



MedizinTechnik

English

Operating Instructions

ATMOS[®] S 61

Servant vision

ENT treatment unit



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1.1 Notes on Operating instructions



These operating instructions contain important notes on how to operate the ATMOS® S 61 Servant vision safely, correctly and effectively. Their reading helps to avoid risks, and also to reduce repair costs and down-times. This increases, amongst other things, the reliability and service-life of the device.

These operating instructions serve not only for new operating personnel to be instructed in its use, but also for use as a reference manual. Reprints (also in extracts) only with permission in written form by ATMOS.

These operating instructions must always be kept available near the device.



Care and period tests in conjunction with professional execution provide for operational safety and readiness for use of your ATMOS® S 61 Servant and are therefore a must besides regular cleaning.

Repair work and period tests may be carried out only by expert personnel authorised by ATMOS. By applying only original spare parts you will have the guarantee that operational safety, readiness for work and the value of your ATMOS® S 61 Servant vision will be preserved.



- The product ATMOS® S 61 Servant vision bears CE marking CE according to the EC Directive of the council for medical products 93/42/EEC and meets the basic requirements of Appendix I of the directive.
- The product ATMOS® S 61 Servant vision complies with all applicable requirements of the Directive 2011/65/EC restricting the use of certain hazardous substances in electrical and electronic equipment ("RoHS").
- The declaration of conformity and our general standard terms and conditions can be obtained on our website at www.atmosmed.com.
- The quality management system applied at ATMOS has been certified according to international standards EN ISO 13485.
- Prior to start-up please peruse chapter 2.0 „For your safety“, in order to be prepared for any possible dangerous situations.

1.2 Intended use

Name: ATMOS® S 61 Servant vision

Main functions:

ATMOS® S 61 Servant vision:

- Light sources
- Storage and heating of endoscopes
- Visualization
- Stroboscopy for larynx diagnostic

Medical indications / application:

Standard ENT examination and/or therapy

Specification of the main function:

ATMOS® S 61 Servant vision:

- Light source LED for light guide
- LED light source, 700 mA
- Camera (ATMOS® Cam)
- Stroboscope (ATMOS® Strobo 21 LED)

User profile:

Doctors and medical assistants

Patient groups:

Patients of all ages with and without restrictions

Application organ:

Mouth to pharynx, auditory canal to the ear drum and the nasal cavities

Application time:

- ENT unit: Short term use (up to 30 days)
- Suction / Compressed air / ear rinsing / light source: Temporary application on the patient (less than 60 minutes)

Application site:

Application sites are clinics and practices for ENT doctors and phoniatriests. The examination and/or therapy with the ENT unit may only be executed by medically trained persons.

Contraindications:

May not be used for irrigation of the paranasal sinuses. The ear irrigation should not be applied to an infected auditory canal or a perforated eardrum.

The product is: active

Sterility: The ENT unit is no sterile product.

Single-use product / reprocessing:












The ENT unit is intended for multiple use. The device and parts of the accessories are reusable. For information on reprocessing, cleaning and disinfection, please see the operating instructions.

1.3 Function


















- Coldlight channels (LED)
- Automatic activation over light barrier, headlight hook, microscope arm
- Endoscope storage without/with heating
- Disinfectant timer
- Integration ATMOS® Cam
- Integration ATMOS® LED Strobo
- Instrument illumination

1.4 Explanation of pictures and symbols

Short cuts / symbols contained in this operating instructions

| | | |
|--|--|---|
| <p> Follow the arrows</p> <p> • Please press where dot indicates</p> <p> Please read, important information</p> | <p> General information</p> <p> Numeration</p> <p> Subnumeration</p> <p> Check</p> | <p> Move, plug... in this direction</p> <p> Turn, shift ... in this direction</p> <p> Replace</p> <p> Engage, check correct fit</p> |
|--|--|---|

Short cuts / symbols on the unit

| | | |
|---|--|--|
| <p> Warning, special diligent notice</p> <p> Fuse according to IEC 417/5016, DIN 30600/0186</p> <p> Application part type BF</p> <p> Potential equalization</p> <p> Manufacturing date</p> <p> Manufacturer</p> | <p> Signal input</p> <p> Signal output</p> <p> Signal input and output</p> <p> Foot switch</p> <p> Refer to the operating instructions</p> <p> Professional disposal</p> | <p> Ground wire connection</p> <p> Alternating current</p> <p> On (feed-in, power connection)</p> <p> Off (feed-in, power connection)</p> <p> This product complies with the relevant requirements of EU directives</p> |
|---|--|--|



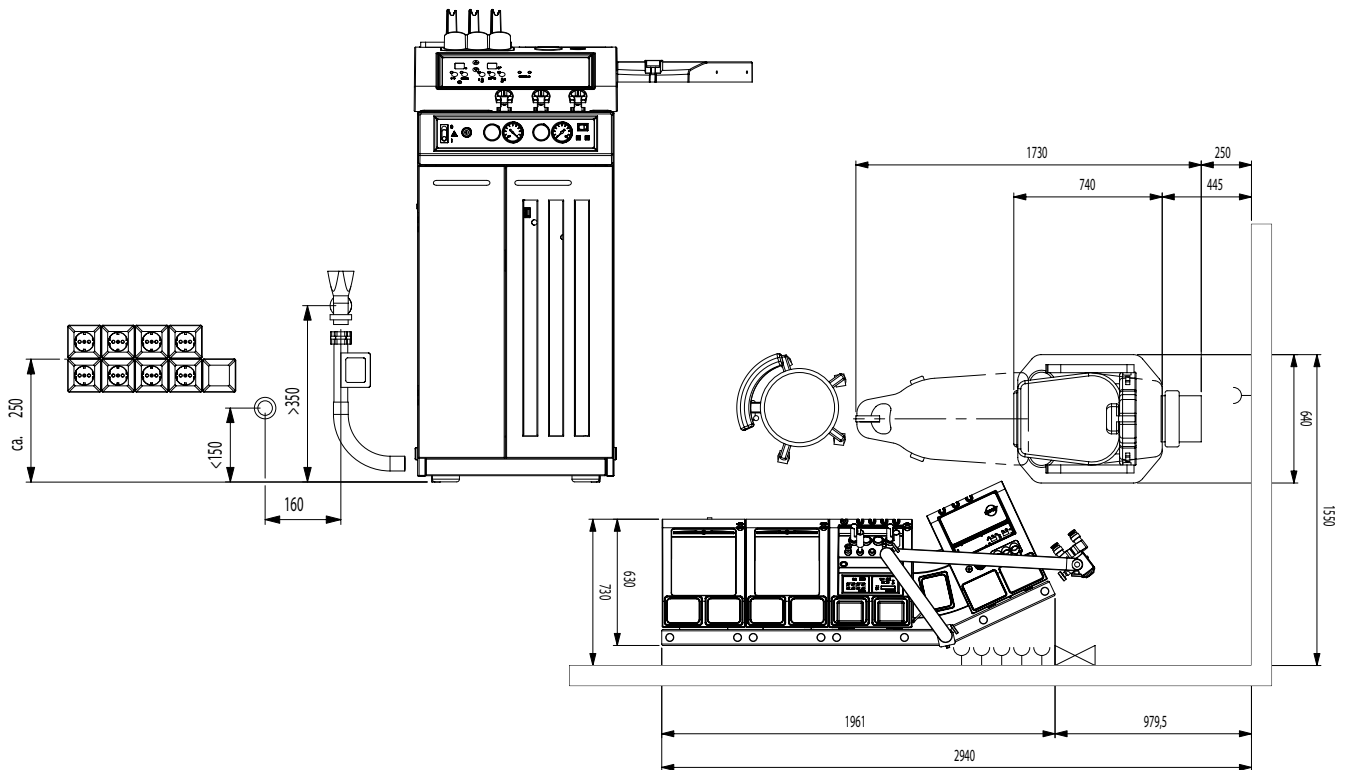
For your safety

- The ATMOS® S 61 Servant vision is produced according to IEC 601 / EN 60601 and listed in the following classes:
 - VDE Class of protection 1
 - Class IIa (IEC 93/42).
- The unit should not be positioned directly next to a wall, because of the ventilation openings on the rear side! Do not restrict the air supply at the rear of the unit!
- Caution! Mirror and endoscope heaters may generate temperatures above 40°C!
- Attention with the cold-light source!
Because of the high energy of the light there is a large amount of heat emission at the point of the optical system. Avoid too small a distance between the tissue and the field of light emission of the light guide respective of the endoscope, as this may cause coagulation of the patient's tissue. When using the endoscope avoid the direct contact between area of light emission and the tissue.
- Attention, Fire Hazard!
Do never place the area of light emission from the light guide or from the endoscope onto heat-absorbing surfaces (dark pieces of cloth, etc.), because this will cause unacceptable high heating or even ignition of the material. Switch the light off when you do not require the light over a prolonged period of time.
- Care is to be paid in respect to light sources when working with endoscopes. The intensity of the light is very high. Do not look directly into the light outlets! In case of possible light failure remove the endoscope from the working area.
- Always make sure that you do not blind patients with the light source! Watch out that patients do not look directly into the light source! You should always avoid looking directly into the light source.
> Damages to the eyes due to blinding may be the result.
- Exclusively connect ATMOS® HL 21 LED and ATMOS® LS 21 LED to the connections for ATMOS® HL 21 LED and ATMOS® LS 21 LED. Unsuitable application parts may result in an electric shock or damage. Cardiac arrhythmia and even death are possible.
- The ATMOS® S 61 Servant vision may only be used under the supervision of skilled staff who have been authorised by ATMOS and trained in its operation (IEC 601-1 / EN 60601-1).
- The mains voltage specified on the type plate must correspond with the data of the power supply system.
- Make sure prior to every application of the equipment that it is technically safe and in proper condition. Damaged cables must be replaced immediately!
- Never leave the patient unattended at the treatment unit.
- Correct configuration in assembly of country-specific connections:
 - green/yellow: protective conductor (PE)
 - blue: neutral conductor (N)
 - black or brown: phase
- Please note:
A medical insulating transformer with earth leakage monitor or any similar safety system acc. to EN 60601-1 is required, if several devices are connected over one common power supply. The transformer must correspond to the power consumption of all the devices to be connected.
- Do not place used contaminated instruments on the ENT unit!
- The ambient conditions specified in the "Technical data" must be strictly observed!
- Switch off main switch after finishing work in practice and close water supply, if present.
- The ATMOS® S 61 Servant vision may be operated only in rooms used for medical purposes, but not in areas subject to explosion hazards and in oxygen rich environments.
- The ATMOS® S 61 Servant vision meets the immunity to interference requirements of IEC 601-1-2 / EN 60601-1-2 „Electromagnetic Compatibility – Medical Electrical Devices“.
- The ATMOS® S 61 Servant vision may not be operated with devices not complying with the requirements of standard EN 60601-1 „Medical Electrical Equipment“ and EN 60601-1-2 „Electromagnetic Compatibility“ (Medical Electrical Equipment).
- ATMOS is not liable for personal injury and damage to property if
 - no original ATMOS parts are being used,
 - the advice for use in these operating instructions is not being observed,
 - assembly, new settings, alterations, extensions and repairs have been carried out by personnel not authorised by ATMOS.
- Never touch the device's interfaces and the patient at the same time!
- The unit may only be opened by a specialist authorised by ATMOS!
- Please pay attention to the period tests in chapter 7.0 „Service and maintenance“ on page 20.

