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## User Manual

# CO2 Euthanasia Electronic station

Ref. TEG

Date	Document	REV	Page
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## General Information

### Labelling:



**Read carefully documentation before use**



**Electrical hazard : always disconnect power supply before opening parts where this mark is applied.**



**Xi - Irritant**

**Chemical hazard : always take appropriated precautions before opening parts where this mark is applied.**



**Suffocation hazard : always pay attention to the right ventilation of room and safety procedures when this mark is applied.**

### **Disposal of waste :**

All consumable must follow hospital waste treatment procedure (soda lime).

### **Consumable References :**

Référence:	Désignation:
2175	soda lime

## **1 General Use :**

This station is dedicated to labs staff to perform CO2 euthanasia for rodents during authorized experimentation programs.

It has been designed to work only in labs and be used by trained people complying with ethical consideration and regulations.

**ATTENTION : all use except veterinarian purpose is strictly forbidden.**

## **2 Operation Principle :**

This station is able to drive a CO2 process induction with following steps:

- 1) Rodent induction
- 2) Rodent euthanasia by CO2 saturation
- 3) Purge

Many protocols are memorized. More protocols can be added by the authorized user if necessary.

## **3 Regulations compliance of the device :**

EN 61010 for electric safety of labs device;  
EN 61326-1 : class B for emission of EMC;  
EN 61558-2 for TBTS power supply;  
RoHS for electronic parts;  
Stainless steel classification and regulation of use;  
NF C15-100 electrical conformity;  
European Directive 98/24/CE (protection of people against chemical risks);  
ISO 14644-1 for clean and controlled environments;

## 4 Connection and settings

### Front side



General switch ON/OFF

Touch screen

Electronic lock

Soda lime rack

### Rear Side



CO2 input

### Precautions before use:

- Check the device is connected to 220V power supply with ground connection.
- Check the CO2 input is connected to a network or a CO2 bottle.
- Check this gas is delivered at 3 bars service pressure.
- Check no tube is damaged or pinched.
- Check that soda lime rack is full following chapter 8 recommendations.

**ATTENTION :** never change the internal pressure limitation device, this will occur device damages.

**ATTENTION :** this station must be used only in euthanasia room equipped with CO2 detection system.

Max Altitude of use : 2000m

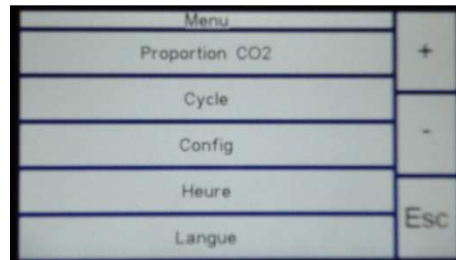
Max humidity of use : 80%

This device must be used only inhouse and must be protected against flood and liquids.

It must be connected on power supply protected by Ground Fault Circuit Interrupter (GFCI) 16A - 30mA

## 5 Touch screen and symboles :

This station is equipped with a touch screen interface. Tuning, settings and operations are represented by buttons. They can be activated by single finger touch or non-sharp stylet.



## 6 Operations :

### 6.1 Getting started

General switch ON is starting the device.

In case of emergency, the same general switch will immediately stop the power supply.

**ATTENTION :** never switch OFF the device during an euthanasia session or purge session!

When switching on, the following screen appears :



It provides the software embedded version.

## 6.2 Program Selection and tuning

When station is ready to work, you have the following screen :



In this menu, you can choose one of the memorized protocols, or you can define your own protocol.

When you select one protocol, you have the following menu :



This screen shows the last settled parameters

- 1) CO2 proportion during induction step
- 2) Time and flow for each step of the protocol

Please check if the settings are fitting and then you can release the session. Otherwise, please follow the next chapter.

## 6.3 Protocol definition or change

In the previous screen, press on Config button.

Step 1: select box volume

This step is not necessary for the TEG station.

Step 2 : setting of the parameters

By pressing on Animal button, you can access the configuration menu for each step of the protocol. You can change the time and flow for each step of the protocol



Choose the protocol you want to change :



Each protocol is composed of 5 steps :

- 1) induction step
- 2) Hold-on step Air/CO2
- 3) Euthanasia step
- 4) Hold-on step CO2
- 5) Purge step

By pressing one of the step, you will access to the configuration parameters menu. Then you can tune time parameter and flow parameter :



To memorize your tuning, press on Valide button.  
To cancel, press on Esc button.



