Rh Operating Range:



## Record process

Appliance has a built-in RS232 communication port for communication with PC or Printer.

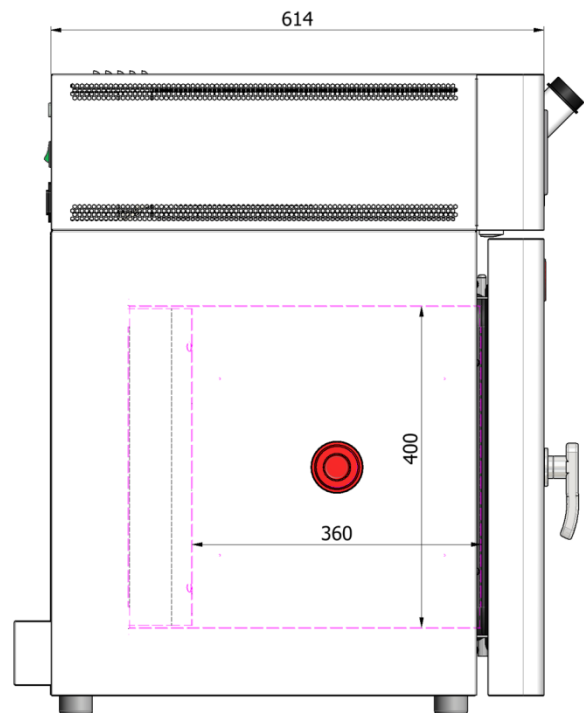
## Calibration, validation

The basic calibration is performed by the manufacturer. If ordered the calibration report is delivered with the unit.

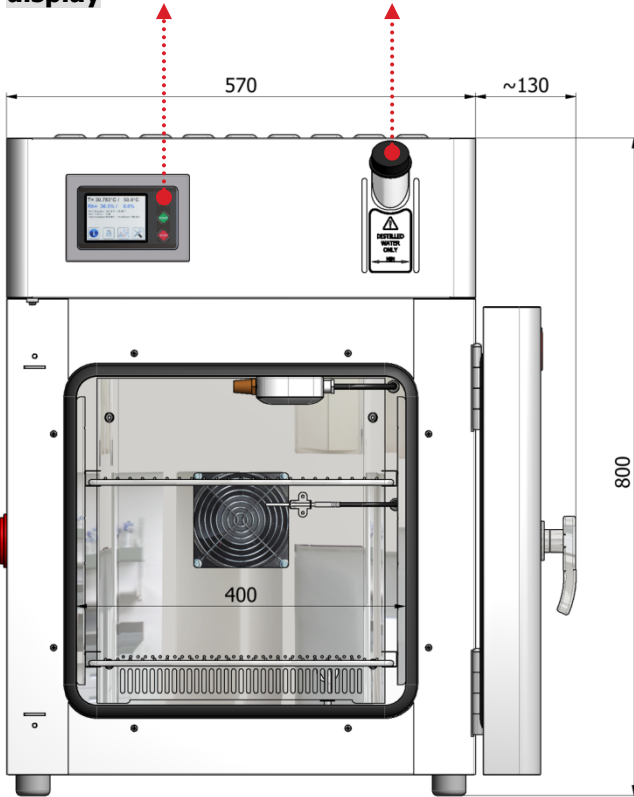
Calibration, validation can also be done by the user because the appliance has a special sub-program that allows easy settings and adjustments for temperature probes and Rh probe, without mechanical intervention on the device.

## 3.0 TECHNICAL DATA

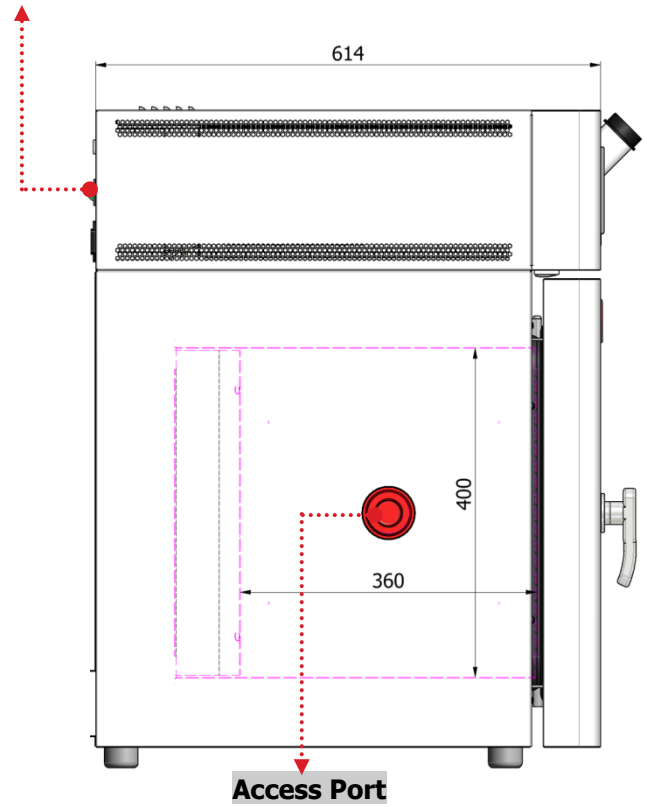
	<b>PKK-50</b>
Interior dimensions	570 x 800 x 660 mm (W x H x D)
Exterior dimensions	400 x 400 x 360 mm (W x H x D)
Volume	57 L
Number of shelves	2/6
Temperature range	+8 °C to +55 °C
Temperature stability	<± 0.1 °C
Humidity range	10 ... 98 % Rh
Humidity stability	<± 3 % Rh
Control	MPC-PID
Cooling	Peltier System
Heating	Peltier System
Doors	one wing- metal
Power supply	230V 50 Hz / 500W
Communication port RS 232	Built-in