3.0 Assembly: Connecting conditions



These connection conditions refer to the overall unit with maximum equipment.



3.1 Required connections for all units of ATMOS® S 61 Servant

Flexible multi-port distributors may not be used as a power supply for the ATMOS® S 61 Servant workstation, ATMOS® S 61 Servant vision or for an optional HF or radiofrequency surgical device.

| Unit / Device | Maximum required connections |
|---|--|
| ATMOS® S 61 Servant ENT workstation | 1 x earthing contact socket outlet |
| ATMOS® S 61 Servant vision | 1 x earthing contact socket outlet (basic version) or 1 x fixed connection for the integrated camera or stroboscope LED |
| ATMOS® S 61 Servant instruments | 3 x earthing contact socket outlet |
| Water separating system (WTA) | 1 x earthing contact socket outlet |
| Monitor | 1 x earthing contact socket outlet |
| Patient chair | 1 x earthing contact socket outlet |
| An adequate number of socket outlets with earthing contact should be mounted for possible connection of further electrically operated units which may be installed (e.g. installation of an electrically operated ATMOS® patient chair, water separating system, camera, monitor, etc.) | |

3.2 Connection to electrical power line

Prerequisites

- Installation acc. to IEC 60346-7-710: earth leakage circuit breaker (FI-circuit breaker) with rated leakage current <0.03 A
- Connection of the power supply cable of the ATMOS® S 61 Servant vision to a safety socket outlet near the device, max. 3 meters, preferably left (fig.). This may only be carried out by authorized qualified personnel.
- The supply circuit must be separated from other devices e.g. PCs etc.
- If isolating transformers are used then isolation monitoring must be integrated in the isolating transformer.
- Maximum power consumption:
 - ATMOS® S 61 Servant workstation 2.300 VA
 - ATMOS® S 61 Servant vision 200 VA
 - ATMOS® S 61 Servant instruments 250 VA

Flexible multi-port distributors may not be used as a power supply for the ATMOS® S 61 Servant vision or ATMOS® S 61 Servant workstation.

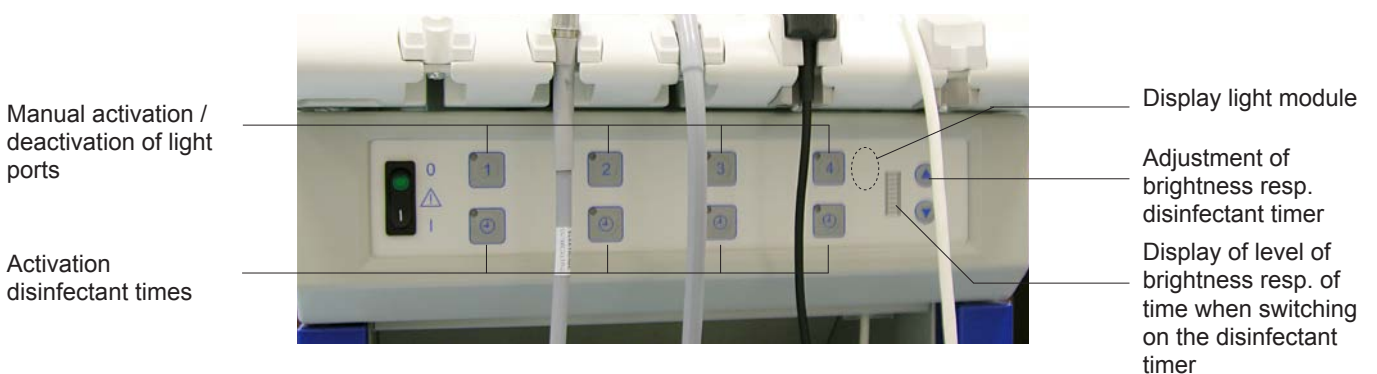
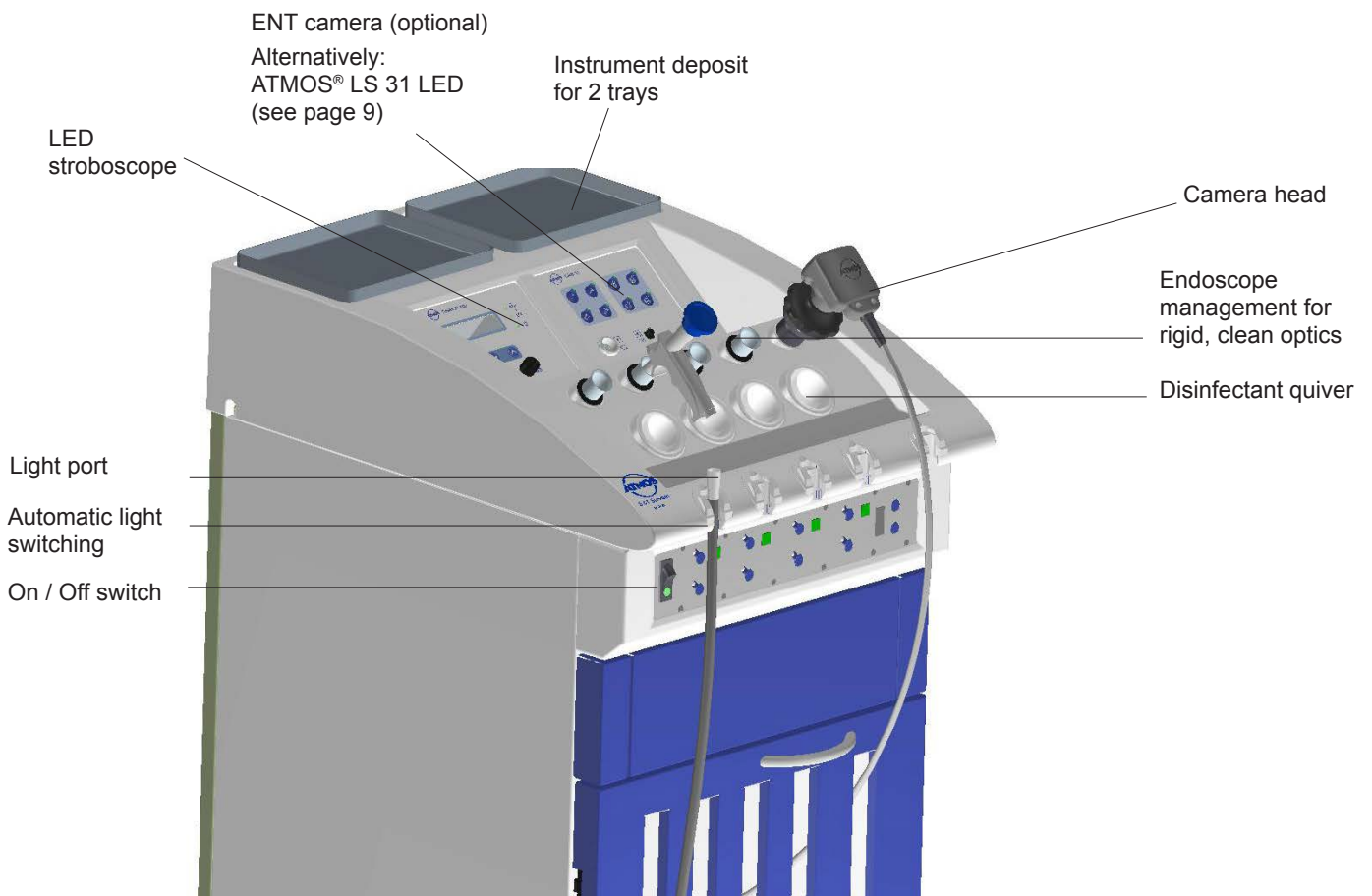
i First start-up

Prior to shipment each ATMOS® S 61 Servant is being inspected by the manufacturer for function and safety. In order to make sure that the appliance is working safely after transport and installation, the following points should be observed: The user should put the appliance into operation only if

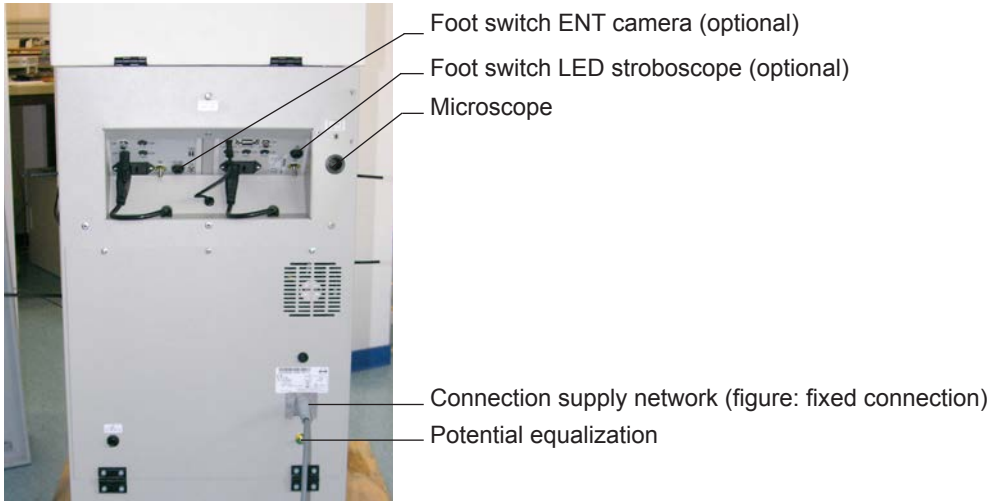
1. a functional test on the appliance at the place of operation has been carried out.
2. the operating instructions have been read and noticed.