When all the steps are programmed, then press on Return button. You reach the initial menu.

#### 6.4 Configuration of the device

Menu	
Pression	+
Cycle	
Config	-
Proportion CO2	
Animal	Esc
Blocage	
Nom	

In this menu, you can set the Air/CO2 proportion during induction step, time and date of the device, name of the device, and the pressure alert level.

by pressing the appropriate button, you can reach each following menu :

##### CO2 proportion setting

Menu	
Reglage Proportion CO2	+
50 %	-
Valide	ESC

##### Date/heure setting

Heure/Date		
Jour 10	+	-
Mois 3	+	-
Annee 2011	+	-
Valide	ESC	

##### Name of the device setting

-										
1	2	3	4	5	6	7	8	9	0	
A	Z	E	R	T	Y	U	I	O	P	
Q	S	D	F	G	H	J	K	L	M	
a	w	x	c	v	b	n	/	-		
Esc	Eff							Valide		

##### Pressure alert level

Menu	
Reglage Pression	+
20 cmH2O	-
Valide	ESC

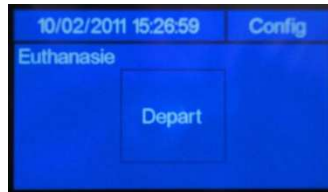
#### 6.5 Euthanasia session release



From the main menu, you can release the euthanasia session, by pressing the Valid button.



Then you reach the release screen.



Before pressing on Depart button, please check all connections are ready.

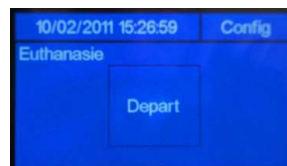
## 6.6 Euthanasia session operations

### STEP-BY-STEP PROCEDURE

- 1 Introduce the animals into the induction chamber. They must be placed into their living box after Removing the top of the living box.
- 2 Close the cover and lock it.

**ATTENTION : the cover is very heavy to tight the chamber. DON'T DROP IT when closing.**

- 3 Press the Depart button to launch the session. If the Depart button stay red light, that means the Lock is not closed.



- 4 Then you will access to the operations menu :



This menu shows the step in progress, the remaining time for this step, the real-time flow and internal pressure.

**DO NOT TRY TO OPEN THE CHAMBER DURING THIS STEP.**

In case of emergency, please use the STOP button, then you reach the following menu :



If you press on Valid button, you will immediately move to the purge step.

At the end of induction step, you will move (if programmed) to Hold-on AIR/CO2 step:



**DO NOT TRY TO OPEN THE CHAMBER DURING THIS STEP.**

In case of emergency, please use the STOP button following the same process that previously.

At the end of this step, you will move to Euthanasia step.

**DO NOT TRY TO OPEN THE CHAMBER DURING THIS STEP.**

In case of emergency, please use the STOP button following the same process that previously.

At the end of euthanasia step, you will move (if programmed) to Hold-on CO2 step:

**DO NOT TRY TO OPEN THE CHAMBER DURING THIS STEP.**

In case of emergency, please use the STOP button following the same process that previously.

At the end of this end, you will move to purge step.



- 5 Please wait the end of the step before trying to open the chamber.

Fixed stops

**ATTENTION : the cover is very heavy to tight the chamber. An hydraulic cylinder is presnet to assist you during the opening.  
DON'T DROP THE COVER DURING OPENING  
AND PAY ATTENTION NOT TO DROP AGAINST THE FIXED STOP.**



- 6 To start a new session :
- Remove the animals box,
  - Introduce a new box of animals,
  - Close the cover and lock it,
  - check the soda lime color following next chapter procedure,
  - then press on start button.
- 7 If you don't have other animals :
- Switch OFF the device.
  - clean the induction chamber,
  - check soda lime following next chapter procedure.
- 8 Replace used soda lime :

Unlock the rack and open it smoothly. Under the rack, you have a water collector. Please check it carefully and clean it if necessary.



## 7 Cleaning and disinfection :

In order to preserve your equipment, it is necessary to clean and disinfect it regularly.

Clean and disinfect the stainless chamber as often as needed and at least every day. Avoid alcohol on plastic parts.

## **8 RECOMMENDATIONS FOR CO2 SODA LIME USE**

(Soda lime type Medisorb® or other)

### **Indications**

Carbon dioxide absorber for CO<sub>2</sub> .

