

Operating Instructions

# ATMOS Strobo 21 LED

Englisch



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# 1 Introduction

## 1.1 Notes on the operating instructions



This operating information contains important notes on how to operate your product safely, appropriately and effectively.

This manual is used to train and instruct operating personnel and is also intended as a reference manual. This document must not be reprinted, either in part or in whole, without the written permission of ATMOS.

**These operating instructions must always be kept available near the product.**



Care, period tests, regular cleaning and appropriate application are essential. They ensure the operational safety and usability of the product.

Maintenance, repairs and period tests must be carried out only by persons who have the appropriate technical knowledge and are familiar with the product. To carry out these measures, the person must have the necessary test devices and original spare parts.



Read chapter "2 Notes on your safety" on page 10 before using the product for the first time. This will help you to avoid potentially dangerous situations.

This device bears the CE marking CE in accordance with the European Medical Device Regulation (MDR) 2017/745.

The product meets all applicable requirements of the directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("RoHS").

The Declarations of Conformity and our General Terms and Conditions can be viewed on our website at [www.atmosmed.com](http://www.atmosmed.com).









The quality management system applied at ATMOS has been certified according to the international standard EN ISO 13485.

These operating instructions apply to the following products:









- ATMOS Strobe 21 LED (ATMOS S 61 Servant vision) REF 531.2050.0
- ATMOS Strobe 21 LED REF 507.4700.0























## 1.2 Explanation of pictograms and symbols








### In the operating instructions

 <b>DANGER</b>	Warning of a danger resulting directly in fatal or serious injury. Observe the necessary measures.
 <b>WARNING</b>	Warning of a danger of fatal or serious injuries. Observe the necessary measures.
 <b>CAUTION</b>	Warning of a danger that can cause minor injury. Observe the necessary measures.
<b>ATTENTION</b>	Notice of a danger of damage to the product or other objects. Observe the necessary measures.
	Warning of a danger of serious or fatal injury.
	Notice of potential material damage that can be caused.
	Useful information on handling the device.
1.	Call for action. Proceed step by step.
»	Result of an action.
	Move/plug in this direction.
	Engage and check for tight fitting.

### On the device, type plate and packaging

	Follow the operating instructions (blue)
	Observe the operating instructions
	Warning! Pay special attention.
	This product meets the relevant requirements of EU statutory ordinances.
	This product meets the relevant requirements of the Eurasian Economic Union.
	Manufacturer
	Date of manufacture
	Date of manufacture Country of manufacture: Germany

	Item number
	Unique identifier of a medical product
	Medical product
	Serial number
	Type BF applied part
	No domestic waste
	Potential equalization
	Fuse protection
	Foot switch
	On, connected to the power supply
	Off, disconnected from the power supply
	Signal input and signal output
	Signal input
	Signal output
	This side up
	Handle with care
	Fragile, handle with care
	Store in a dry place
	Keep away from sunlight
	Temperature limit
	Humidity limit
	Atmospheric pressure limit

	Slow motion
	Freeze image
	Permanent light
	Light intensity setting
	“Downwards” symbol
	“Upwards” symbol
	Microphone input

### UDI application identifier

(1)	UDI-DI: identification of the manufacturer and product
(11)	Date of manufacture
(21)	Serial number

## 1.3 Intended use

<b>Product name:</b>	ATMOS Strobo 21 LED
<b>Main function:</b>	Recording and analysis of frequency and sound pressure level of a voice. Appropriate control of a light source. Adjustment of phase shift and pulse width regulation.
<b>Intended use/purpose:</b>	Visual examination of the anatomy and the movement of the vocal folds.
<b>Intended users / user profile:</b>	Physicians and medical specialists.
<b>Intended patient group:</b>	All patients without any restrictions
<b>Medical conditions to be diagnosed, treated or monitored:</b>	General examination of the larynx, voice problems.
<b>Application organ:</b>	Larynx / vocal folds
<b>Application time:</b>	< 60 min.
<b>Application environment:</b>	Outpatient medical facilities, e.g. ENT practices, hospital outpatient departments, medical care centres
<b>Patient selection criteria:</b>	None
<b>Indications:</b>	General examination of the larynx, voice problems
<b>Medical contra-indications:</b>	None
<b>Other contraindications:</b>	None
<b>Warnings:</b>	None
<b>The product is:</b>	Active
<b>Sterility / specific microbial condition:</b>	Non sterile
<b>Single-use product / re-sterilization:</b>	Not a disposable product. Re-sterilization according to operating instructions.

## 1.4 Function

The device is used to record and analyze the frequency and sound pressure level of a voice. It can trigger a light source accordingly. The device enables phase shift adjustment and pulse width control for the illumination.

The device is an electrically driven device and takes medical effect by triggering a light source according to the recorded frequency of a voice. By using the triggered light source, the movement of the vocal folds is visible at a lower speed and can be examined with the human eye.