Following transportation at low temperatures the appliance must be held for up to four hours at ambient temperature before first start-up. When the appliance has not been acclimatised the formation of condensation water is possible and a malfunction might be the result.

4.1 Front view: Controls and options at complete equipment



4.2 Connections



Connections version 1:

- ①, ② Connections for light guide
- ③, ④ Connections for ATMOS® HL 21 LED and ATMOS® LS 21 LED

The LED light module has different connections depending on the configuration:

Version 1:

2 connections for light guide

2 connections for ATMOS® HL 21 LED and ATMOS® LS 21 LED

Version 2:

4 connections for light guide

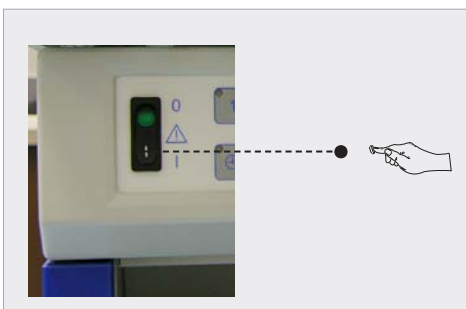
Version 3:

4 connections for ATMOS® HL 21 LED and ATMOS® LS 21 LED



Exclusively connect ATMOS® HL 21 LED and ATMOS® LS 21 LED to the connections for ATMOS® HL 21 LED and ATMOS® LS 21 LED. **Unsuitable application parts may result in an electric shock or damage.** Cardiac arrhythmia and even death are possible.

4.3 On / off switch



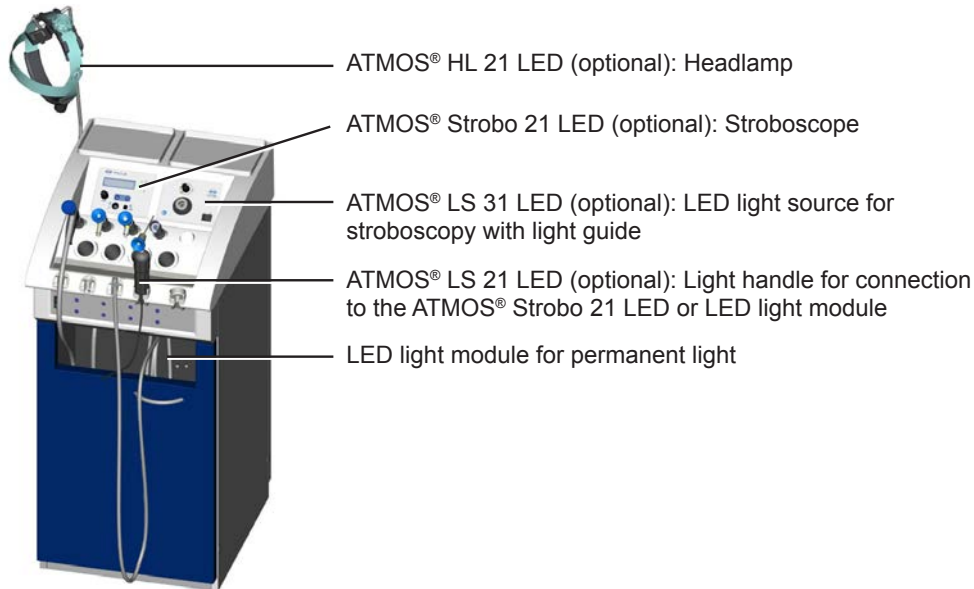
After switching on the mains switch, all integrated and connected devices are ready for operation.

→ green light at mains switch: Mains voltage switched on

When the device gets switched on, all LEDs are lit for a short while. Please check them each time you switch on the device.

4.4 Light modules and controls

Light modules



Control panel



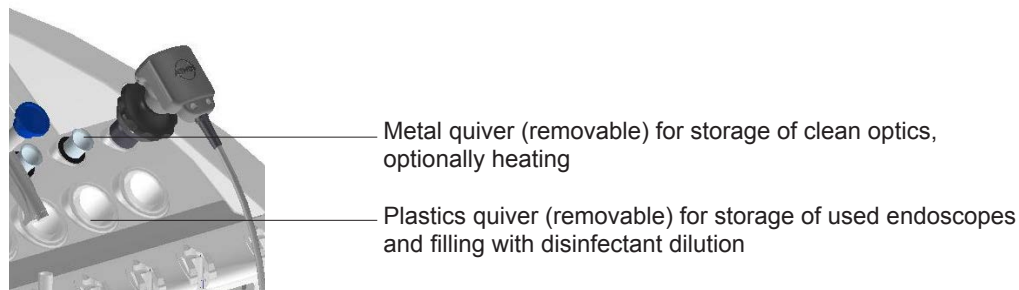
- After switching on, the light module is displayed amongst the corresponding light port (LED or no display [no display: no light module integrated / intended]). The kind of display depends on the presetting from installing resp. your purchased options.
- The ATMOS® LS 31 LED can be switched on and off independent of the device. Observe the separate operating instructions.
- Activate light module by removing the light guide or by taking off the headlight.
- In the case that more than one light guide is removed, the last one will be activated. As soon as this light guide is put back, the light source of the other light guide is switched on again. When two light guides are taken out and it should be impeded that the unused channel is activated, it can be switched off manually immediately after removal.
- Adjustment of brightness:
Choose port, press the up/down button on the right side (possible: from 100 % until 10 %). When switching off the device the last adjustment will be kept.

Observe the separate operating instructions for the options:

- ATMOS® HL 21 LED
- ATMOS® LS 21 LED
- ATMOS® LS 31 LED

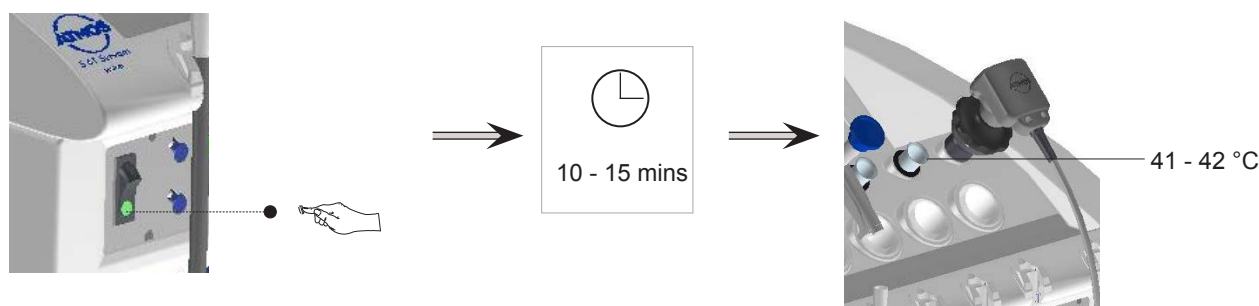
4.5 Endoscope management

4.5.1 Overview



i Please treat the instruments carefully, when inserting resp. removing.

4.5.2 Endoscope heating



! Fire hazard!
Prior to each use on your patient check your instruments' temperature (on the back of your hand or similar).

i Only store and heat clean instruments!

i Clean and disinfect the storage quivers regularly! Therefore please note the instructions in chapter "5.0 Cleaning".

4.5.3 Disinfection monitoring

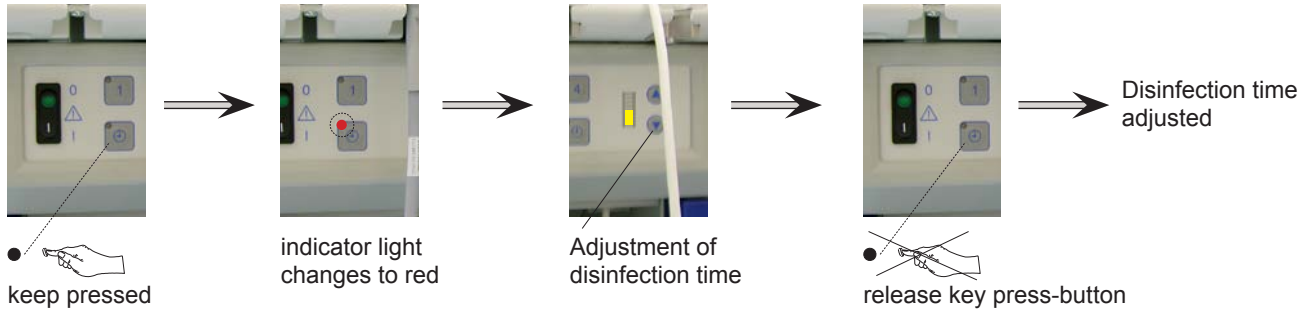
! Only fill quivers with admitted and nonhazardous disinfectants and always note application advices of the manufacturer. Read more in chapter "5.0 Cleaning".

Please note that the disinfecting quivers can be heated up to max. 42 °C!

i Additionally please observe the maximal and minimal allowed residence time of instruments in the disinfectant dilution
Check the adjusted time prior to use!

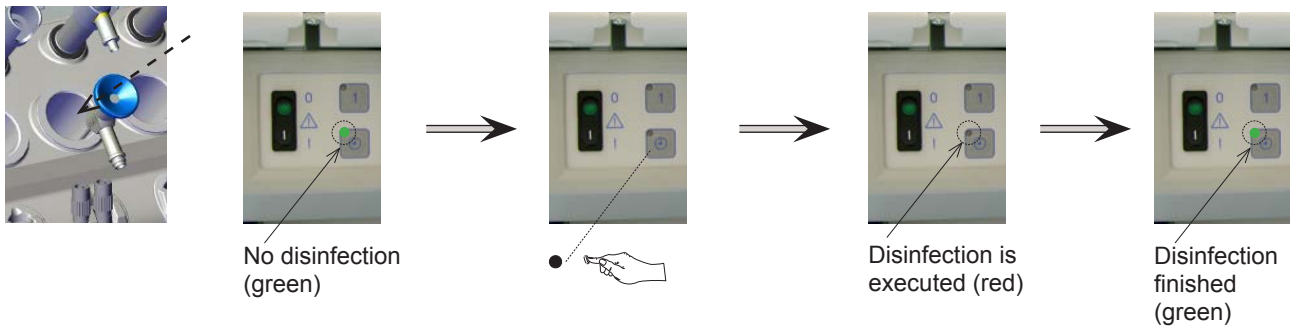
Adjustment of disinfection time

When switching on the unit the disinfection time is taken over from prior use.



| | | | | | | | | | | |
|--------------------------------|---|----|----|----|----|----|----|----|----|----|
| Displayed illuminated segments | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Time in mins | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |

Perform disinfection



Stop disinfection

Switch off timer by pressing the button again when timer is active!

i An additional acoustic signal results after end of disinfection.