**Control panel with touch display**    **Water Reservoir**



**Main switch, Power cord connection, RS 232**



Touch screen based controller with user friendly interface, history graph advance settings options RS-232 or USB or Ethernet communication ports

Water tank with illumination and safety level switch

Access port with both end plugs

Temperature controlled observation window with illumination

Fan for internal air circulation

Fully stainless steel chamber with all rounded corners

Height adjustable stainless steel wire shelf



## 4.0 USE PURPOSE AND SAFETY ELEMENTS

Climatic chambers indicated with PKK-... are designed and build for many testing purposes or sample storage at required temperature and humidity.

Given the wide scope of temperature and humidity regulation this appliance is useful in many areas as, pharmacy, electronics industry, testing.

It is not allowed to heat-up any material which could form explosive atmosphere.

Do not store any fluids on top of the housing!

The appliance may only be used in rooms where the possibility of explosive atmosphere is not present!

Operating the unit with open doors can cause different errors or even break down. When opening the door keep in mind to shorten this sequence as much as possible.

If your action requires longer period of open doors, switch off the unit for this period.

Microprocessor controller has a special safety system which turns heaters off if temperature rises for more than 5°C above set temperature.

In case of an error on this system, a mechanical over temperature shut-off will disable heating. If this happens the cause must be found and the over temperature shut-off must be manually reset. The over temperature shut-off device is located behind the rear plate of the lower housing and is manually reset by pressing the spring next to the thermostat setting shaft.

The appliance may only be used by trained personnel with enough practical experience regarding heating, cooling and conditioning.

Each user is responsible for correct and safe use.

The device does not cause noise greater than 75 dB.

When indicating error, press "START/STOP" and switch the main switch in the off position immediately. Contact service.

## 5.0 INSTRUCTION FOR USE

### ATTENTION:

Safety gloves use is highly recommended when working with high/low temperatures!

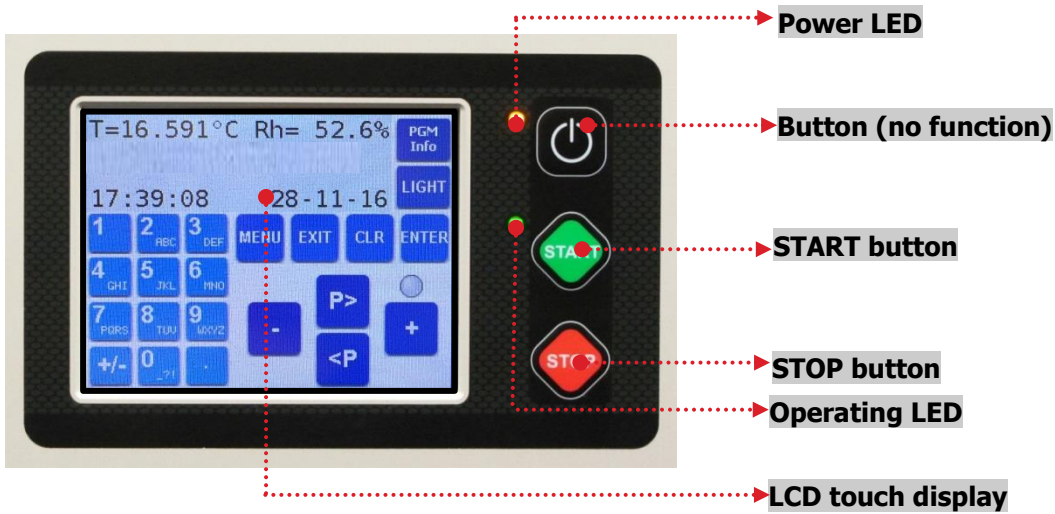
Transport is usually carried in the original packaging. In case that the appliance has to be replaced, it must be manually placed on a transport palette and only then lifted and transported with a vehicle. Installation must be done in a dry, well ventilated room. Be sure that the seal is always clean and in superb condition!

