



## TEQSAS LAP-TEQ INTERFACE Instruction Manual

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# 1 Before you begin

## 1.1 Intended use

The LAP-TEQ interface is a web interface for all LAP-TEQ sensors. It is available as a "stand-alone" version with three sensor inputs and as a plug-in board for the **LAP-TEQ motion receiver** .

The interface provides the data from the LAP-TEQ sensors via a protocol based on TCP/IP. The sensor data can be read out in a normal web browser. In addition, the data is also made available in JSON format for "third-party" products.

## 1.2 What do the symbols used mean?


Hazard statements and instructions are clearly marked in the instructions for use. The following symbols are used:

<b>⚠ Danger!</b>	
	<b>Immediate danger to life or injury!</b> Immediately dangerous situation that will result in death or serious injury

<b>⚠ Warning!</b>	
	<b>Probable danger to life or injury!</b> Generally dangerous situation that may result in death or serious injury.

<b>⚠ Caution!</b>	
	<b>Possible risk of injury!</b> Dangerous situation that can result in injuries.

<b>Attention!</b>	
	<b>Risk of equipment damage!</b> situation that may result in property damage.

<b>Hint</b>	
	Information that is given for a better understanding of the processes.

## 2 For your safety

<b>⚠ Warning!</b>	
	<p><b>Failure to comply with the safety instructions and instructions can cause electric shock, fire and/or serious injury!</b></p> <ul style="list-style-type: none"> <li>• Read all safety instructions and instructions.</li> </ul>

### 2.1 General safety instructions

- Keep all safety instructions and instructions for the future. The term device used in the safety instructions refers to mains-powered devices (with a power cord) and battery-powered devices (without a power cord).
- Danger to life and accidents for small children and children! Never leave children unattended with packaging material and product. There is a risk of suffocation due to packaging material and a risk of death due to strangulation. Children often underestimate the dangers. Always keep children away from the product. The product is not a toy.
- In order to use this device safely, the user of the device must have read and understood these instructions for use before using it for the first time.
- If you sell or pass on the device, be sure to hand over this instruction manual as well.
- This device is not intended for use by persons (including children) with reduced physical, sensory or mental abilities or lack of experience and/or knowledge, unless they are supervised by a person responsible for their safety or receive instructions from them on how to use the device.
- The device may only be used if it is in perfect order and fully assembled. If the device or part of it is defective, it must be taken out of operation and professionally repaired or disposed of.
- Use the device only for the purpose for which it is intended.
- Keep children away from the device! Keep the device safe from children and unauthorized persons.
- Use and store the device only within the permitted limits
- environmental conditions (temperatures, humidity, etc.).

### 2.2 Job security

- Keep your workspace clean and well-lit. Clutter or unlit work areas can lead to accidents. Observe the workplace and accident prevention regulations applicable in your country.
- Do not work with the electrical appliance in a potentially explosive environment where flammable liquids, gases or dusts are present. Power tools produce sparks that can ignite the dust or fumes.

### 2.3 Electrical safety

- In dry environments, static electricity can be generated. In dry rooms, touch a metallic object to discharge the static electricity before operating the device.

- Do not misuse the cables to carry the device, hang it up or unplug it from the socket. Keep cables away from heat, oil, sharp edges, or moving device parts. Damaged or tangled cables increase the risk of equipment damage.
- If you use the device outdoors, only use extension cords that are also suitable for outdoor use. Using an outdoor extension cord reduces the risk of equipment damage.

## 2.4 Safety of people

- Be attentive, pay attention to what you are doing, and go to work with reason. Do not use the device if you are tired or under the influence of drugs, alcohol or medication. A moment of carelessness during use can lead to serious injury (e.g. electric shock).

## 2.5 Service

- Have your device repaired only by qualified professionals and only with original spare parts. This ensures that the safety of the power tool is maintained.
- When working with the device, make sure that there is sufficient lighting. Poor visibility can lead to an increased risk of accidents.
- Do not use accessories that have not been specifically designed and recommended by the manufacturer for this device. Just because you can connect the accessories to your device does not guarantee trouble-free and safe use.
- The device may show signs of wear and tear over time. • The use of non-approved accessories may result in damage or wear and tear that is not covered by the warranty.
- Read and follow the instructions for use before use.