## 1.5 Scope of delivery

Prior to dispatch, the ATMOS Strobo 21 LED was subjected to an extensive functional test and was carefully packed.

Nevertheless, please immediately compare the contents of the shipment for completeness upon receipt (see delivery note).

## 1.6 Transport and storage

Transport the device only in a shipping box that is padded and offers sufficient protection.

If you notice any transport damage:

1. document and report the transport damage.
2. Send the device to ATMOS; see chapter "6.3 Sending in the device" on page 26.

### **Ambient conditions for transport and storage:**

See chapter "8 Technical data" on page 29.

## 2 Notes on your safety

### 2.1 General safety instructions

Read and observe the safety instructions carefully before using the product.

Report any serious incidents that occur in connection with this product to the manufacturer and the national authority responsible for you.

Please check the delivery for completeness and intactness.

#### Please note:

A medical isolation transformer with earth leakage monitor or a similar safety system according to EN 60601-1 must be used if several devices are connected via one common mains. The transformer must correspond to the power consumption of all the devices to be connected.

- The product will meet the safety requirements of users, patients and third parties only if it is fully functional. Therefore, please observe the following instructions on your product:

#### DANGER

#### **Electric shock due to unsuitable power supply, incorrect handling of the product or damage to product components**

Burns, cardiac arrhythmia and even fatal injuries are possible.

- Do not operate the device if it has been dropped. In this case, clean and disinfect the device and send it to ATMOS for repairs.
- Check whether the device or power cable is damaged each time before using the device. Do not operate the device if you notice any damage. In this case, clean and disinfect the device and send it to ATMOS for repairs.
- Disconnect the device from the mains supply before cleaning or disinfecting it.
- Disconnect the device from the power supply before servicing, repairing or opening it.
- You can disconnect the device from the power supply only by pulling the power plug.
- Position the device where you can easily disconnect it from the power supply at any time.
- Connect the device only to a power supply with a protective conductor.
- Never touch the plug or power cable with wet hands.
- Use the power supply unit and power cable only in a dry environment. The environment must be non-conductive.
- Make sure no liquid enters the device. The device must no longer be used if liquid enters it. In this case, clean and disinfect the device and send it to ATMOS for repairs.
- Use power supply units and power cables only in accordance with the operating instructions.
- Use only appropriate power connections and extension cords.
- Never touch the device's interfaces and the patient at the same time!
- Use only original accessories and spare parts from ATMOS.
- Observe the specifications regarding period tests in chapter "6 Maintenance and service" on page 25.
- Assembly, new settings, alterations, extensions and repairs may be carried out only by authorized persons.

- Check the correct assignment when assembling country-specific plugs:
  - Green/yellow: protective conductor (PE)
  - Blue: neutral conductor (N)
  - Black or brown: phase (L)
- Do not modify the device without the manufacturer's permission.

**⚠ CAUTION**

**Danger of explosion and fire!**

Burns and injuries are possible.

- Never operate the product in potentially explosive areas or areas that are oxygenated.
- Use only original accessories and spare parts from ATMOS.

**⚠ WARNING**

**Avoid misuse or incorrect diagnoses.**

Your patient could become severely injured.

- The product is permitted for use only by instructed specialist personnel under supervision.
- The product is permitted for use only by medically trained staff.
- Diagnoses may be made only by persons with the appropriate medical training.

**⚠ CAUTION**

**Keep the product fully functional.**

Malfunctions could cause injury to you and your patients.

- Please observe the notes on the electromagnetic compatibility (EMC) of the device.
- A function check must be performed each time before use.
- Observe the specifications regarding period tests in chapter "6.2 Period tests" on page 25.
- Use only original accessories and spare parts from ATMOS.
- Assembly, new settings, alterations, extensions and repairs must be carried out only by persons authorized by ATMOS.

**⚠ CAUTION**

**Tripping hazard due to cables.**

Injuries and fractures are possible.

- Lay connection cables properly.

## 2.2 Danger to users, patients and third parties

### **CAUTION**

- If the endoscope is combined with energy-powered accessories the patient leakage currents may add up.
- Never look directly into the light source!
- The treating physician is responsible for the proper procedure and technology! The appropriateness and the kind of application must be decided by a trained physician according to the circumstances.
- The microphone must be mounted only tightly enough as absolutely necessary for the function.
- Please observe that body parts may get caught in the foot controller!

## 2.3 Avoiding damage to the device

### **ATTENTION**

- Switch off the device when you finish your daily operations.
- Pay attention to the ambient conditions specified in the technical data. See chapter "8 Technical data" on page 29.
- Before starting up the device for the first time, check whether the operating voltage specified on the type plate (on the bottom of the device) matches the local mains voltage.
- Protect the device against direct sunlight and keep it away from heaters.
- Always set up the device in such a way that the operating elements are in clear view and within easy reach of the operator.
- The device must be placed on a stable, level surface.