### 5.1 Water reservoir

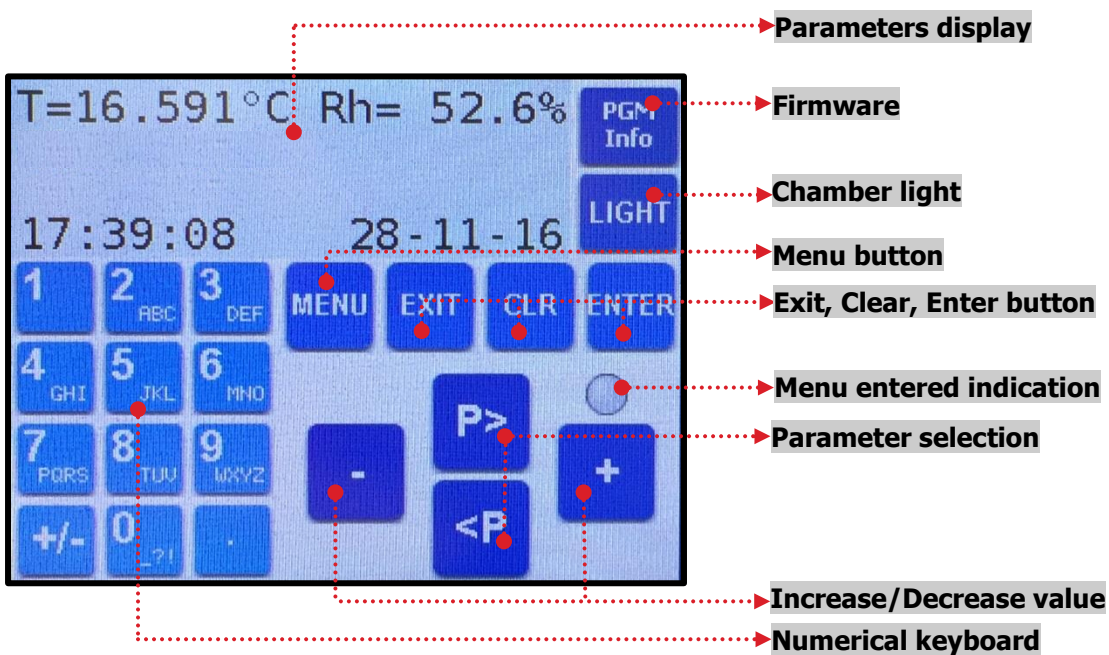
Before start, check the water level in reservoir. Open cap and fill with distilled water only!



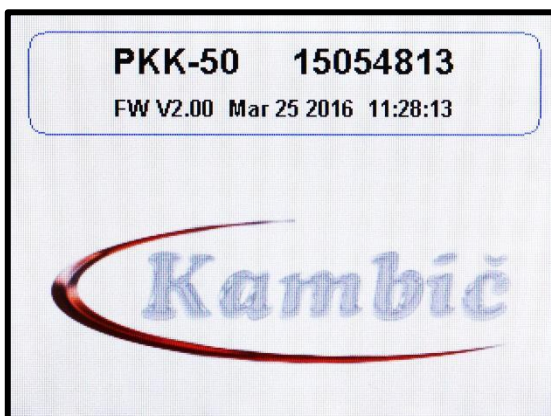
## 5.2 Control panel with touch display



## 5.3 Touch display



Firmware (PGM Info):



## 5.4 Basic setup

- Step 1:** Check distilled water level in reservoir (see chapter 5.1).
- Step 2:** Connect the power cord into the power supply 230V±10%; 50Hz, 60Hz.
- Step 3:** Connect the compressed air supply to the unit.
- Step 4:** Connect the CO2 supply to the unit.
- Step 5:** Close the chamber door.
- Step 6:** Put the main switch in position 1 (on the back of the device).
- Step 7:** Select the preset program and press "**START button**".
- Step 8:** From this moment on the device runs completely automatically
- Step 9:** Press "**STOP**" to stop the device


## 5.5 Program selection and Start

Turn on the main switch

Display:

T = 38.6°C	Rh = 61.9%
CO2 = 0.5%	
07:18:19	22-03-16

T = 38.6°C = current air temperature in chamber  
Rh = 61.9% = current relative humidity in chamber  
CO2 = 0.5% = current CO2 concentration in chamber  
07:18:19 = Time  
22-03-16 = Date

Press  to enter main menu


Display:

1 – START PROGRAM
2 – MANUAL
3 – PROGRAM SETUP
4 – SPECIAL SETUP

Press a number on a keyboard to enter in the selected sub-menu



Press 

SELECT PROGRAM  
TO START  
*(Program name)*  
SELECTED PROGRAM: 1

To choose between programs press on the number (below display) and press .

When program was stopped by pressing stop button, you get notification on display

PROGRAM INTERRUPTED!  
PRESS BUTTON  
-> TO CONTINUE PROGR.  
<- FROM BEGINNING

If you would like to continue program from the point where it was interrupted press   
Or if you would like to start from beginning press 

After few seconds

STEP Nr: 1 :           30:00  
Tc= 38.3°C /       40°C  
Rh = 62.2 % /       75%  
CO2= 0.5% /       20%

Meaning:

STEP Nr: 1: 30:00	First step in the process. Time set to 30 minutes [when temperature and Rh reaches the tolerance area the time count down starts. See special settings]
Tc=38.3°C / 40°C	Current chamber temperature is 38.3°C, set chamber temp. 40°C
Rh= 62.2% / 75 %	Current chamber humidity is 62.2%, set humidity is 75 %.
CO2= 0.5% / 20 %	Current chamber CO2 concentration is 0.5%, set is 20 %.

**WARNING:**

This kind of display indicates automatic running of selected program. The machine will automatically turn off at the end of all temperature/rh steps!



## 6.0 SETTINGS

Press **MENU** to enter main menu

Display:

1 – START PROGRAM  
2 – MANUAL  
3 – PROGRAM SETUP  
4 – SPECIAL SETUP

If you press the number next to the written description you enter the described sub menu.