## 3 Product

### 3.1 Your device at a glance

The interface is a handy device that is powered by 230V. It is available as a standalone version with three sensor inputs and as a plug-in board for the **LAP-TEQ motion receiver**. The three sensor inputs are designed as LAP-TEQ interfaces and can be connected to all LAP-TEQ sensors, such as the **ELEVATION**, the **ATMOSPHERE** or the **INCLINOMETER**, among others.

The measured values fed in this way are forwarded to a TCP/IP interface (RJ45) and can thus be read via a web interface on your end device.

In addition, in order to read out an even larger number of sensors at once via your WEB interface, several web displays can also be integrated into a network at the same time.

You can also find more information on this under the following link:

<https://www.youtube.com/watch?v=xWBK6l7K8Mc>

### 3.2 Requirements

The functionality of the interface was checked in conjunction with all common web browsers:

- **Windows:** Firefox, Chrome, Edge, Opera
- **Mac:** macOS >= Sierra, Safari >=v10.1
- **iPhone/iPad:** iOS >= v10
- **Android:** Chrome

» **IMPORTANT:** JavaScript must be enabled and enabled!



## 4 Commissioning

### 4.1 Power supply

The interface has a built-in power supply (100 - 240VAC - 15W 50Hz/60Hz) which is powered by the included power cable.

1. To do this, connect the interface to the blue Neutrik PowerCON connector.
2. Then connect the safety plug to the mains.

### 4.2 Service

#### 4.2.1 Connecting the sensors to the interface

The interface has three sensor inputs with a 3-pin XLR connector. These inputs are compatible with all common LAP-TEQ sensors:

- **LAP-TEQ PLUS INCLINOMETER** (green laser)
  - **LAP-TEQ PLUS ATMOSPHERE** Temperature & Humidity Sensor
  - **LAP-TEQ PLUS ELEVATION** Height Sensor
  - The old "legacy" LAP-TEQ Inclinator Sensor
- » The ATMOSPHERE also has the possibility to be connected to the interface without cables.

**LAP-TEQ ATMOSPHERE** and **ELEVATION** can be sanded through. This allows two sensors to be connected to one input.

## 4.2.2 Network Setup

The basic network settings of the **LAP-TEQ PLUS interface** are:

**IP address:** 192.168.1.222  
**Subnet:** 255.255.255.0  
**Gateway Address:** 192.168.1.1

- The interface does not support Dynamic Host Configuration Protocol (DHCP).
- Each interface must be assigned its **own fixed** IP address.
- The network adapter of your device must be in the same address range of the interface.
- To access the web interface, open a browser and enter the IP address of the interface in the URL bar.
- If the interface is to be integrated into a network in a different address range, the IP address can be changed via the *SETUP* menu. To do this, click on the gear icon in the top right. Change the network settings and confirm with *Apply+Reboot*.
- To reset to the basic network settings, the hidden RESET button on the front of the device must be pressed for at least five seconds.
  
- Multiple interfaces can be displayed in one browser window. Once you have assigned an individual IP address to each interface, you will need to connect to one of these interfaces by entering the IP address in the browser. This interface will always be the top of the list. To find the other interfaces, click on *SETUP* and then *FIND FRIENDS*. All found interfaces will be displayed after a few seconds.

### 4.2.3 Start sensors

- To start a sensor, click on one of the large sensor buttons on the home page of the web interface.
  - » If you have connected an **ATMOSPHERE** to the daisy chain, you can activate it by double-clicking
- To start all sensors, press *START ALL* (rocket symbol).
  - » To start all connected **ATMOSPHERE**, click on *START ATMOSPHERE* (weather icon)
- To stop a sensor, click the sensor button a second time.
- To stop all sensors, click on *STOP ALL* (STOP symbol)

Each color indicates measured values of a specific sensor:

Angle or height measurements:  
Blue Load Readings:

Green Atmospheric measured values:  
Yellow

The screenshot shows the LAP-TEQ WEB DISPLAY interface with four sensor panels. Each panel includes control icons (STOP ALL, START THIS, START ALL) and an IP address.