## 3 Setting up and starting up the device

### 3.1 Scope of delivery and options

- Control unit
  - Airborne sound microphone including clip for laryngoscope
  - ATMOS LS 21 LED light handle including Wolf adapter
  - Holder for LS 21 light handle with switching function
  - Foot controller
  - Audio cable
  - Power cable
- Optional:**
- Body sound adapter for airborne sound microphone (REF 507.4775.0)
  - Strobe 21 LED data cable (REF 507.5016.0)

### 3.2 Device overview

#### 3.2.1 Control elements



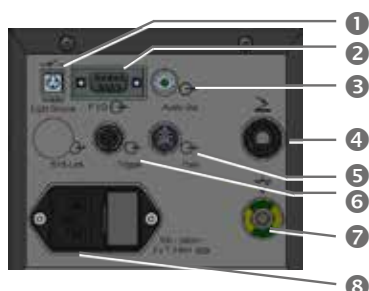
- 1 Control knob
- 2 Settings
- 3 On/off switch

#### 3.2.2 Front of the device



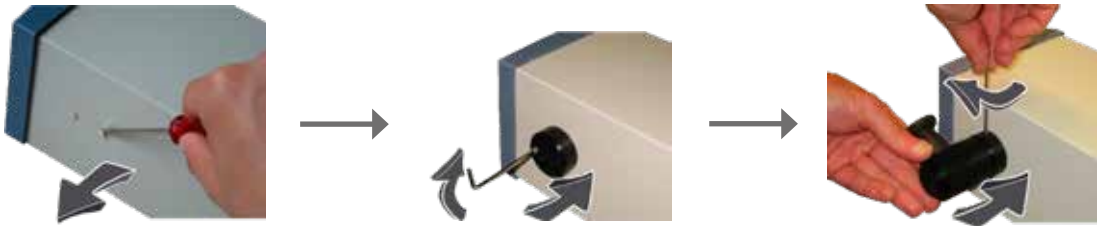
- 1 Display
- 2 Indication for slow motion
- 3 Indication for freeze image
- 4 Indication for permanent light
- 5 Connector for microphone
- 6 Connector for LED light handle

#### 3.2.3 Backside



- 1 Holder connector for ATMOS LS 21 LED light handle with switching function
- 2 Optional connector for MediaStroboscope
- 3 Audio output (Line Out)
- 4 Connector for foot controller
- 5 DATA interface
- 6 No function
- 7 Connector for potential equalization
- 8 Socket for power supply

### 3.3 Installation of the light source holder



### 3.4 Putting the device into service

⚠ Please make sure you do not switch on the devices until they are completely wired.



#### 3.4.1 Potential equalization

⚠ The ATMOS Strobe 21 LED has a rear connector for potential equalization, which can be connected to the potential equalization rail in the room if necessary. This connector can be used for devices of protection class I to avoid differences in potential between the protective earth of the device and the protective earth of other devices or sections of a system, which can be used or touched on the patient at the same time.

### 3.4.2 ATMOS Strobe 21 LED connection with external light source ATMOS LS 31 LED

Only qualified personnel are allowed to set up electrical medical systems. The manufacturer of an electrical medical system is responsible for ensuring that the performance, installation and start-up, safety, technical data and intended use of the ATMOS LS 31 LED are not impaired.

Observe the following information when connecting the device in the required combination:

- Observe the specifications of the standard EN 60601-1 on medical electrical systems.
- Pay particular attention to the information on the patient environment, multi-outlet power strips and leakage currents.

The connectors for the trigger cable (REF 507.4838.0) can be found on the rear of the two devices. They are marked. Please connect both devices as illustrated (applies to ATMOS Strobe 21 LED manufactured in October 2016 or later):

Connecting the F I/O 1 connector ① with the trigger cable to the F I/O connector ②



ATMOS LS 31 LED



ATMOS Strobe 21 LED

## 4 Operation

### 4.1 Switching the device on and off



Conduct a function check each time before use. See chapter "6 Maintenance and service" on page 25.

#### Switching on



After switching on the device, it will take a few seconds until it is ready for operation.

#### Switching off



### 4.2 Display functions

#### Indication during phonation

Frequency (pitch)



Volume (sound pressure level)

#### Indication after phonation



#### Change of contrast display



... or ...