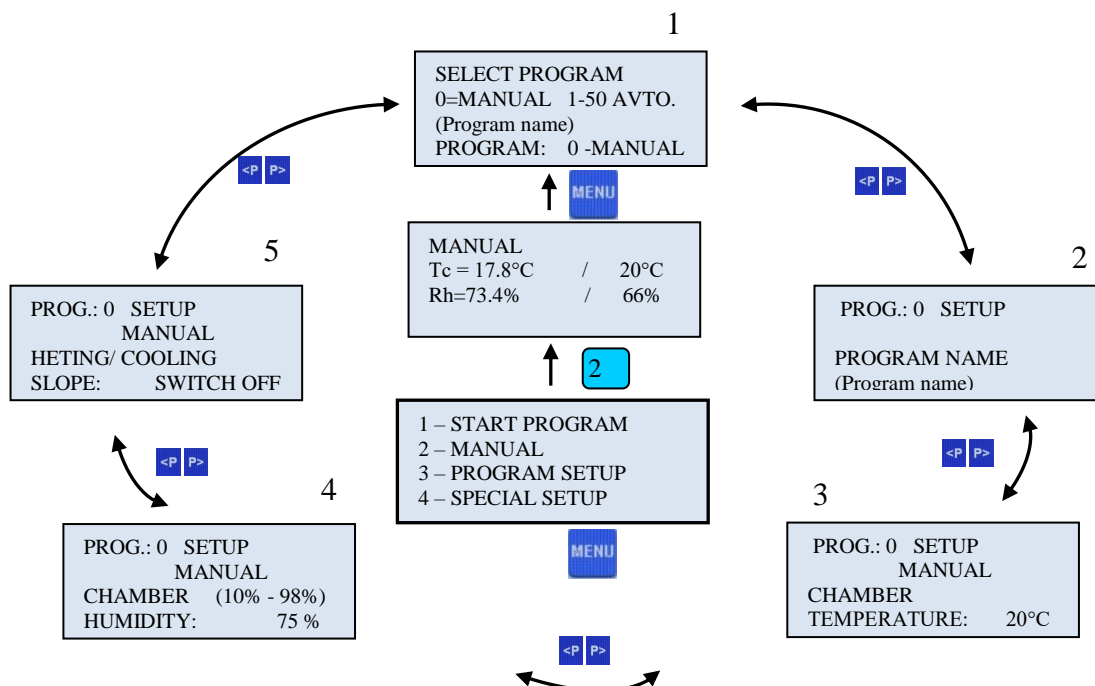
Press **2**

### ATTENTION:

If you press 2 – MANUAL manual program starts immediately! Parameters for manual program can be set while in operation!

To move between parameters press **<P P>**, to set value press **- +**.

### 6.1 Parameter settings – Manual Program



### 1. Select program

- Select desired program to set settings. Program 0 is reserved for manual program

### 2. Program name

- Enter program name (the selected program can be named)

### 3. Chamber temperature

- Set desired chamber temperature (temperature range is limited by producer)

### 4. Relative humidity

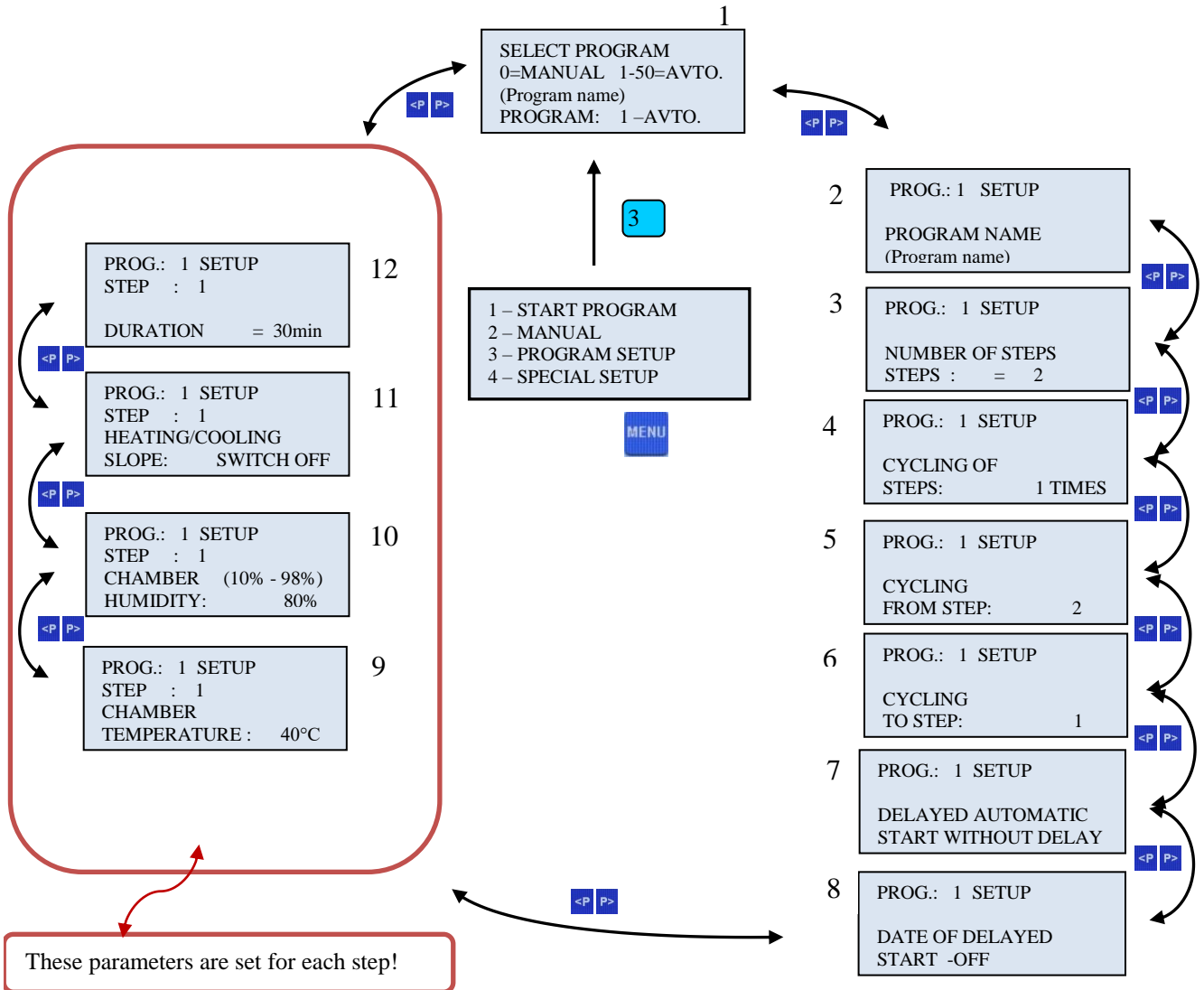
- Set desired relative humidity in a chamber. On display you can see an available humidity range in a round bracket. (valid for water dew point system)

```
PROG.: 0 SETUP
        MANUAL
CHAMBER (10% - 98%)
HUMIDITY:      75 %
```