Panel	Sensor	Value	Color
CenterStage West	A: West1	+ 0.1°	Green
	B: West2	+ 0.6°	Green
	C: West3	+ 0.6°	Green
Center	A: Atmos	22.4°C, rH 35%, hPa, 345m/s	Blue
	B: TrimHgth	7.41m	Green
	C: Motors	1595kg, 470kg, 1030kg, ___kg	Yellow
CenterStage East	A: East1	+ 0.4°	Green
	B: East2	+ 0.8°	Green
	C: East3	+ 0.4°	Green
FOH	A: Atmos	20.4°C, rH 40%, hPa, 343m/s	Blue
	B: -	off	Grey
	C: -	off	Grey

Color coding of the sensors. LAP-TEQ INCLINOMETER in green, ATMOSPHERE in blue and LOAD in yellow.

#### 4.2.4 Software Updates

### Attention!

**Risk of equipment damage!**

Close all browser windows with a connection to the interface. The update process takes about 60 seconds. Do not disconnect the device from power or internet during this time.

To update the firmware of the interface, you need a stable internet connection. Connect the interface to a router and enter the appropriate IP address, subnet mask and gateway address to connect to the web interface.

- Click on *SETUP* (gear icon)
- Click on the *Update Firmware* button

After the process is finished, an update report will be displayed and the home page of the device can be loaded again.

- » If no changes are visible on the web interface, the cache of the browser must be cleared and the page must then be reloaded.


## 4.2.5 Reset of the interface

The device can be reset without access to the web interface. For this purpose, there is a recessed button on the front of the device, which must be pressed with a sharp object for more than 5 seconds.

The basic settings are restored during delivery. The following settings are affected:

- IP address: 192.168.1.222
- Subnet: 255.255.255.0
- Gateway: 192.168.1.1
- Sensor Names
- Notes

## 4.2.6 Cleaning and care


<b>⚠ Danger!</b>	
	<b>Danger to life due to electric shock!</b> Disconnect the device from the mains before doing any work.
<b>Attention!</b>	
	<b>Risk of equipment damage!</b> Do not immerse the device in water when cleaning, as water can damage the electrical system.
<b>Attention!</b>	
	<b>Possible product damage!</b> The surface can be damaged. No scratching or abrasive objects or aggressive cleaning agents must be used for cleaning.


- To clean the housing, use a soft, lint-free swab moistened with mild soapy water.
- Avoid chafing movements on the display pane and on the glass pane.
- Do not use chemicals, cleaners or solvents. This may cause discoloration and corrosion of the outside of the device, or may result in an electric shock or fire.

## 5 Atmosphere Analyzer

The Atmosphere Analyzer is the latest addition to the interface. This allows the transmission properties of the air to be mapped as a model. From the atmospheric measured values of the LAP-TEQ PLUS Atmosphere, a temporal change in the acoustic conditions can be displayed. The speed of sound and attenuation of the air (dissipation) depend directly on humidity and temperature. These can vary greatly from the time the system is set up to the show. In particular, the proportion of water vapour depends on temperature and pressure, which in turn changes the frequency-dependent absorption.

The Atmosphere Analyzer clearly interprets the atmospheric measured values of the LAP-TEQ PLUS Atmosphere and can provide the sound engineers with information as to whether and how the system may need to be adjusted.

<b>Hint</b>	
	The Atmosphere Analyzer is in an early beta phase at the time of release (16.04.2024). The scope of the software can be adjusted at any time and there is no claim to error-free functioning.