4.6 ATMOS® ENT camera – quick start

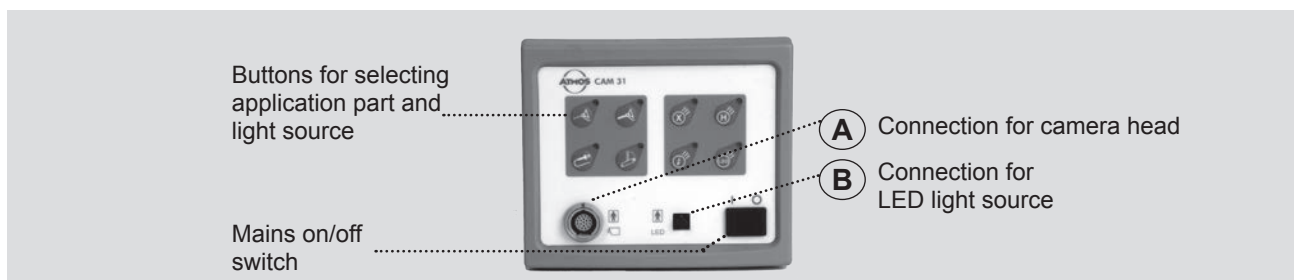


The integrated ATMOS® ENT camera ATMOS® Cam 21 / 31 features separate operating instructions.

Please note:

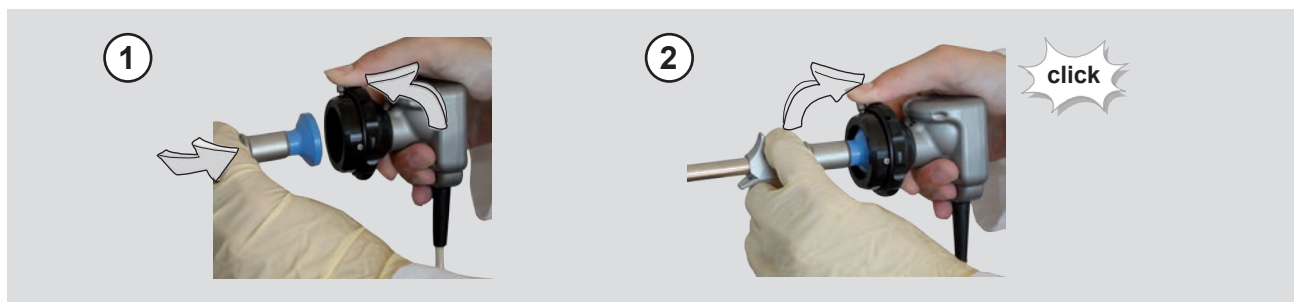
Read these separate operating instructions attentively and follow the stated notes for your safety to guarantee ideal and safe use of all functions!

4.6.1 Controls and front view



4.6.2 Operation

By switching on the unit ATMOS® S 61 Servant vision the ENT camera is automatically switched on also.



Choose light source

1.) at the treatment unit:

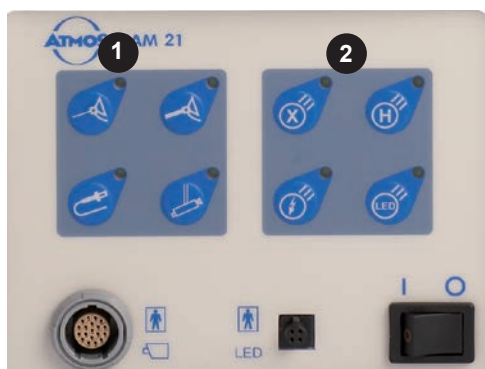
Take out the wanted light source. The adjustments on the camera (LED, Halogen) have been set ex works.

2.) directly at the camera:

Take out the wanted light source (see above). Choose desired optics by pressing the button at the camera (1).

Choose the used light source (2).

When using the camera next time, all adjustments will be taken over from prior use.



4.7 ATMOS® LED stroboscope - quick start

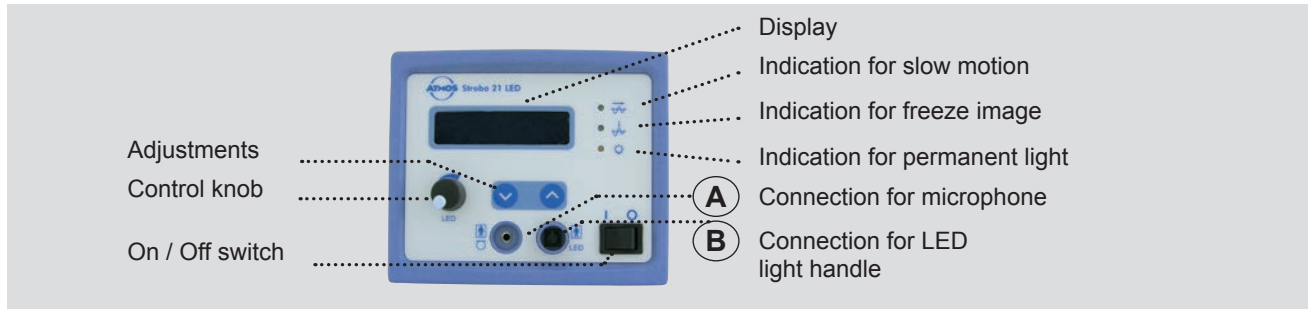


The integrated ATMOS® LED Stroboscope ATMOS® Strobo 21 LED features separate operating instructions.

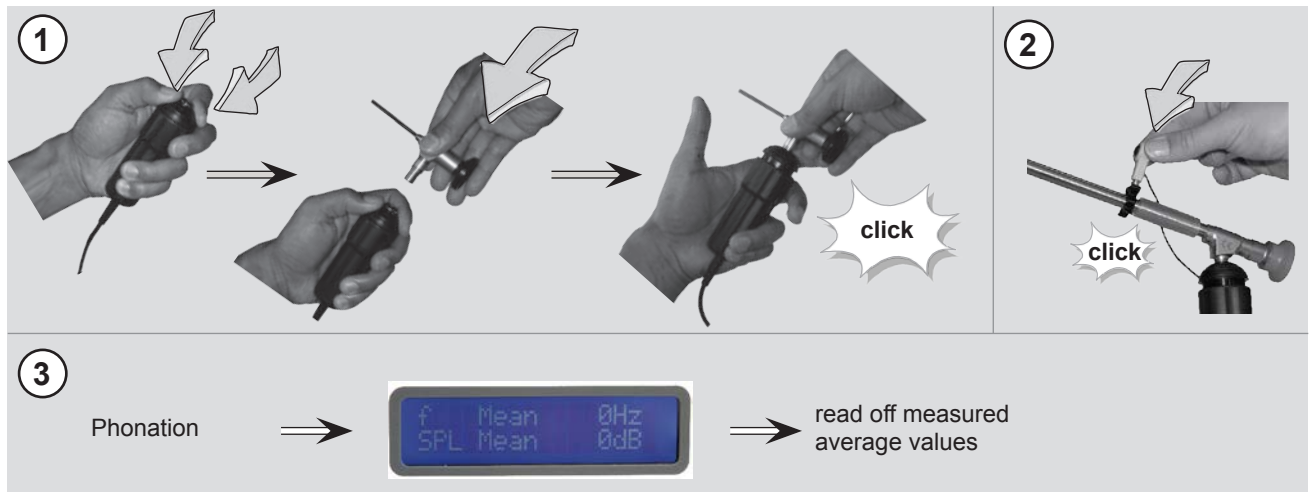
Please note:

Read these separate operating instructions attentively and follow the stated notes for your safety to guarantee ideal and safe use of all functions!

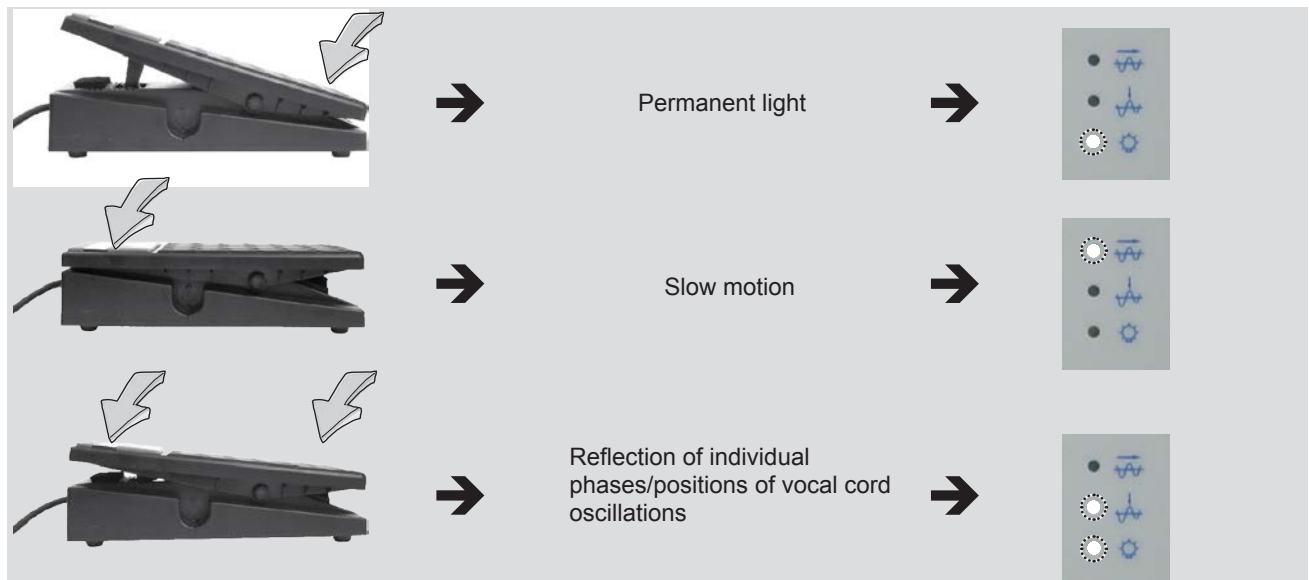
4.7.1 Controls and front view



4.7.2 Operation



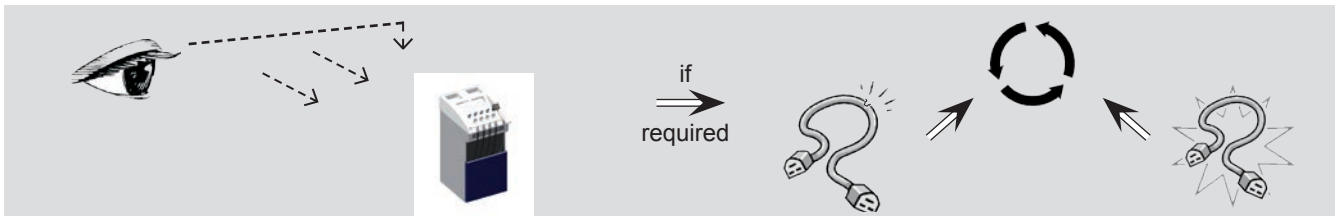
4.7.3 Operate the foot switch



5.1 General information on cleaning and disinfection

Prior to cleaning

Medical devices like the ATMOS® S 61 Servant vision need to be fail safe at any time. Therefore we recommend prior to every use:



5.1.1 Cleaning the unit surface

- The surfaces of the ATMOS® S 61 Servant vision are resistant against all surface disinfectants listed in chapter „Recommended surface disinfectants“. Please note that long-term use of disinfectants with alcohol might affect the flexibility and transparency of the protective covers.
- Wipe the unit surface with a cloth moistened with a cleaning or disinfecting solution.
- You may also use disinfectant sprays or disinfectant tissues for cleaning and disinfection.
- Please take care that all surfaces are dry wiped. Use a single-use cloth to absorb any liquid.
- In case that any disinfectant is spilled, please take care to dry wipe the surface immediately in order that no liquid may penetrate gaps and edges.
- Always observe the concentration specifications and instructions by the respective manufacturer!

Do not use


- Disinfectants which contain organic or inorganic acids or bases as they could cause corrosion damage.
- Disinfectants containing chloramides or phenol derivatives, since these may cause stress cracks in the material used for the housing of the unit.

5.1.2 Instrument trays

- Before disinfection, thoroughly rinse the trays under running water. A detergent or cleaning agent (surface disinfectant) may also be used if required.
 - Use water to thoroughly rinse all residues of these substances.
- Melamine and anodized aluminium trays cannot be sterilised.

5.1.3 Endoscope quivers

- The metal quivers of the endoscope holder are to be used solely for holding the endoscopes, **these first having been cleaned and** disinfected. The quivers are to be cleaned daily and subsequently disinfected. For doing this, the stopper at the lower end should be taken off.

-  • Only deposit clean instruments on the board!
- Clean and disinfect the instruments regularly!

5.2 Recommended instrument disinfectants

Manual disinfection of instruments

| Disinfectant | Ingredients | in 100 g | Manufacturer |
|--|--|-----------------------------------|--------------------------------|
| Korsolex® med AF (Application concentrate) | N-dodecylpropane-1,3-diamine N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine surfactants, corrosion inhibitors, ph-value regulators, foam inhibitors | 15.6 g 5.1 g | Bode Chemie, Hamburg |
| Korsolex® basic (Application concentrate) | glutaral (ethylenedioxy)dimethanol surfactants, salts, corrosion inhibitors | 15.2 g 19.7 g | Bode Chemie, Hamburg |
| Korsolex® plus (Application concentrate) | N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine didecyltrimethylammonium chloride surfactants, corrosion inhibitors, complexing agents, ph-value regulators | 9.2 g 13.0 g | Bode Chemie, Hamburg |
| Korsolex® extra (Application concentrate) | (ethylenedioxy)dimethanol glutaral benzyl-C12-18-alkyldimethyl-ammonium chlorides didecyltrimethylammonium chloride surfactants, foam inhibitors, corrosion inhibitors | 15.3 g 7.5 g 1.0 g 1.0 g | Bode Chemie, Hamburg |
| neodisher® Septo MED (Application concentrate) | N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine didecyltrimethylammonium chloride non-ionic surfactants, perfumes | 9.2 g 13.0 g | Dr. Weigert, Hamburg |
| neodisher® Septo 3000 (Application concentrate) | glutaral (ethylenedioxy)dimethanol | 15.2 g 19.7 g | Dr. Weigert, Hamburg |
| Sekusept® PLUS (Application concentrate) | glucoprotamin | 25 g | Ecolab, Düsseldorf |
| Sekusept® aktiv (Application concentrate) | sodiumpercarbonate, non-ionic surfactants, phosphonates | | Ecolab, Düsseldorf |
| Gigasept® Instru AF (Application concentrate) | Cocospropylendiaminguanidindiacetate Phenoxypropanols Benzalkonium chloride non-ionic surfactants, ph-value regulators, corrosion inhibitors | 14 g 35 g 2.5 g | Schülke & Mayr, Norderstedt |
| Gigasept® FF (new) (Application concentrate) | succinaldehyde dimethoxytetrahydrofuran anionic and non-ionic surfactants, perfumes, methylisothiazolinone | 11.9 g 3.2 g | Schülke & Mayr, Norderstedt |
| Gigazyme® (Application concentrate) | non-ionic surfactants, enzymes, corrosion inhibitors | 5 - 15 g | Schülke & Mayr, Norderstedt |

Automatic disinfection of instruments

| Disinfectant | Ingredients | in 100 g | Manufacturer |
|--|---|----------------------------------|--------------------------------|
| Dismoclean® 24 Vario (Application concentrate) | surfactants, micro-encapsulated enzymes, corrosion inhibitors, complexing agents | | Bode Chemie, Hamburg |
| Dismoclean® 28 alka med (Application concentrate) | alkali dispenser, complexing agents, corrosion inhibitors, surface active materials | | Bode Chemie, Hamburg |
| Dismoclean® twin basic / twin zyme | | | Bode Chemie, Hamburg |
| Dismoclean® twin basic | alkali dispenser, complexing agents, corrosion inhibitors | | |
| Dismoclean® twin zyme | surface active materials, enzymes, stabilisers, corrosion inhibitors | | |
| neodisher® FA | phosphates | 15 - 30 g | Dr. Weigert, Hamburg |
| neodisher® MediClean forte (Application concentrate) | non-ionic and anionic surfactants enzymes | < 5 g | Dr. Weigert, Hamburg |
| Thermosept® alka clean forte (Application concentrate) | non-ionic surfactants anionic surfactants NTA (nitrilotriacetic acid) and its salts enzymes, poly carboxylates corrosion inhibitors | < 5 g < 5 g < 5 g < 5 g | Schülke & Mayr, Norderstedt |
| Thermosept® RKN-zym | non-ionic surfactants, enzymes, corrosion inhibitors, glycols | 5 - 15 g | Schülke & Mayr, Norderstedt |

5.3 Recommended surface disinfectants

Coated surfaces

| Disinfectant | Ingredients | in 100 g | Manufacturer |
|--|---|-------------------------|--------------------------------|
| Green & Clean SK | Di alkyl dimethyl ammonium chloride Alkyl dimethyl ethyl benzyl ammonium chloride Alkyl dimethyl benzyl ammonium chloride | < 1 g < 1 g < 1 g | Metasys, Rum (Austria) |
| Dismozon® pur (Granulate) End of product 12/2014 | magnesium monoperoxyphthalate hexahydrate | 80 g | Bode Chemie, Hamburg |
| Dismozon® plus (Granulate) | magnesium monoperoxyphthalate hexahydrate | 95.8 g | Bode Chemie, Hamburg |
| Kohrsolin® FF (Application concentrate) | glutaral benzyl-C12-18-alkyldimethyl-ammonium chlorides didecyldimethylammonium chloride | 5 g 3 g 3 g | Bode Chemie, Hamburg |
| Perform® | Potassium peroxymonosulfate | 45 g | Schülke & Mayr, Norderstedt |
| Terralin® Protect (Application concentrate) | benzyl-C12-16 alkyldimethyl, chloride 2-phenoxyethanol aminoalkylglycine non-ionic surfactants, perfumes | 22 g 17 g 0.9 g | Schülke & Mayr, Norderstedt |

Other surfaces

| Disinfectant | Ingredients | in 100 g | Manufacturer |
|--|---|-----------------------|--|
| Dismozon® pur (Granulate) End of product 12/2014 | magnesium monoperoxyphthalate hexahydrate | 80 g | Bode Chemie, Hamburg |
| Dismozon® plus (Granulate) | magnesium monoperoxyphthalate hexahydrate | 95.8 g | Bode Chemie, Hamburg |
| Kohrsolin® FF (Application concentrate) | glutaral benzyl-C12-18-alkyldimethyl-ammonium chlorides didecyldimethylammonium chloride | 5 g 3 g 3 g | Bode Chemie, Hamburg |
| Perform® | Potassium peroxymonosulfate | 45 g | Schülke & Mayr, Norderstedt |
| Terralin® Protect (Application concentrate) | benzyl-C12-16 alkyldimethyl, chloride 2-phenoxyethanol aminoalkylglycine non-ionic surfactants, perfumes | 22 g 17 g 0.9 g | Schülke & Mayr, Norderstedt |
| Surface disinfection F 312 | alkyl-benzyl-dimethyl-ammonium chloride non-ionic surfactants, complexing agents, hexyl cinnamal, butyl phenyl methyl proionale, linalool | 13 g | Dürr Dental, Bietigheim- Bissingen |

When using disinfectants containing aldehyde and amine at the same object. colour changes may occur.