### 5. Cooling / Heating speed



- You can set how fast the temperature in the chamber changes (°C/min)

## 6.2 Parameter settings – Automatic Program



### 1. Choose desired program to set settings:

- choose program from 1-10



To change program number press  .

### 2. Program name

- Enter program name (the selected program can be named)

### 3. Number of steps:

- Choose the required number of temperature, humidity and time steps.  
 Maximum number of different steps is 10.

To change value press  .

#### 4. Cycling of steps

- Choose how many times should the selected program sequences to be repeated.

#### 5. Cycle from step

#### 6. Cycle to step

- With these two settings you select the program sequence that will be repeated.

For example: you have "number of steps" set to 4, and you would like to repeat/cycle all steps from 1 to 4. In this case you have to set the "cycle from step" to 4, and "cycle to step" to 1. This way when the program is finished with step no. 4 it returns to step no. 1 and repeats the process. The process will be repeated for so many times as you have set in the "cycling of step" setting.

ATTENTION:  
"Cycling from step" number must always be bigger than "Cycling to step" number!

#### 7. Delayed automatic start

- Controller has option to set automatic start at certain hour and date.



ATTENTION:  
The hour of the delayed start should always be set in combination with date of delayed start!

#### 8. Date of delayed start

- Here you can set the date of the delayed start. Delayed start should always be set in combination with time of delayed start.





ATTENTION:  
The date of the delayed start should always be set in combination with time of delayed start!

ATTENTION:  
If you would like to start the cycle right after pressing the start button the time of auto start should be set to »START NOW« and date of auto start to »START OFF« !



## 9. Chamber temperature setting

- Set desired air chamber temperature for the first step.

To change value press  .



## 10. Relative humidity setting.

- Set the desired relative humidity.

To change value press  .

## 11. Cooling / Heating speed

- You can set how fast the temperature in the chamber changes (°C/min)

To change value press  .

## 12. Duration time

- Set desired duration time in time range from 1 min to 1440 min.
- Duration time can also be set endless (under 1 min or above 1440 min)

### ATTENTION:

The countdown will start when only when temperature and humidity are within allowed limits from set values!

If you selected more than 1 step, then parameters for other steps must be set the same way as for the first step.

When you finish with settings return to main menu by pressing .

## 7.0 SPECIAL SETUP

### 7.1 Special Settings – Time and Date

Press  to enter main menu

Display:

```
1 – START PROGRAM
2 – MANUAL
3 – PROGRAM SETUP
4 – SPECIAL SETUP
```

Press number  to enter special setup menu

Display

```
1 – TIME SETUP
2 – CORRECTION SETUP
4 – PROGRAM COPY
```

Press number  to enter sub menu time setup


Display

```
SETUP
TIME AND DATE
TIME   :    06: 58 : 12
DATE   :    16-09 - 12
```

To change value under blinking line press  , to move blinking line press  .

To save and exit setting press .

## 7.2 Corrections setup

To enter this menu press  button.