→ press repeatedly

#### Setting Menu

Opening the "Setting Menu"



+



"Startup" is displayed



Press and hold down the button

Release the button

Selecting the menu



Select submenu

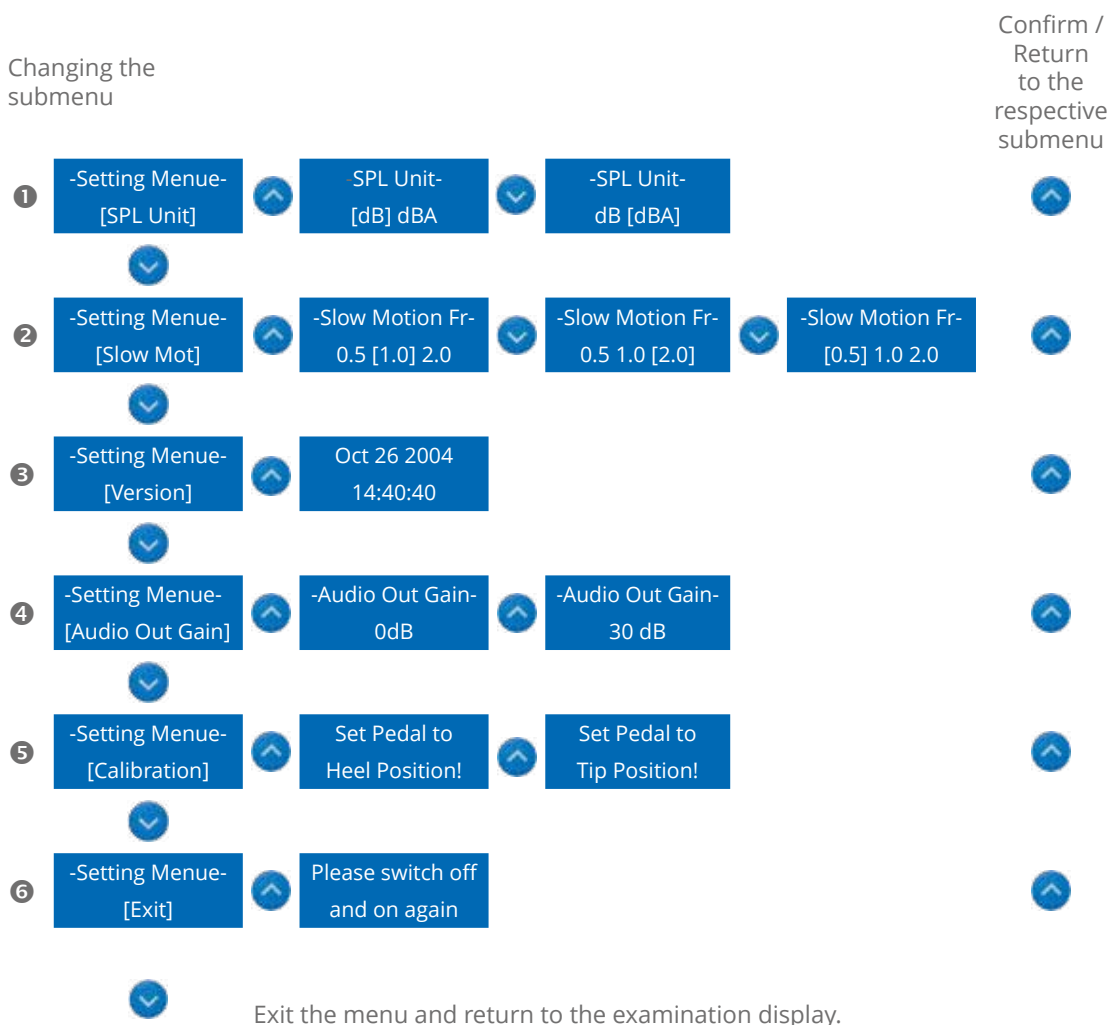


Confirm "Set", "Continue"

### Editable submenus

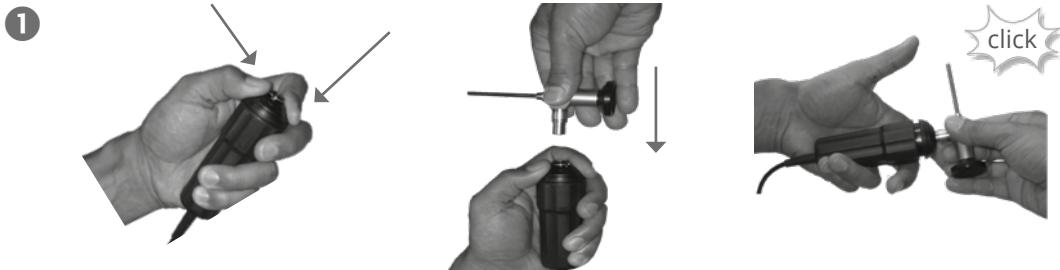
- 1 **SPL Unit:** dB or dBA setting
- 2 **Slow Motion:** slow motion speed setting
  - 0.5: 1 oscillation / 2 sec.
  - 1.0: 1 oscillation / sec.
  - 2.0: 2 oscillations / sec.
- 3 **Version:** information about software version
- 4 **Audio Out Gain:**  
Amplification of the audio signal, which can be adjusted at the LINE-OUT audio output.  
**Attention!** In case the audio signal of the LINE-OUT is amplified, that is to say for all adjustments other than 0 dB, the audio signal no longer corresponds to the sound level of the input signal which is shown in the display respectively emitted at the data interface.
- 5 **Calibration:**  
Calibration of foot controller. Your supplied foot controller has already been calibrated on your stroboscope. Please follow the instructions on the display to repeat the calibration procedure. Make sure to apply only slight pressure. You should wait about two seconds between starting and confirming.
- 6 **EXIT:** closing the menu settings