5.4 Recommended endoscope disinfectants

Manual disinfection of endoscopes

| Disinfectant | Ingredients | in 100 g | Manufacturer |
|---|--|------------------------|-------------------------|
| Helipur® H plus N | glutaral 2-propanol ethyl hexanol surfactants, complexing agents, corrosion inhibitors, colorants, perfumes | 12 g 7.5 g 0.5 g | BBraun, Melsungen |
| Helix® Ultra | peracetic acid | | BBraun, Melsungen |
| Korsolex® basic | glutaral (ethylendioxy) dimethanol surfactants, salts, corrosion inhibitors | 15.2 g 19.7 g | Bode Chemie, Hamburg |
| neodisher® MediClean forte (Application concentrate) | non-ionic and anionic surfactants enzymes | < 5 g | Dr. Weigert, Hamburg |
| Sekusept® aktiv (Application concentrate) | sodiumpercarbonate, non-ionic surfactants, phosphonates | | Ecolab, Düsseldorf |

Automatic disinfection of endoscopes

| Disinfectant | Ingredients | in 100 g | Manufacturer |
|---|---|------------------|-----------------------------------|
| Korsolex® basic | glutaral (ethylendioxy) dimethanol surfactants, salts, corrosion inhibitors | 15.2 g 19.7 g | Bode Chemie, Hamburg |
| neodisher® MediClean forte (Application concentrate) | non-ionic and anionic surfactants enzymes | < 5 g | Dr. Weigert, Hamburg |
| Gigasept® FF (new) (Application concentrate) | succindialdehyde dimethoxytetrahydrofuran anionic and non-ionic surfactants, perfumes, methylisothiazolinone | 11.9 g 3.2 g | Schülke & Mayr, Norderstedt |
| Endozime® AW Plus | 2-propanol | | Ruhof, Mineola (USA) |
| AdaptacleanTM | Potassium hydroxide, surfactants | | ASP, Norderstedt |



Cleaning and disinfection plan

ATMOS® S 61 Servant



| | What | How | | | Notices | When | | | | Who |
|---|---|---------------|----------------------|----------------------|---|------------------------|-------|--------|---------|-----|
| | | C Cleaning | D Disinfection | S Sterilization | | After each application | Daily | Weekly | Monthly | |
| Secretion canister | | | | | | | | | | |
| | Hose connection (grommet) | X | X ^{2,4,5} | | Cleaning and disinfection (manual or automatic) | | X | | | |
| | Secretion canister lid | X | X ^{2,4,5} | | Cleaning and disinfection (manual or automatic) | | X | | | |
| | Seal | X | X ^{2,4,5} | | Cleaning and disinfection (manual or automatic) | | X | | | |
| | Bacterial filter | | | | Exchange daily or when blocked | | X | | | |
| | Splash guard | X | X ^{2,4,5} | | Cleaning and disinfection (manual or automatic) | | X | | | |
| | Float ball | X | X | | Cleaning and disinfection (manual or automatic) | | X | | | |
| | Suction hose in the canister | X | X ^{2,4,5} | | Cleaning and disinfection (manual or automatic) | | X | | | |
| | Secretion canister | X | X | | Empty when the canister is full; at least daily; Cleaning and disinfection (manual or automatic) | | X | | | |
| | Disposable canister system | | | | Exchange and disposal of full canister | | X | | | |
| Hose rinsing system | | | | | | | | | | |
| | Suction nozzle for hose rinsing | X | X ³ | | Wipe cleaning and disinfection | | X | | | |
| | Silicone attachment piece | X | X ^{2,4,5,6} | | Cleaning and disinfection (manual or automatic) | | X | | | |
| | | | | | Exchange of the silicone attachment | | | | X | |
| | Suction nipple | X | | | Manual cleaning after each application | X | | | | |
| | | | | X ^{2,4,5,6} | Cleaning and disinfection (manual or automatic) | | X | | | |
| | Secretion suction hose | X | | | Rinse the secretion hose with the hose rinsing system after each application; | X | | | | |
| | | | | X ^{2,4,5,6} | Exchange or disinfection of the hose | | | | X | |
| | Storage canister hose rinsing | X | X ^{2,4,5,6} | | Cleaning with a brush; cleaning and disinfection (automatic or manual) | | X | | | |
| Ear irrigation / Thermal nystagmus stimulation | | | | | | | | | | |
| | Ear irrigation bowl | X | X ^{2,4,5} | | Cleaning and disinfection (manual or automatic) | X | | | | |
| | Handle | X | X ³ | | Wipe cleaning and disinfection | | X | | | |
| | Jet connection | X | X ^{2,4,5,6} | | Cleaning and disinfection (manual or automatic) | | X | | | |
| | Splash guard | X | X ^{2,4,5} | | Cleaning and disinfection (manual or automatic) | | X | | | |
| | Hose tip (disposable) | | | | Exchange after each application | X | | | | |
| | Rinsing attachment | X | X ^{2,4,5} | | Cleaning and disinfection (manual or automatic) | X | | | | |
| | Hygiene filter | | | | See operating instructions for hygiene filter | | | | X | |
| | Rinsing lid with rinsing hose | X | X ^{2,4,5} | | Cleaning and disinfection (manual or automatic) | | X | | | |
| | Rinsing bottle | X | X ^{2,4,5,6} | | Cleaning and disinfection (manual or automatic); cleaning in the dishwasher with the glass care programme | | X | | | |
| Medication nebulisation / Politzer | | | | | | | | | | |
| | Handle compressed air | X | X ³ | | Manual cleaning and disinfection | | X | | | |
| | Sprayer jet | X | | | Cleaning after each application | X | | | | |
| | | | | X ^{2,4,5,6} | Cleaning and disinfection (manual or automatic) | | X | | | |
| | Sprayer head | | X ^{2,4,5} | | Multiple rinsing of the sprayer head with water | | | X | | |
| | Hose at sprayer head | X | X | | Weekly exchange of the hose or when changing the medication | | | X | | |
| | Sprayer bottle | X | X ^{2,4,5,6} | | Cleaning in a cleaning and disinfection device; weekly or when changing the medication | | | X | | |
| | Politzer olive | X | X ^{2,4,5,6} | | Exchange after each application, cleaning and disinfection | X | | | | |
| | Politzer connection | X | X ^{2,4,5,6} | | Exchange after each application, cleaning and disinfection | X | | | | |
| Endoscope management | | | | | | | | | | |
| | Plastic quiver | X | X ^{2,4,5} | | Cleaning with a brush; disinfection | | X | | | |
| | Metal quiver | X | X ^{2,4,5,6} | | Cleaning with a brush; disinfection (automatic or manual) | | X | | | |
| | Fixation adapter for plastic quiver | X | X ^{2,4,5} | | Cleaning and disinfection (manual or automatic) | | X | | | |
| | Protective sleeve (teflon element for metal quiver) | X | X ^{2,4,5} | | Cleaning and disinfection (manual or automatic) | | X | | | |

Qualified and trained staff who are familiar with reprocessing. (Please fill in the responsible person -> use a water-based overhead marker)

| | What | How | | | Notices | When | | | Who |
|--|-------------------------|---------------|-------------------|--------------------|---------|------------------------|-------|--------|---|
| | | C Cleaning | D Disinfection | S Sterilization | | After each application | Daily | Weekly | |
| | Parts to be reprocessed | | | | | | | | Qualified and trained staff who are familiar with reprocessing. (Please fill in the responsible person, use a water-based over-head marker) |

Instrument management

| | | | | | | | | |
|----------------------------|---|--------------------|---|---|---|---|--|--|
| ENT instruments | X | X ^{2,4,5} | X | Immerse instruments into solution immediately after use, complete wetting is required, air must be removed from any cavities, after the contact time instruments must be rinsed with water, have to be dried and sterilised afterwards. Please also observe the ATMOS operating instructions for ENT instruments. | X | | | |
| Instrument bowl | X | X ⁴ | | Cleaning and disinfection (manual) | | X | | |
| Instrument bowl with cover | X | X ⁴ | | Cleaning with a brush; disinfection (manual) | | X | | |

Visualization

| | | | | | | | | |
|----------------------|---|--------------------|----------------|--|---|---|--|--|
| ATMOS® Cam 21 / 31 | X | X ³ | | Wipe cleaning and disinfection | | X | | |
| ATMOS® Strobo 21 LED | X | X ³ | | Wipe cleaning and disinfection | | X | | |
| ATMOS® LS 31 LED | X | X ³ | | Wipe cleaning and disinfection | | X | | |
| Flexible Endoscope | X | X ^{1,7,8} | X ¹ | Immediate pre-cleaning after application | X | | | |
| Rigid endoscope | X | X ^{1,7,8} | X ¹ | Immediate pre-cleaning after application | X | | | |
| Laryngoscope | X | X ^{1,7,8} | X ¹ | Immediate pre-cleaning after application | X | | | |
| Light cable | X | X ³ | | Wipe cleaning and disinfection | | X | | |
| Light grip | X | X ³ | | Wipe cleaning and disinfection | | X | | |
| Microscope | X | X ³ | | Wipe cleaning and disinfection | | X | | |
| Headlight | X | X ³ | | Wipe cleaning and disinfection | | X | | |

Radiofrequency surgery

| | | | | | | | | |
|-------------------------|---|----------------------|----------------|--|---|---|--|--|
| ATMOS® RS 221 (surface) | X | X ³ | | Wipe cleaning and disinfection | | X | | |
| Ergonomic handles | X | X ^{1,2,4,5} | X ¹ | Wipe cleaning and disinfection | X | | | |
| Bipolar tweezers | X | X ^{1,2,4,5} | X ¹ | Immediate pre-cleaning after application; Cleaning and disinfection (manual or automatic); Use of enzymatic detergents | X | | | |
| Bipolar electrode | X | X ^{1,2,4,5} | X ¹ | Immediate pre-cleaning after application; Cleaning and disinfection (manual or automatic); Use of enzymatic detergents | X | | | |
| Bipolar electrode cable | X | X ^{1,2,4,5} | X ¹ | Immediate pre-cleaning after application; Cleaning and disinfection (manual or automatic); Use of enzymatic detergents | X | | | |
| Neutral electrode | X | X ^{1,2,4,5} | X ¹ | Immediate pre-cleaning after application; Cleaning and disinfection (manual or automatic); Use of enzymatic detergents | X | | | |
| Neutral electrode cable | X | X ^{1,2,4,5} | X ¹ | Immediate pre-cleaning after application; Cleaning and disinfection (manual or automatic); Use of enzymatic detergents | X | | | |
| ENT electrodes | X | X ^{1,2,4,5} | X ¹ | Immediate pre-cleaning after application; Cleaning and disinfection (manual or automatic); Use of enzymatic detergents | X | | | |