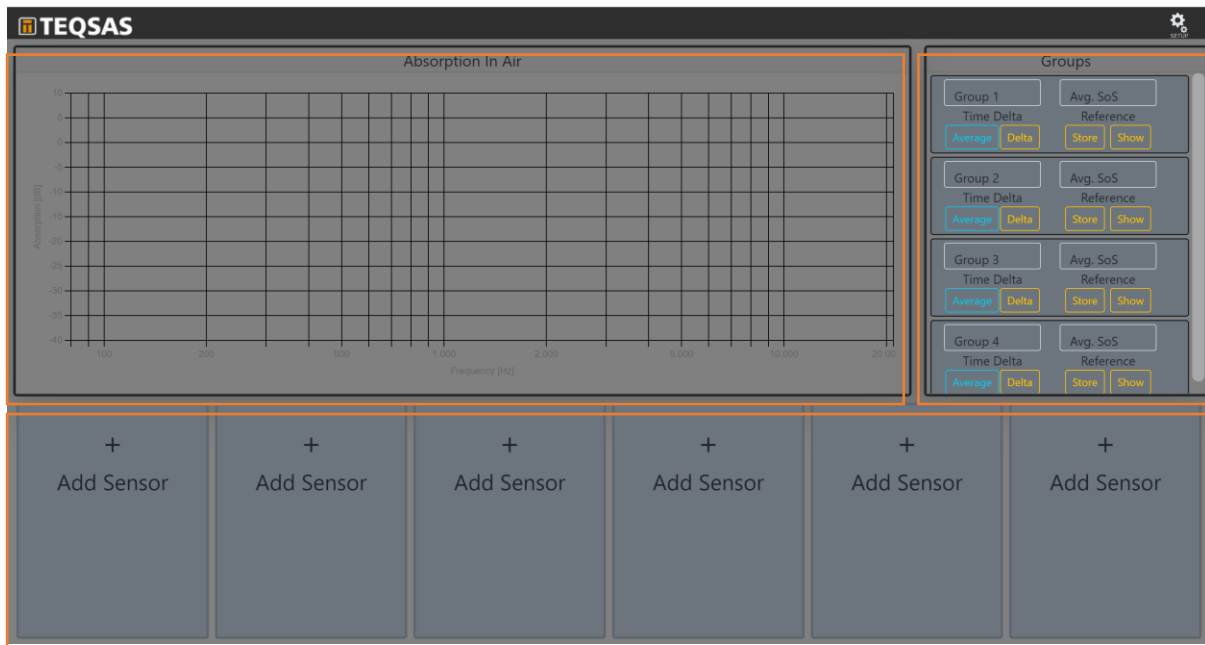
<b>Hint</b>	
	Detected errors can be sent to <a href="mailto:support@teqsas.de">support@teqsas.de</a> <b>with the subject Issue Atmosphere Analyzer Beta</b> . Please include a description of the bug as detailed as possible, the version number and other information.

The Atmosphere Analyzer is started via the icon on the Web UI interface. If the symbol is not visible, the software of the interface is not yet up to date. Please see chapter 4.2.4 Software Updates heed.



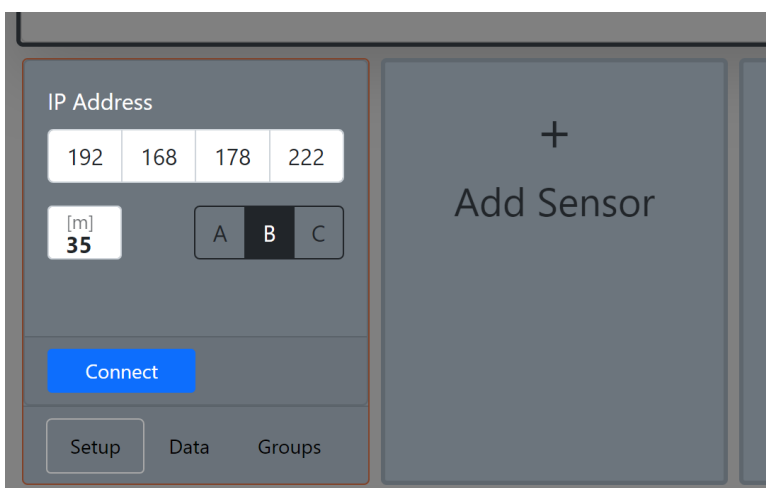
## 5.1 Overview

The surface is divided into three areas, at the bottom the ATMOSPHERE sensors can be added. In the area at the top left/center the attenuation of the air is displayed and to the right of it the groups are displayed.



## 5.2 Sensor

### 5.2.1 Connect Sensor



To add a sensor, click on one of the *Add Sensor* cards in the lower area. There you enter the network address of the INTERFACE and the port where the sensor is plugged in. Furthermore, the distance that is to be simulated in the model is entered here.