### Menu settings



## 4.3 Examination

### 4.3.1 Procedure



Use your thumb and forefinger to press down



### 4.3.2 Resolution/brightness control

#### After switching on:

Turn the LED controller clockwise as far as it will go. Then slowly turn it anti-clockwise until the desired image setting is achieved.

#### Settings:

Turn the LED controller anti-clockwise	>>	LED becomes darker
Turn the LED controller clockwise	>>	LED becomes brighter

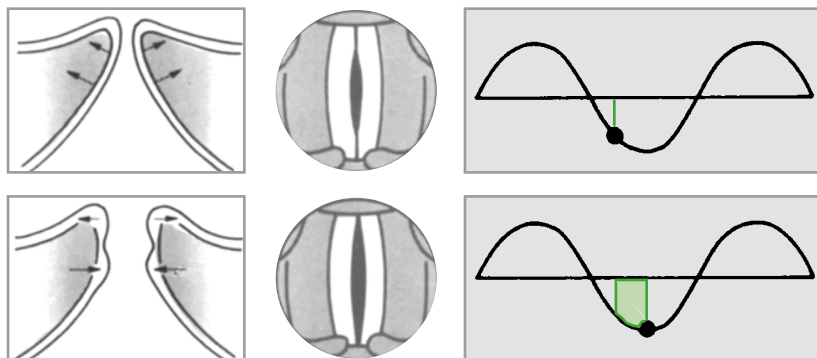
#### **i** Operating mode and brightness control:

If the picture becomes more blurred when the brightness is increased:

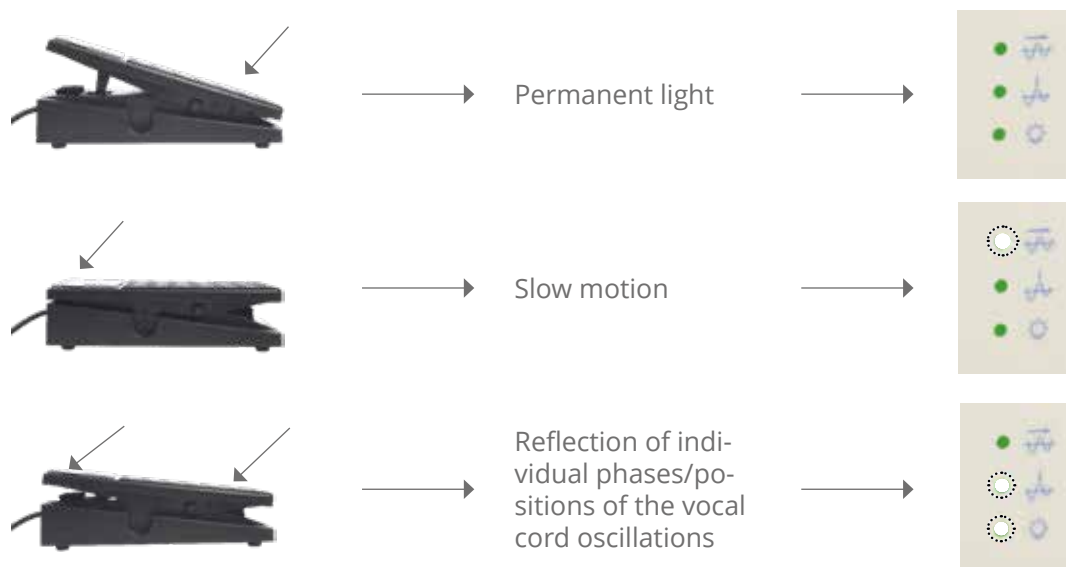
The ATMOS Strobo 21 LED flashes with 2 watts. For generating a brighter image, the illumination has to be longer. This entails that the vocal cord oscillates fractionally at this moment.

The tiny movement reclined during the exposure time is perceived blurred.

The darker the image, the shorter the exposure time is. The shorter the reclined movement of the vocal cord, the more well-defined the image is.



### 4.3.3 Operating the foot controller



### 4.4 Operation with other light sources

The device can be operated with other ATMOS light sources or other ATMOS devices with an integrated light source, e.g. ATMOS LS 31 LED.

During the operation with other devices, the ATMOS LS 21 LED light handle may remain in the light source holder.

## 5 Sterilization

### 5.1 Safety instructions for sterilization

#### 5.1.1 General safety instructions

We recommend that you always document any maintenance work and also any exchange of parts.