Display:

1 – START PROGRAM  
2 – MANUAL  
3 – PROGRAM SETUP  
4 – SPECIAL SETUP

Press  to enter special setup menu

Display:

1 – TIME SETUP  
2 – CORRECTION SETUP  
3 – USERS PASSWORDS  
4 – PROGRAM COPY

Press  to enter correction setup menu

**To enter correction setup during program in operation hold  for app. 10s.!**

If password protection is active you must enter password:

**General password: 0207**

ENTER PASSWORD AND  
FINISH WITH ENTER  
  
PASSWORD:            0\*\*\*\*

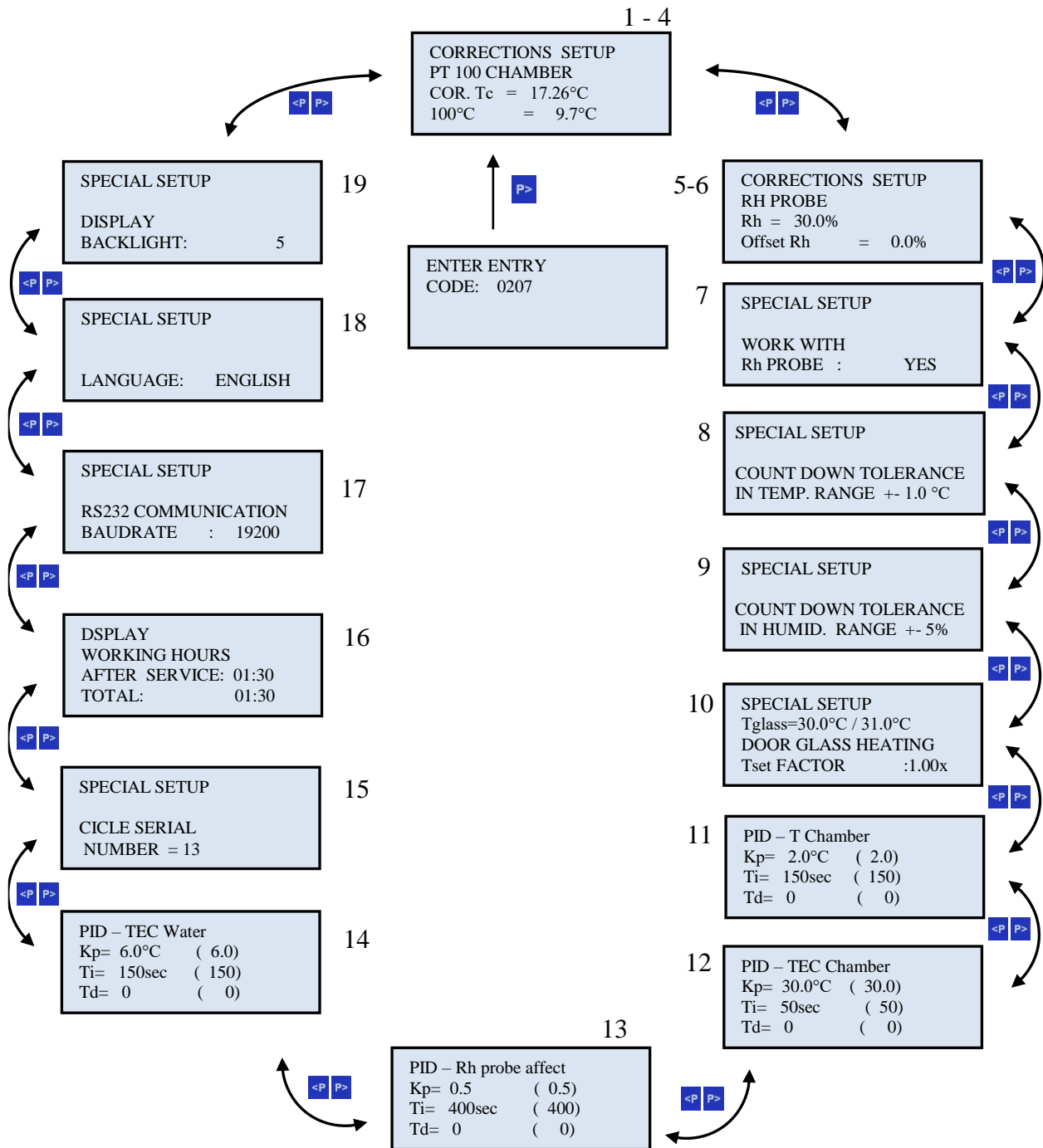
Enter password (use numeric keyboard) and finish with enter.

### **ATTENTION:**

Special settings should only be changed by the authorized personal on the basis of relevant measurements or other proofs!

Corrections are allowed to be changed only on credible measures basis, by personnel with suitably equipment and knowledge to perform calibration.



### 7.3 Corrections setup scheme







#### 1-4: Temperature probe correction

- For temperature probe 4 corrections points are defined.

For each correction point correction can be set. To change value use  .


#### 5-6: Rh probe corrections

- Correct Rh Offset and Factor.

To change values use  .

#### 7: Relative humidity control

- You can choose the principle of maintaining relative humidity.

You have two options: with Rh probe or without the probe. To change value use  .

The relative humidity (Rh) control works on a principal of dew-point. That means that the Rh is maintained on the basis of the temperature difference between air temperature and the water temperature. When the Rh probe is turned on, the probe constantly measures the air Rh in the chamber and adjusts the water temperature accordingly. That way we get a very precise and stable Rh control in the chamber. When the Rh probe is turned off, then the relative humidity in the chamber is basically controlled by theoretical values of the temperature difference between water and air temperature.