Then you establish the connection via the *Connect* button .

### 5.2.2 Sensor

#### functions

Once connected, the sensor's readings and the set distance are used to calculate the air absorption. If you move the mouse over the curve in the diagram, you can read the exact values.

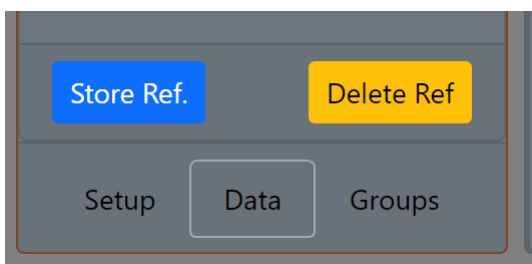
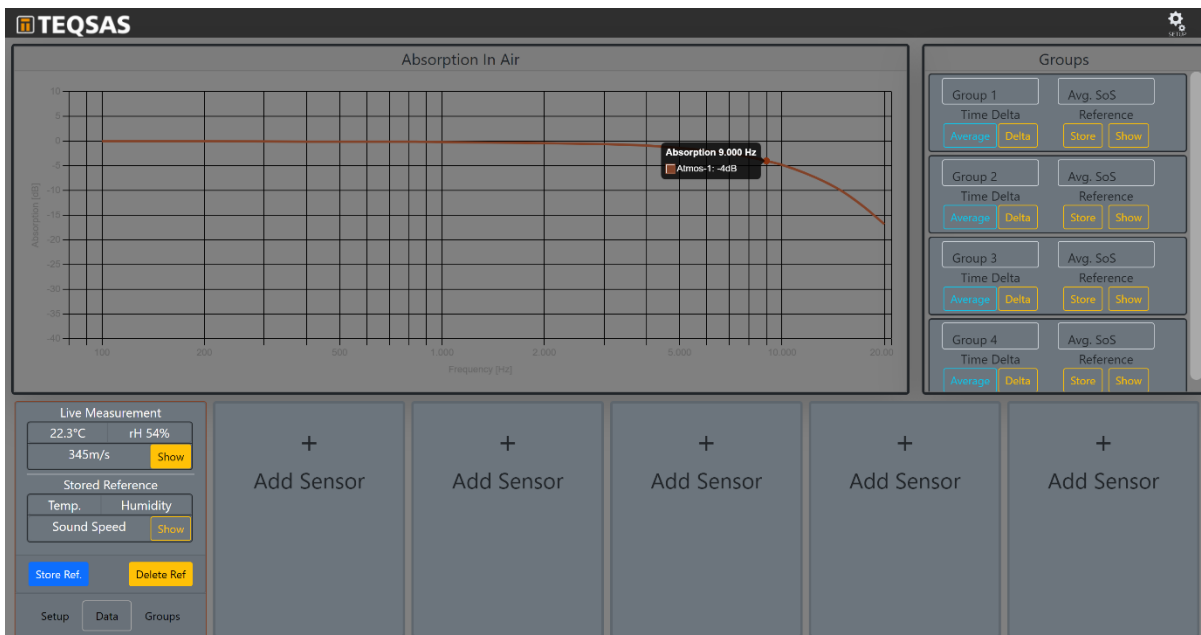


In the area of the sensor, the current measured values are displayed and it is possible to control whether the curve should be displayed or not via the Show button. Directly below is the reference area. This becomes active as soon as you click on the Store Ref. presses. The button saves the current measured values and the curve can now also be displayed in the diagram. Only when you press the Store Ref.button, the measured values are overwritten.

The stored reference measured values can also be viewed offline. The data is stored in the browser and is therefore only available via the same browser. The measurement should therefore be carried out with the same computer that will be used to monitor later.