It is the responsibility of the user to ensure that the required cleaning and disinfection results are achieved. Validation and routine monitoring of the procedure are usually necessary.

The sterilization must be carried out only by persons with the necessary expertise. The person in question must possess the equipment required to take the mentioned measures.

#### 5.1.2 Danger to users, patients and third parties

##### **ATTENTION**

##### **Risk of infection due to unsuitable accessories.**

Pathogens can be transmitted.

- Always wear your own personal protective equipment. The protective equipment consists of protective gloves, and protective clothing for all steps in which the product components are still contaminated.
- Use only accessories that are easy to sterilize or are disposable products.

##### **ATTENTION**

##### **Risk of infection due to unsuitable sterilization.**

Pathogens can be transmitted.

- Make sure all areas of the device are easy to access.

#### 5.1.3 Avoiding damage to the device

##### **ATTENTION**

##### **Damage to the device due to cleaning with fixatives!**

Stains can no longer be removed permanently.

- Do not use any aldehydes before and during cleaning.
- Do not expose the product to temperatures above 40 °C / 104 °F before and during cleaning.

##### **ATTENTION**

##### **Unsuitable accessories.**

The product may become damaged.

- Use only lint-free, soft cloths.
- Always use fully demineralized water for the final rinsing.
- Observe the corresponding operating instructions for all accessories used.

## 5.2 Preparing and completing the sterilization

### Prior to sterilization

1. Switch off the ATMOS Strobo 21 LED prior to cleaning and disinfection!
2. Disassemble the product into the following components for sterilization:
  - Control device with mounted holder for ATMOS LS 21 LED light handle with switching function
  - Accessories:
    - ATMOS LS 21 LED light handle
    - Wolf adapter
    - Airborne sound microphone (optional)
    - Impact sound adaptor for airborne sound microphone (optional)

### After sterilization

Conduct a function check each time before use.

## 5.3 Preparing surfaces

### 5.3.1 Overview

Surface	After each application	Daily	Weekly	Every 14 days	Monthly	Pre-cleaning	Wipe cleaning	Wipe disinfection	Comment
Control device housing		X					X	X	Or if visibly dirty
Holder for ATMOS LS 21 LED light handle with switching function		X							Or if visibly dirty
ATMOS LS 21 LED light handle	X						X	X	
Wolf adapter		X					X	X	When used
Impact sound adaptor for airborne sound microphone	X						X	X	

### 5.3.2 Selecting the surface disinfectant

**ATTENTION**

**Unsuitable cleaning agents and disinfectants.**

The product may become damaged.

Do not use any:

- Disinfectants that contain organic or inorganic acids or bases because they could cause corrosion damage.
- Disinfectants containing chloramides or phenol derivatives, because they cause stress cracks in the plastic material used.

Observe the operating instructions prescribed by the manufacturers of disinfectants. Pay particular attention to the concentration specifications and notes on material compatibility.

Agent (manufacturer)	Active ingredients in 100 g	Type
Green & Clean SK (Metasys)	< 1 g dialkyl dimethyl ammonium chloride < 1 g alkyl dimethyl ethyl benzyl ammonium chloride < 1 g alkyl dimethyl benzyl ammonium chloride	Foam, ready to use
Dismozon® plus (Bode Chemie)	95.8 g magnesium monoperoxyphthalate hexahydrate	Granulate

- ☞ Colour changes may occur if disinfectants containing aldehyde and amine are used on the same object.



	<b>Instruction</b>
<p><b>Manual cleaning</b></p> <p><b>ATTENTION</b></p>	<ol style="list-style-type: none"> <li>1. Use a moist (never wet), clean and lint-free cloth moistened with cleaning agent to wipe the surfaces and accessories evenly. <ul style="list-style-type: none"> <li>☞ Make particularly sure to clean the control knob, adjusting knobs and on/off switch of the control device thoroughly.</li> <li>☞ Avoid wiping the device openings to prevent liquid from entering the interior of the device.</li> <li>☞ ATMOS LS 21 LED light handle: Make sure the lens in the light fitting is not covered with liquid.</li> </ul> </li> <li>2. If there is still some visible dirt, repeat the cleaning to avoid impairing the disinfection effect.</li> </ol>
	<b>Instruction</b>
<p><b>Manual disinfection</b></p> <p><b>ATTENTION</b></p>	<ol style="list-style-type: none"> <li>1. Wipe all surfaces and accessories with a moist (not wet), clean and lint-free cloth and a recommended surface disinfectant. Make sure they are covered completely to ensure an efficient disinfection effect. <ul style="list-style-type: none"> <li>☞ In particular, clean the control knob, adjusting knobs and on/off switch of the control device.</li> <li>☞ Do not cover the device openings to prevent liquid from entering the device interior.</li> <li>☞ ATMOS LS 21 LED light handle: Make sure the lens in the light fitting is not covered with liquid.</li> </ul> </li> <li>2. Wait for the exposure time of the disinfectant to work.</li> </ol>
	<b>Instruction</b>
<p><b>Drying</b></p> <p><b>ATTENTION</b></p>	<p>Allow the device to dry completely before putting it back into service.</p> <ul style="list-style-type: none"> <li>☞ Avoid residual liquid and dry edges on the lens of the image sensor when drying.</li> </ul>
	<b>Instruction</b>
<p><b>Maintenance, check and inspection</b></p>	<ol style="list-style-type: none"> <li>1. Check the success of the sterilization by means of visual inspection.</li> <li>2. If the sterilization was unsuccessful, the procedure must be repeated.</li> <li>3. Dispose of damaged accessories and replace them or have them repaired.</li> <li>4. Subject the device to a function check each time before using it; see chapter "6 Maintenance and service" on page 25.</li> </ol>