#### 8: Time count-down tolerance (temperature)

- You can set the time of each temperature step. The countdown will start when temperature is in set limits.

*For example:*

*Set temperature: 50°C*

*Set time: 60 min*

*Set START TIME COUNT IN RANGE : +- 1°C*

*The countdown will start when the temperature will be between 49.0°C and 51.0°C !*

#### 9: Time count-down tolerance (humidity)

- You can set the time of each temperature step. The countdown will start when humidity is in the set limits.

*For example:*

*Set humidity: 50%*

*Set time: 60 min*

*Set COUNT DOWN TOLERANCE IN HUMIDITY RANGE: +-5%*

*The countdown will start when humidity will be between 45% and 55% !*

#### ATTENTION:

Time count-down begins when both parameters (temperature and humidity) are in their limits!

## 10: Door heating power factor

- To avoid water condensation on the doors a weak heater is installed on inner side of doors and the chamber edge. In case of inconvenient condensation at some temperatures you may higher/lower this value.

### Factory default values

Tset Factor	<b>1.00x</b>
-------------	--------------

## 11: Chamber temperature PID settings

### Factory default values

Kp-Gain	<b>2.0</b>
Ti-Integral time [s]	<b>150.0 sec</b>
Td-Rate time	<b>0.0</b>

## 12: Thermoelectric cooler – chamber PID settings

### Factory default values

Kp-Gain	<b>30.0</b>
Ti-Integral time [s]	<b>50.0 sec</b>
Td-Rate time	<b>0.0</b>

## 13: PID-Rh probe affect

### Factory default values

Kp-Gain	<b>0.5</b>
Ti-Integral time [s]	<b>400.0 sec</b>
Td-Rate time	<b>0.0</b>

## 14: PID-TEC Water

### Factory default values

Kp-Gain	<b>20.0</b>
Ti-Integral time [s]	<b>150.0 sec</b>
Td-Rate time	<b>0.0</b>


## 15, 16: Information valid only for service personal!

## 17: Communication port setup

## 18: Selection of menu language

## 19: Display contrast setup

## 7.4 Special Setup – Program copy

To enter this menu press  button.

Display:

```
1 - START PROGRAM
2 - MANUAL
3 - PROGRAM SETUP
4 - SPECIAL SETUP
```

Press  to enter special setup menu

Display:

```
1 - TIME SETUP
2 - CORRECTION SETUP

4 - PROGRAM COPY
```

Press  to enter program copy setup menu

Display:

```
PROGRAM COPY      :
DATA FROM PROG.  : 1
COPY TO PROGRAM  : 2
CONFIRM COPY=F1  3sec
```

DATA FROM PROG. : 1            Data from selected program (number 1) will be copied  
COPY TO PROGRAM : 2            to selected program (number 2).

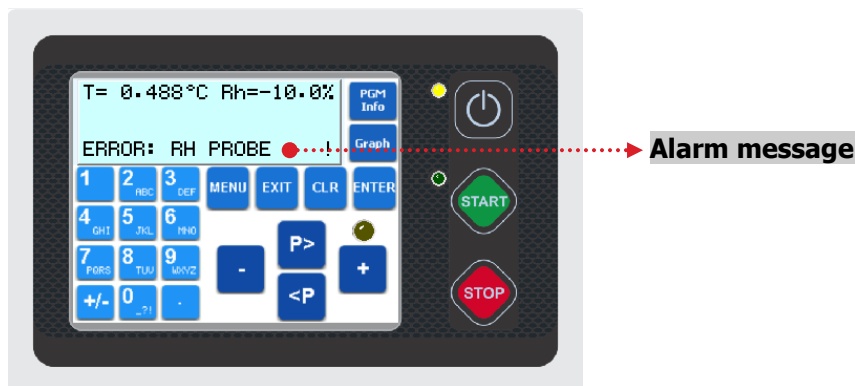
To move between parameters press  , to set value press   .

To confirm copy press  button for 3 seconds.

## 8.0 TROUBLESHOOTING

### 8.1 Alarm screen

In the case of an alarm the alarm message will appear.



### 8.2 Over temperature shut-off

Microprocessor controller has a special safety system which turns heaters off if temperature rises for more than 5 °C above set temperature.

In case of an error on this system, a mechanical over temperature shut-off device will disable heating.

If this happens the cause of overheating must be found and the over temperature shut-off device must be manually reset.

The over temperature shut-off device is located behind the rear plate of the lower housing and is manually reset by pressing the spring next to the thermostat setting shaft (See picture).