Surfaces

| | | | | | | | | |
|-----------------------------------|---|----------------|--|--|---|---|---|--|
| Housing | X | X ³ | | Wipe cleaning and disinfection | | | X | |
| Roller shutter | X | X ³ | | Wipe cleaning and disinfection | | | X | |
| System frame | X | X ³ | | Wipe cleaning and disinfection | | | X | |
| Drawers | X | X ³ | | Wipe cleaning and disinfection | | | X | |
| Writing surface | X | X ³ | | Wipe cleaning and disinfection | X | | | |
| Instrument deposit | X | X ³ | | Wipe cleaning and disinfection | X | | | |
| Mirror preheater | X | X ³ | | Wipe cleaning and disinfection | | | X | |
| Tongue patches and swab dispenser | X | X ³ | | Wipe cleaning and disinfection; Daily or when refilling | | X | | |
| Waste disposal | X | X ³ | | Wipe cleaning and disinfection; Daily or when refilling | | X | | |
| Instrument tray | X | X ³ | | Wipe cleaning and disinfection; Daily or when refilling | | X | | |

Recommended disinfectants

- ³⁾ Surface disinfection for coated surfaces:
- Green & Clean SK (ATMOS)
 - Dismozon® plus (Bode Chemie)
 - Kohrsolin® FF (Bode Chemie)
 - Perform® (Schülke & Mayr)
 - Terralin® Protect (Schülke & Mayr)

Other surfaces:

- Dismozon® plus (Bode Chemie)
- Kohrsolin® FF (Bode Chemie)
- Mikrobac® forte (Bode Chemie)
- Perform® (Schülke & Mayr)
- Terralin® Protect (Schülke & Mayr)
- Surface disinfectant FD 312 (Dürr Dental)

⁴⁾ Manual disinfection of instruments:

- Korsolex® med AF (Bode Chemie)
- Korsolex® basic (Bode Chemie)
- Korsolex® plus (Bode Chemie)
- Korsolex® extra (Bode Chemie)
- neodisher® Septo MED (Dr. Weigert)
- neodisher® Septo 3000 (Dr. Weigert)
- Sekusept® PLUS (Ecolab)
- Sekusept® aktiv (Ecolab)
- Gigasept® Instru AF (Schülke & Mayr)
- Gigazyme® (Schülke & Mayr)
- Gigasept® FF neu (Schülke & Mayr)

⁵⁾ Automatic disinfection of instruments:

- Dismoclean® 24 Vario (Bode Chemie)
- Dismoclean® 28 alka med (Bode Chemie)
- Dismoclean® twin basic/twin zyme (Bode Chemie)
- neodisher® FA (Dr. Weigert)
- neodisher® MediClean forte (Dr. Weigert)
- Thermosept® alka clean forte (Schülke & Mayr)
- Thermosept® RKN-zym (Schülke & Mayr)

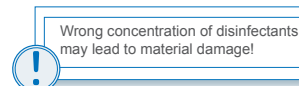
⁷⁾ Endoscopes - manual disinfection:

- Helipur® H plus N (BBraun)
- Helix® Ultra (BBraun)
- Korsolex® Basic (Bode Chemie)
- neodisher® MediClean forte (Dr. Weigert)
- Sekusept® aktiv (Ecolab)

⁸⁾ Endoscopes - automatic disinfection:

- Korsolex® Basic (Bode Chemie)
- neodisher® MediClean forte (Dr. Weigert)
- Gigasept® FF neu (Schülke & Mayr)
- Endozime® AW Plus (Ruhof)
- ADAPTACLEAN™ (ASP)

For concentrations, contact time, temperature, material compatibility, please see the relevant information from the manufacturer.



The above stated hygiene requirements are based on the regulations according to the Medical Devices Act, the Medical Devices Operator Ordinance, §18 IfSG and the recommendations of the Robert Koch Institute. Definition of the required reprocessing steps result from the recommendations of the Robert Koch Institute: „Requirements for the reprocessing of medical products“, from Robert Koch Institute. The medical products were categorised in the risk groups uncritical, semi-critical and critical. The reprocessing measures mentioned in this cleaning and disinfection plan are a recommendation of ATMOS MedizinTechnik. Any additional reprocessing measures are at the operator's discretion. All the recommended disinfectants which are stated herein are listed disinfectants (VAH/RKI) and have been tested on their suitability of use on the ATMOS® S 61 Servant. ATMOS MedizinTechnik cannot be held liable for any damage caused by wrong concentration of the disinfectants or by the application of any other disinfectants. Patients with suspicion of a clinical disease or who developed a transmissible spongiform encephalopathy (CJK, vCJK, etc.) have to be treated at facilities which are able to provide for the necessary preventive measures against infection. The reprocessing of the reusable instruments and material may only be performed at facilities which have an externally certified QM Management acc. to DIN EN ISO 13485. The Medical Devices Act, IfSG, the RKI directives, BGR 250 and TRBA 250 always have to be considered.

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Important information

Wipe cleaning and disinfection:
All surfaces have to be wiped with a clean (disposable) wipe which is damped with disinfectant solution. The entire surface has to be wiped thoroughly and may not be dried afterwards.

¹⁾ Please observe the manufacturer's operating instructions.

²⁾ Preferred: machine cleaning and disinfection in the washer disinfectant

⁵⁾ Material dimensionally stable at 134°C

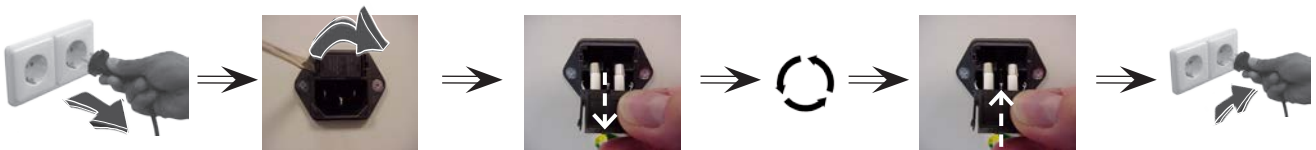
Maintenance, repairs and period tests may only be carried out by persons who have the appropriate technical knowledge and are familiar with the product. To carry out these measures the person must have the necessary test devices and original spare parts.

ATMOS recommends: Work should be carried out by an authorized ATMOS service partner. This ensures that repairs and testing are carried out professionally, original spare parts are used and warranty claims remain unaffected.

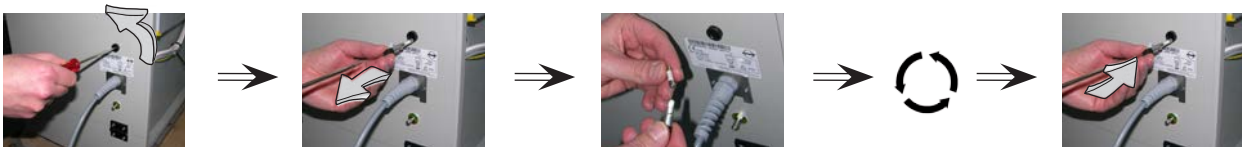
At least every 12 months a repeat test of the electrical safety should be performed according to IEC 62353. ATMOS recommends an inspection according to the manufacturer's specifications.

7.1 Replacing the fuse

7.1.1 Earthing contact socket outlet



7.1.2 Fixed connection



7.2 Sending in the device

- Remove and properly dispose of consumables.
- Clean and disinfect the product and accessories according to the operating instructions.
- Place used accessories with the product.
- Fill in the form QD 434 „Delivery complaint / return shipment“ and the respective **decontamination certificate**.
- ☞ This form is enclosed to each delivery and can be found at www.atmosmed.com.
- The device must be well padded and packed in suitable packaging.
- Place the form QD 434 „Delivery complaint / return shipment“ and the respective **decontamination certificate** in an envelope.
- Affix the envelope to the outside of the package.
- Send the product to ATMOS or to your dealer.



| Description | Possible causes | Measure |
|---|--|-----------------------------------|
| Light module | | |
| No light | > Defective electronics | Contact the ATMOS service! |
| Green control light at mains switch does not glow, device does not work | > AC power line not connected | Connect AC power line |
| | > Device fuse is defective | Replace fuses |
| Green control light at mains switch glows, but device does not work | > AC power line defective | Contact the ATMOS service! |
| | > AC power line fuse defective | Contact the ATMOS service! |
| Microscope | | |
| No activation / deactivation of microscope light port via microscope column | > Cable of switching contact is not or not correctly connected | Connect cable correctly to device |
| | > Switching contact in microscope column is defective / misaligned | Contact the ATMOS service! |



| Accessories for light package 2-channel LED for light guide and ATMOS® LS 31 LED | | 531.1100.0 |
|--|--|-------------------|
| Adapter for light conductor with ATMOS®/Storz connection | | 530.6100.0 |
| Adapter for light conductor with Olympus connection | | 530.6101.0 |
| Adapter for light conductor with Pentax connection | | 530.6102.0 |
| Adapter for light conductor with Wolf connection | | 530.6103.0 |
| High-perf. light guide cable, Ø 4.8 mm, L = 1.8 m, Storz, straight | | 950.0152.0 |
| Light conducting cable, Ø 3.5 mm, L = 1.7 m, Storz, straight | | 508.0663.0 |
| Light conducting cable, Ø 3.5 mm, L = 1.8 m, Storz angled, 90° | | 508.0664.0 |
| Trigger cable for connection of the ATMOS® LS 31 LED to the ATMOS® Strobo 21 LED from date of manufacture 2016-10 | | 507.4838.0 |
| Trigger cable for connection of the ATMOS® LS 31 LED to the ATMOS® Strobo 21 LED up to date of manufacture 2016-09 | | 507.4837.0 |
| Accessories for light package 2-channel LED for ATMOS® HL 21 LED and ATMOS® LS 21 LED | | 531.1200.0 |
| ATMOS® LS 21 LED | | 507.4600.0 |
| LED light handle for direct connection to endoscopes and laryngoscopes | | |
| ATMOS® LS 21 LED, warm white | | 507.4602.0 |
| LED light handle for direct connection to endoscopes and laryngoscopes | | |
| Lithium-ionic rechargeable battery | | 507.4510.0 |
| Battery for connection to ATMOS® LS 21 LED or ATMOS® HL 21 LED | | |
| Universal battery quick charging power supply unit (100-240 V~) | | 011.1199.0 |
| ATMOS® HL 21 LED | | 530.4020.0 |
| LED headlight with long-life and high-performance white light LED | | |
| Headlight acc. to Binner with headband, 90°, with light conducting cable | | 502.0515.5 |
| Headlight acc. to Binner without headband, 90°, with light conducting cable | | 502.0516.0 |
| Accessories for endoscope management | | |
| Shock protection adapter | | 508.0777.5 |
| for endoscopes Ø 2.8 - 4 mm, teflon element for metal quiver | | |
| Fixation adapter for plastics quiver | | 508.0782.0 |
| Blind for light conductor support | | 531.0271.0 |
| Accessories for LED stroboscope | | |
| Body sound stroboscope adapter | | 507.4775.0 |