## 6 Maintenance and service

Medical devices like the ATMOS Strobo 21 LED must be fail-safe at all times. Do not use the device if it is obviously damaged.

Subject it to a function check each time before using it:

- Check whether the device or its cables are visibly damaged. Replace any damaged cables immediately.
- Connect the microphone and sing a tone. The device must show a constant frequency. As soon as you change the pitch level, the frequency changes.
- Check whether the foot switch works as described in chapter “4.3.3 Operating the foot controller” on page 19.

### 6.1 Changing the fuse

#### 6.1.1 General information

Subject the device, including the device connection line, to a visual inspection each time before using it.

#### 6.1.2 Fuse changing procedure

##### Fuses:

For devices manufactured before 2016-09 2 x T 2.5 A/H.

For devices manufactured in or after 2016-10 2 x T 2.0 A/H.

1. Remove the power cable.
2. Both fuses can be changed using a screwdriver.
3. Press in the clip with the screwdriver and pull out the fuse tray.

### 6.2 Period tests

Maintenance, repairs and period tests must be carried out only by persons who have the appropriate technical knowledge and are familiar with the product. To carry out these measures, the person must have the necessary test devices and original spare parts.

ATMOS recommend assigning an authorized ATMOS service partner. This will ensure that repairs and inspections are carried out professionally, original spare parts are used and warranty claims remain unaffected.

Please comply with the national guidelines regarding regular testing. ATMOS recommend performing a test every 24 months.

**ATMOS recommend conducting an inspection within this framework in accordance with the manufacturer’s specifications.**

## 6.3 Sending in the device

- Remove all consumables and dispose of them properly.
- Clean and disinfect the product and accessories in accordance with the operating instructions.
- Submit any used accessories with the product.
- Fill in the form QD 434 "Delivery Complaint / Return Shipment" and the corresponding decontamination certificate.
- ☞ This form is enclosed with each delivery and can be found at [www.atmosmed.com](http://www.atmosmed.com).
- The device must be packed well padded in suitable packaging.
- Place the form QD 434 "Delivery Complaint / Return Shipment" and the decontamination certificate in an envelope.
- Affix the envelope to the outside of the packaging.
- Send in the product to ATMOS or your dealer.




## 7 Troubleshooting

Description	Possible causes of error	Remedy
No indication from the device	Power plug is fitted poorly	Check the fitting of the power cable at the socket and at the device.
	No mains voltage available	Check the main fuse.
	Fuse defective	Check the fuses
Indication is illegible	Insufficient contrast	Set the contrast by pressing the 'up' and 'down' buttons (see "4.2 Display functions" on page 16).
Blurred image	For technical reasons, the vocal fold oscillation/ position is blurred if there is an increase in brightness during stroboscopy with the LED light source, (see chapter "4.3.2 Resolution/ brightness control" on page 18)	Reduce the brightness of the LED light source.
	The foot controller is positioned at „heel“, thereby the signal for permanent light is generated.	Change to freeze image mode or slow motion mode by moving the foot controller into the respective position ("4.3.3 Operating the foot controller" on page 19).
	The acoustic signal is not picked up properly / microphone has not been connected correctly.	Make sure the microphone is connected correctly to the device, affixed close enough to the acoustic source and correctly aligned. Make sure the operational reliability of the microphone is given.
	Acoustic signal cannot be evaluated at all or not properly.	Use the optional obtainable contact microphone.

Description	Possible causes of error	Remedy
Image is too dark	The brightness of the LED light source is too low.	Enhance the brightness of the LED emitter by operating the control knob (see chapter "4.3.2 Resolution/brightness control" on page 18). Please observe the information there regarding resolution/ brightness control.
Foot controller does not work	Foot controller not connected correctly.	Check whether the foot controller is connected correctly. Switch off the device and wait 5 seconds before switching it on again.
	Foot controller not calibrated.	Calibrate it. Open the 'Calibration' submenu in the Setting menu (see chapter "Setting Menu" on page 16) and follow the specified instructions.