- *Attention: the old measured values are overwritten immediately after pressing and there is currently no warning about this*
- *It makes sense to save the sensor immediately after connecting, as this also saves the connection data. This makes it easier to reload the page without having to reconnect all the sensors individually.*

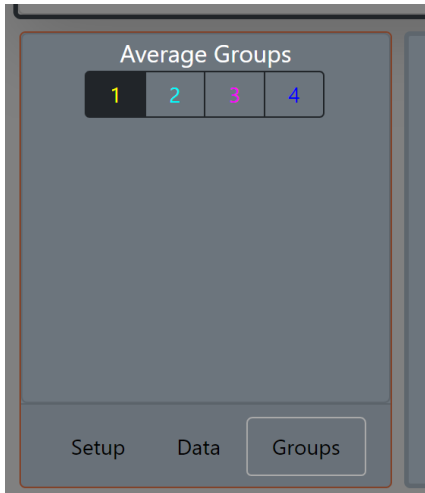
In the diagram, the curves of a sensor are displayed in the same color, with the reference measurement dashed and the live measurement solidified. Here, too, the display in the diagram can be switched on/off via the Show button.



The Setup, Data and Groups tabs can be used to change the view of the sensor. In the Setup tab, the basic settings of the sensor can be changed. The Data tab displays the measured values and the Groups tab can be used to assign the sensor to one of four groups.

## 5.3 Groups

Sensors can be grouped together, and a group can consist of just a single sensor or many sensors. In the *Groups* tab, the sensor can be assigned to groups.

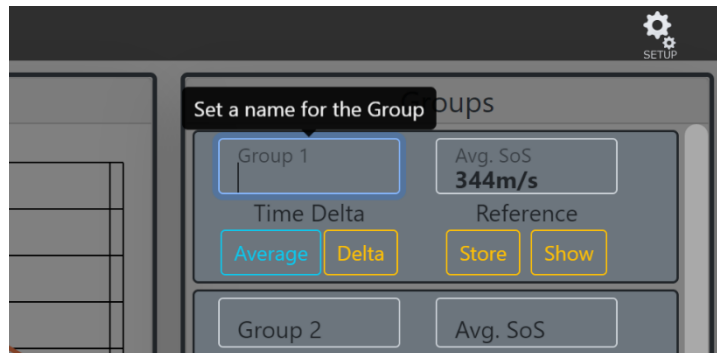


Once sensors have been added to a group, the group curve is displayed on the chart.

### 5.3.1 Group name and reference

In the group view area, the average speed of sound is displayed. Furthermore, the name of the group can be changed. To do this, simply click in the name field and change the name.

Just like a sensor, a reference of the group can also be created. This can also be viewed offline.



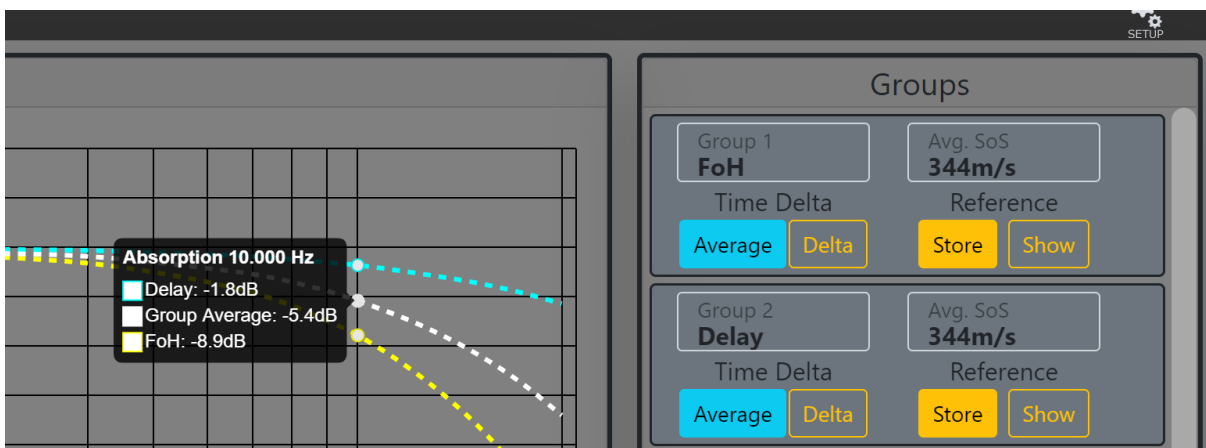
### 5.3.2 Time Delta



As soon as a reference of the group is saved and the added sensors are live, the *time* difference between the reference measurement and the current time can be displayed via the Delta button. This results from a change in air temperature and refers to the mean distance of the added sensors. This function is not

available if the distance of a sensor has changed since the reference was saved and the current time.