### **Precautions and attention**

The CO<sub>2</sub> soda lime absorbant is only used with Air, oxygen, heliox, Nitrogen protoxyde, and halogen agents.

Don't use when using chloroform or trichloroethylene.

Don't have any contact (skin or eyes) with the product or its packing.

In case of contact with skin or eyes, immediatly rinse with clear water and contact a doctor.

The use of this soda lime must be supervised by authorized person.

The dust of soda lime is caustic and can burn the respiratory organs in case of inhalation.

Use gloves and protection glasses during filling and emptying of soda lime.

Don't use the end of the soda lime packing because much more dust at the bottom of the bottle.

### **Instructions of use**

Please read it carefully before use.

#### Soda lime replacement frequency

CO<sub>2</sub> absorption by soda lime occurs a progressive color change of the raw material.

Depending of brand of products, soda lime generally move from white to purple, or from pink to white.

#### Note

Used soda lime should be immediatly removed. Otherwise, after several hours, it will take back its original color and give an wrong information about its status.

### **Destruction**

Do not incinerate soda lime because it contains inflammable raw materials like cyclopropane, ethylene or ether.

Even if used soda lime can keep some alkaline characteristics, it can be treated as every organic waste.

### **Storage**

It must be stored in its intact packing in clean and dry environment, at a temperature of 0/+32°C. Avoid direct sunshine.

Protect it from choc and water.

Stored as described, it can keep generally during two years.

Expiration date is mentioned on the packing.

### **Technical data**

#### Active componants

Hydroxyde de calcium

Hydroxyde de sodium

Water

#### Soda lime

size of granula: 2,5-5,0 mm

humidity: 12 -19%

pH (during use): 10

pH (before use): 12 à 14

## 9 Technical Specifications:

SIZE WEIGHT	140 mm x 360 mm x 250 mm 3 kg
FLOWMETERS	2 electronic flowmeters Air and CO2 from 20 to 200 L/min. Servicing pressure from 3 to 4 bars, recommended 3.5 bars, power supply 24 VDC
EUTHANASIA GAS	CO2
PRESSURE SENSOR	From 0 to 30 cm H2O
GENERAL POWER SUPPLY POWER (CONSUMPTION)	230V 50Hz max under 24V : 50W
USE TEMPERATURE	From 20° to 24°C optimal 22°C

## 10 Servicing and Repair :

The device should be checked every year by qualified people. Servicing report must be kept during several years.

Each year :

- change all the tubes, control and change if necessary the air-tight join.

Malfunction	CAUSE	Resolution
Nothing happen when switching ON	no power supply  GFCI is down  electronic board is defective	check power supply  check GFCI  Call supplier

When switching ON, green light is OK but nothing appears on screen or defective light on the screen	electronic board is defective	call supplier
Touchscreen is not answering	touchscreen is decalibrated  Touchscreen is defective	Touch screen calibration : Switch off the device, then switch on. When logo appears, press on the screen. Etalonnage 1/5 appears: press several times until the word Haut/gauche appears. Then press on the top/left part of the screen. Then Top/right then bottom/left and bottom/right.  Call supplier
Pressure alert turns red during session	Soda lime is too wet  sensor is defective	change soda lime  Call supplier
Flow alert turns Red during session	the flow of gas is not available	Check gas inlet is open, bottle is not empty.
Animaux still sleeping or awaking at the end of session	Time and/or flow parameters are not good	Increase the flow if possible with your network, or increase time of session.

## 11 Terms of Warranty :

### **Warranty field**

This manufacturer warranty covers only TEG device from TEM SEGA. It doesn't include all parts used as interface or connection if not provided by TEM SEGA.

This warranty doesn't apply if the damages result from bad use, accident, negligence, from any modification, servicing or repair not made by TEM SEGA technicians.

### **Warranty covering**

TEM SEGA warranties that this device is complying to its specifications and that every issue due to manufacturing, conception or defective parts will be repaired or replaced at manufacturer choice by himself, free of charge for the client, for a two years period after the delivery date.

This warranty will stop immediately after this period without any advertisement for the manufacturer.

This warranty is back to manufacturing, that means the shipping cost back to manufacturer are under client responsibility.

The manufacturer will take in charge the re-shipping to client after repair.

### **ALWAYS READ THIS USER MANUAL WITH ATTENTION BEFORE USE.**

This could prevent from wrong manipulation that could cause damage to the device. These damages will not be covered by the manufacturer warrant.