## 8 Technical data

Voltage	100-240 V~ ± 10%; 50/60 Hz
Current consumption	0.3 A
Power consumption	Max. 30 VA
Fuses	2 x T 2.0 A/H 250 V
Flash frequency	70–1000 Hz
Flash frequency display accuracy	± 1 Hz
Sound level measuring range	70–125 dB
Accuracy of the sound level display	± 1 dB
Microphone	Airborne sound microphone Impact sound adaptor optional
Operating modes	Continuous light; slow motion 0.5 – 2 Hz; freeze image with 0° - 400° displacement of phase
Operation time	Continuous operation
Protective earth conductor resistance	max. 0.1 Ω
Earth leakage current	max. 5 mA
Touch current	max. 0.1 mA
Patient leakage current	max. 0.1 mA
Ambient conditions: Transport/storage	
• Temperature	-30...+50°C
• Humidity without condensation	5...90%
• Air pressure	700...1060 hPa
Ambient conditions: Operation	
• Temperature	+5...+35°C
• Humidity without condensation	20...80%
• Air pressure	700...1060 hPa
Max. operating altitude	3000 m (NN)
Contamination level	2
Overvoltage category	II
Dimensions H x W x D	118 x 139 x 280 mm
Weight	5 kg
Period tests:	Repeat test of electrical safety every 24 months. Recommended: inspection according to manufacturer's specifications.

Protection class against electric shock (according to EN 60601-1)	I
Applied part classification	ATMOS LS 21 LED: type BF 
	Microphone: type BF 
Type of protection	IPX0
CE mark	
Article number (REF)	507.4700.0 ATMOS Strobo 21 LED 531.2050.0 ATMOS Strobo 21 LED (ATMOS S 61 Servant vision)

## 9 Disposal

### Packaging

1. Please recycle the product packaging.

### ATMOS Strobo 21 LED

Do not dispose of the product together with household waste.

The product does not contain any hazardous materials.

1. Clean and disinfect the product.
2. Dispose of the product properly and in accordance with national laws and regulations.

In principle, the housing is fully recyclable. Observe the national laws and regulations.



### 9.1 Expected service life

If used according to the operating instructions, the device ATMOS Strobo 21 LED will have an expected service life of five years. Regular, thorough cleaning and disinfection of the device and its applied parts as well as the operation of the device in line with the operating instructions are assumed.

## 10 Notes on EMC

Medical electrical devices are subject to special precautions with regard to EMC and must be installed according to the EMC instructions described in the following.

### Guidelines and manufacturer's declaration – Ambient conditions

The ATMOS Strobe 21 LED is intended for operation in the following environments:

- In fields of home health care in any buildings, outdoor areas and means of transport.
- At professional healthcare facilities, such as medical practices, clinics, first aid facilities and operating theatres.

The following environments are not suitable:

- Within the vicinity of HF surgical devices and in settings outside of an HF-shielded room of a magnetic resonance imaging system.
- Special environments such as factory or military facilities and medical areas near HF surgical devices, short-wave therapy equipment or within an HF-shielded room of a magnetic resonance imaging system.

The customer or user of the ATMOS Strobe 21 LED must ensure that the device is used in a prescribed environment.

### Guidelines and manufacturer's declaration – Key features

- ☞ Please observe the technical data in chapter "8 Technical data" on page 29 in this manual. The essential key features are fully usable even in the presence of electromagnetic disturbances.

### Guidelines and manufacturer's declaration – Removable components that can be replaced by the operating company

The ATMOS Strobe 21 LED has the following removable components that can be replaced by the operator:

Type	REF	Max. cable length
Microphone	507.4780.0	2.5 m
ATMOS LS 21 LED	507.4600.0	2.0 m
Foot controller	507.4771.0	2.0 m
Data cable	507.5016.0	0.5 m
Audio cable	008.0858.0	1.2 m
Trigger cable	507.4838.0	1.0 m
Audio cable	008.1024.0	2.0 m

## Guidelines and manufacturer's declaration – Warnings

**⚠ WARNING**

The use of electrical components and accessories other than those specified or provided by the manufacturer can cause increased electromagnetic interference or reduced immunity to electromagnetic interference, resulting in faulty operation of the device.

**⚠ WARNING**

Portable RF communications equipment (e.g. radios, antenna cables) should be used no closer than 30 cm\* to any part of the ATMOS Strobo 21 LED, including cables, specified by the manufacturer. Failure to do so may lead to a reduction in the device's key features.

☞ \*The distance may be shorter at higher immunity test levels.

**⚠ WARNING**

Avoid placing the device on top of or next to another device. This could result in faulty operation. If this is unavoidable, the perfect functioning of the device must be monitored regularly. If possible, please switch off any nearby devices that are not in use.

# 11 Notes

# Notes



**MedizinTechnik**



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