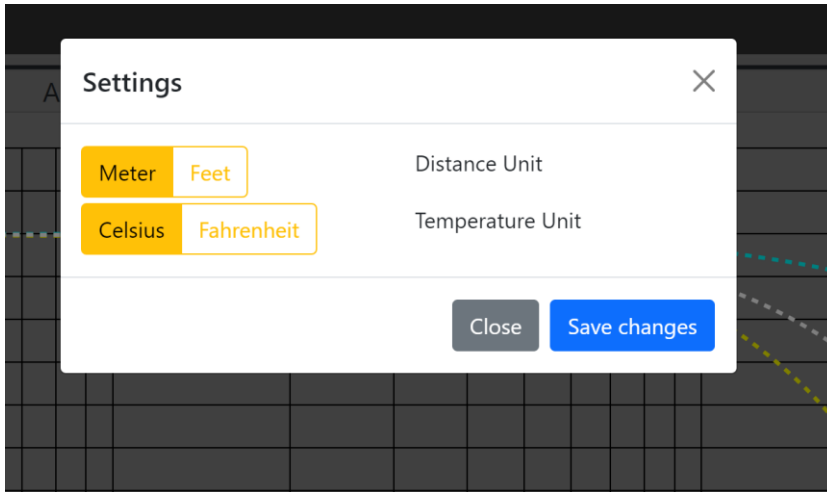
### 5.3.3 Group Alerting



If more than one group is created, the Average button can be used to display an average of the air absorption over the groups.

## 5.4 Settings

The *units* used can be adjusted via the Setup button at the top right.



## 6 Help/Service Center

### **⚠ Caution!**

**Possible risk of injury!**

Improper repairs can cause your device to stop working safely. You are endangering yourself and those around you.

Often it is only small mistakes that lead to a malfunction. Most of the time, you can easily fix them yourself. By resetting the device, see Reset of the interface (page 13), any malfunctioning functions can be fixed.

Please note that improper repairs will also void the warranty claim and you may incur additional costs.

### ***Your service center:***

*Teqsas GmbH Otto-Hahn-Str.*

*20a50354*

*Hürth Germany Phone:*

*+49(0)2233 611-500 Email:*

*service@teqsas.de*

## 7 Disposal

The packaging is made of eco-friendly materials that you can dispose of at the local recycling points.



Appliances marked with the symbol on the right must not be disposed of with household waste. You are obliged to dispose of such waste electrical and electronic equipment separately.



You can find out how to dispose of the old equipment from your municipal or city administration.

With separate disposal, you send the old equipment for recycling or other forms of reuse. In this way, they help to prevent potentially harmful substances from entering the environment.

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## 8 Specifications

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Weight	760g
Dimensions (H x W x D)	41mm x 139mm x 127mm
Class	SK 1
Power consumption	35 W
Internal Power Supply Nominal Voltage	85-264 VAC
Permissible ambient temperature <b>during use</b>	0°C – 40°C
Permissible ambient temperature <b>during storage</b>	-20°C – 50°C

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## 9 EU Declaration of Conformity



in accordance with the EU Directive 2014/30/EU (electromagnetic compatibility) of 26 February 2014, and 2014/35/EU of 26 February 2014.

We hereby declare that the device referred to below complies with the essential safety and health requirements of EU Directives 2014/30/EU and 2014/35/EU in its conception and design as well as in the version we place on the market. In the event of a change to the device that has not been agreed with us, this declaration loses its validity.

**Manufacturer:**            **Teqsas GmbH**  
**Otto-Hahn-Straße 20a**  
**50354 Hürth**

The manufacturer is solely responsible for issuing this declaration of conformity.

### Description of the device:

- LAP-TEQ PLUS Interface

Compliance with other directives / regulations / standards that also apply to the product is declared.

- **RoHS Directive 2011/65/EU** of 08 June 2011
- **EN IEC 62368-1:2020**
- **EN 55032:2015**
- **EN 55035:2016**

Place and date of the exhibition:

Hürth, 16.04.2024

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