10.0 Technical data at complete equipment

Please note the technical specifications of the single devices in the separate operating instructions!

| | |
|--|--|
| Voltage | 100 - 230 V~ ± 10 %; 50/60 Hz |
| Power consumption | Max. 1.0 A |
| Power consumption | Max. 200 VA |
| Fuses | 2 x T 3.15 A/H 250 V |
| Other safety equipment | Internal fuses on control circuit board |
| LED light module | Illuminance: min. 195 kLux (in 5 cm distance of a 4.7 mm high-performance light guide) Colour temperature: 5.500 K ± 10 % |
| Removable adaptor | Olympus, Wolf, Pentax |
| LED power supply for ATMOS® LS 21 LED | 700 mA regulated |
| Endoscope management | For rigid and flexible optics (max. length 500 mm), one quiver per clean and contaminated optics. |
| Endoscope heating | For 4 quivers, quivers temperature approx. 40 °C |
| Disinfection monitoring | Timer adjustable in 10 steps from 6 to 60 minutes |
| Camera module | see ATMOS® Cam 21 / 31 |
| LED stroboscope | see ATMOS® Strobo 21 LED |
| Operating time | Continuous operation |
| Protective earth conductor resistance | Max. 0,1 Ω |
| Earth leakage current | Max. 0.5 mA |
| Enclosure leakage current | Max. 0.1 mA |
| Patient leakage current | Max. 0.1 mA |
| Ambient conditions | |
| Transport / storage | -10...+50 °C 30...95 % humidity without condensing air pressure 500...1060 hPa |
| Operation | +10...+35 °C 30...95 % humidity without condensing air pressure 700...1060 hPa |
| Dimensions H x W x D | 88.5 x 41.2 x 54.0 cm |
| Weight | 15 - 30 kg, depending on configuration |
| Maximum operational altitude | ≤ 3000 m |
| Contamination level | 2 |
| Overvoltage category | II |
| Period tests | Repeat test of the electrical safety every 12 months. Recommended: inspection according to the manufacturer's specifications. |
| Safety class (EN 60601-1) | I |
| Type of protection | Application parts type BF |
| Type of protection | IPX0 |
| Classification in accordance with Annex IX to EC Directive 93/42/EEC | I |
| CE marking | CE |
| UMDNS code | 10-585 ENT treatment unit |
| GMDN code | 11585 |
| Ident-Nr. | 531.0000.0 |

Technical data unchanged since 20.10.2017



- The materials of the housing can be recycled completely.
- The ATMOS® S 61 Servant vision does not contain any hazardous goods.
- The component parts of the ATMOS® S 61 Servant vision must be disposed of correctly and the materials are to be separated carefully.



12.0 Notes on EMC

12.1 Guidelines and Manufacturer's Declaration - Emissions

The ATMOS® S 61 Servant vision is intended for use in the electromagnetic environment specified below. The customer or user of the ATMOS® S 61 Servant vision should ensure that it is used in such an environment.

| Emissions Test | Compliance | Electromagnetic Environment - Guidance |
|---|-------------|--|
| RF Emissions acc.to CISPR 11 | Group 1 | The ATMOS® S 61 Servant vision uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. |
| HF transmission according to CISPR 11 | Class B | The ATMOS® S 61 Servant vision is suitable for use in all establishments, including domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. |
| Harmonic emissions according to IEC 61000-3-2 | Class A | |
| Voltage fluctuations/flicker according to IEC 61000-3-3 | Corresponds | |

12.2 Guidelines and Manufacturer's Declaration - Immunity

The ATMOS® S 61 Servant vision is intended for use in the electromagnetic environment specified below. The customer or user of the ATMOS® S 61 Servant vision should ensure that it is used in such an environment.


| Immunity Test | IEC 60601- Test Level | Compliance Level | Electromagnetic Environment - Guidance |
|--|--------------------------|--------------------------|--|
| Electrostatic discharge (ESD) according to IEC 61000-4-2 | ± 6 kV Contact | ± 6 kV Contact | Floors should be wood, concrete, or ceramics tile. If floors are synthetic, the relative humidity should be at least 30 %. |
| | ± 8 kV Air | ± 8 kV Air | |
| Fast electrical transient/ burst IEC 61000-4-4 | ± 2 kV Mains | ± 2 kV Mains | Mains power quality should be that of a typical commercial or hospital environment. |
| | ± 1 kV I/Os | Inapplicable | |
| Surges IEC 61000-4-5 | ± 1 kV common-mode | ± 1 kV common-mode | Mains power quality should be that of a typical commercial or hospital environment. |
| | ± 1 kV differential mode | ± 1 kV differential mode | |
| Magnetic field at power frequency 50/60 Hz acc. to IEC 61000-4-8 | 3 A/m | Inapplicable | Power frequency magnetic fields should be that of a typical commercial or hospital environment. |

12.0 Notes on EMC

| Immunity Test | IEC 60601- Test Level | Compliance Level | Electromagnetic Environment - Guidance |
|---|--|---|--|
| Voltage Dips / Dropout IEC 61000-4-11 | <p>< 5 % UT (> 95 % Dip of the UT) for 0.5 Cycle</p> <p>40 % UT (60 % Dip of the UT) For 5 cycles</p> <p>70% UT (30 % Dip of the UT) For 25 cycles</p> <p>< 5 % UT (95 % Dip of the UT) for 5 s</p> | <p>< 5 % UT (> 95 % Dip of the UT) for 0.5 Cycle</p> <p>40 % UT (60% Dip of the UT) For 5 cycles</p> <p>70% UT (30 % Dip of the UT) For 25 cycles</p> <p>< 5 % UT (95 % Dip of the UT) for 5 s</p> | Mains power quality should be that of a typical commercial or hospital environment. If the user of the ATMOS® S 61 Servant vision requires continued function during interruptions of the energy supply, it is recommended to supply the ATMOS® S 61 Servant vision from an uninterruptible power supply or a battery. |
| NOTE UT is the alternating mains voltage prior to application of the test levels. | | | |

12.3 Guidelines and Manufacturer's Declaration – electromagnetic immunity – for devices and systems that are not life-sustaining.

The ATMOS® S 61 Servant vision is intended for use in the electromagnetic environment specified below. The customer or user of the ATMOS® S 61 Servant vision should ensure that it is used in such an environment.

| Immunity Test | IEC 60601- Test Level | Compliance Level | Electromagnetic Environment - Guidance |
|-------------------------------|--|------------------|--|
| Conducted RF IEC 61000-4-6 | V1 = 3 V _{eff} 150 kHz to 80 MHz | 3 V | <p>Portable and mobile communications equipment should be separated from the ATMOS® S 61 Servant vision incl. the cables by no less than the distances calculated/listed below.</p> <p>Recommended distances: $d = (3.5 / V1) * \sqrt{P}$ $d = (3.5 / E1) * \sqrt{P}$ $d = (7 / E1) * \sqrt{P}$ </p> <p>where „P“ is the max. power in watts (W) and D is the recommended separation distance in meters (m).</p> <p>Field strengths from fixed transmitters, as determined by an electromagnetic site (a) survey, should be less than the compliance level (b).</p> <p>Interference may occur in the vicinity of equipment containing following symbol:</p>  |
| Radiated RF IEC 61000-4-3 | E1 = 3 V/m 80 MHz to 2.5 GHz | 3 V/m | |

12.0 Notes on EMC

NOTE 1 With 80 MHz and 800 MHz the higher frequency range applies.

NOTE 2

These guidelines may not be applicable in every case. The emanation of electromagnetic waves is affected by absorption and reflection of buildings, objects and people.

a

The field strength of stationary transmitters, such as base stations of cellular phones and mobile terrain radio equipment, amateur radio transmitters, cbm broadcast and TV stations cannot be predestined exactly. To determine the electromagnetic environment in regard to stationary transmitters, a study of the location is to be considered. If the measured field strength at the location where the ATMOS® S 61 Servant vision is used exceeds the above compliance level, the ATMOS® S 61 Servant vision is to be observed to verify the intended use. If abnormal performance characteristics are noted, additional measures might be necessary, e. g. a changed arrangement or another location for the device.

b

Within the frequency range of 150 kHz to 80 MHz the field strength should be below 3 V/m.

12.4 Recommended safety distance between portable and mobile RF Communications equipment and the ATMOS® S 61 Servant vision

The ATMOS® S 61 Servant vision is intended for use in electromagnetic environment in which radiated disturbances are controlled. The customer or user of the ATMOS® S 61 Servant vision can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF Communications equipment and the ATMOS® S 61 Servant vision as recommended below, according to the maximum output power of the communications equipment.

| Nominal capacity of the transmitter W | Safety distance, depending on transmit-frequency m | | |
|---|--|------------------------------------|----------------------------------|
| | 150 kHz to 80 MHz | 80 MHz to 800 MHz | 800 MHz to 2.5 GHz |
| | $d = (3,5/\sqrt{1}) * \sqrt{(P)}$ | $d = (3,5/\sqrt{E1}) * \sqrt{(P)}$ | $d = (7/\sqrt{E1}) * \sqrt{(P)}$ |
| 0.01 | 0.1167 | 0.1167 | 0.2333 |
| 0.1 | 0.3689 | 0.3689 | 0.7379 |
| 1.0 | 1.1667 | 1.1667 | 2.3333 |
| 10 | 3.6893 | 3.6893 | 7.3786 |
| 100 | 11.6667 | 11.6667 | 23.3333 |

For transmitters for which the maximum nominal output is not indicated in the above table, the recommended safety distance d in meters (m) can be determined using the equation belonging to the respective column whereas P is the maximum nominal output of the transmitter in watts (W) acc. to manufacturer's specification.

NOTE 1 By 80 MHz and 800 MHz the higher frequency range applies.

NOTE 2

These guidelines may not be applicable in every case. The emanation of electromagnetic waves is affected by absorption and reflection of buildings, objects and people.



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