Over temperature shut-off device (chamber heating)

## 8.3 Problem diagnostics

### Alarm door opened

- ➔ check the end switch
- ➔ check the locking mechanism

### Water drip from chamber

- ➔ check the chamber seal

### Low temperature stability & uniformity

- ➔ check the door seal
- ➔ check the operation of the chamber fan
- ➔ check the cooling ribs inside & outside
- ➔ check the temperature sensor

### Increased noise

- ➔ check the Peltier block fans (outside and inside)

### Damaged seal

- ➔ replace it with the original

### Damaged access port

- ➔ replace with new access port

### Controller malfunction

- ➔ call service

## 9.0 SERVICE AND MAINTENANCE



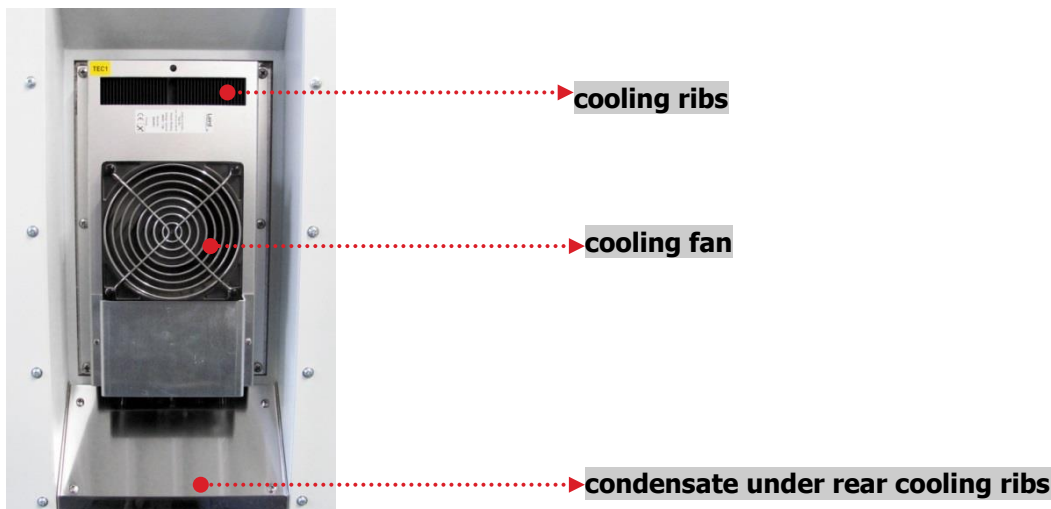
### **WARNING**

In case of maintenance interventions, disconnect all electrical power to the unit!

Maintenance and service within the warranty period may only be performed by the authorized service person. Please advise Kambic in before alternation & modification.

All spare parts are in stock in the producer's magazine. It is only allowed to use the original spare parts. Keep the inside and outside surfaces of the chamber clean. For cleaning use some soft cleaning detergents and soft cloth.

Clean the rear cooling fan and cooling ribs.  
Check and remove condensate under rear cooling ribs.



### Maintenance plan

OPERATION	FREQUENCY
Clean the rear cooling fan and cooling ribs	<b>monthly</b>
Check and remove condensate from internal chamber	<b>weekly</b>
Check and remove condensate under rear cooling ribs	<b>weekly</b>
General cleaning of the apparatus housing	<b>weekly</b>

**In the event of failure, call the service!**

Please find contacts on page 2 or on our web site: [www.kambicmetrology.com](http://www.kambicmetrology.com)

## 10.0 REQUIRED SPACE AND CONNECTIONS

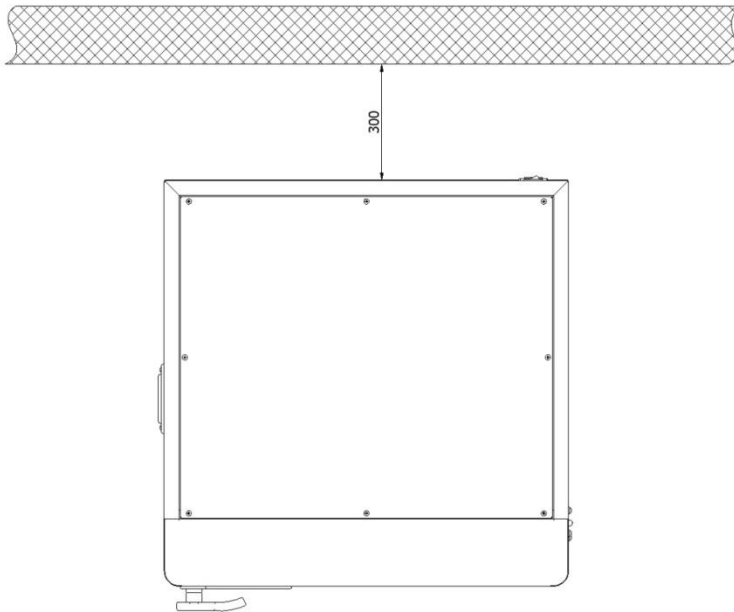
The appliance must be positioned at least 300 mm away from a wall to allow the cooling of Peltier cooling system via its rear fan.

Additional space or relocation of the apparatus may be necessary when carrying out any maintenance or servicing.

The user must provide electrical connection: 500W / 230V $\pm$ 10% / 50Hz, 60Hz.

### Environmental and operational conditions

Temperature	<b>+20°C <math>\pm</math> 5°C</b>
Relative humidity	<b>from 15 % to 75 %</b>



## 11.0 DISMANTLING AND DISPOSAL



This symbol means do not dispose of your product with your other household waste. Instead, you should protect human health and the environment by handing over your waste equipment to a designated collection point for the recycling of waste electrical and electronic equipment. For more information please contact your household waste disposal service.



## 12. ATTACHMENTS

### **12.1 CE declaration of conformity**

### **12.2 Electro drawings**