ATMOS
MedizinTechnik

English

Operating Instructions

ATMOS i View PRO

CE

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Further information, accessories, consumables and spare parts are available from:

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1.0 Introduction

1.1 Notes on Operating Instructions

These operating instructions contain important notes on how to operate the ATMOS i View PRO 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 microscope.

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 safety inspections in conjunction with professional execution provide for operational safety and readiness for use of your ATMOS i View PRO and are therefore a must besides regular cleaning.

Repair work and safety inspections 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 i View PRO will be preserved.

- The product ATMOS i View PRO 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 1 of this directive.
- The product ATMOS i View PRO complies with all applicable requirements of the Directive 2011/65/EU 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.

These operating instructions are valid for the following devices:

ATMOS i View 21 PRO.....REF 538.9000.0

Examination microscope with an integrated, fanless, high transmission, high performance LED light source integrated in the microscope head, 30° coupling included

ATMOS i View 31 PRO.....REF 539.9000.0

Examination microscope with an integrated, fanless, high transmission, high performance LED light source integrated in the microscope head, 30° coupling included

Please keep this document for future consultation!

1.2 Intended use

Name:

ATMOS i View 21 PRO

ATMOS i View 31 PRO

Main functions:

Optical instrument for magnification and illumination of the mouth to the pharynx, the auditory canal to the ear drum, the middle ear and the nasal cavities. It can be used for observation and documentation as well as for the treatment of humans.

Medical indications / application:

Standard ENT examination for visual inspection in the field of ENT and surgical interventions

Specification of the main function:

The application organ is illuminated for examination purposes and can be visualized on a monitor if desired by an integrated, fanless high transmission, high performance LED light source, 5-step magnification changer, integrated camera module, pivoting colour filter and an automatic light control via tilt sensor; the light output is min. 120 kLux (200 mm), min. 80 kLux (250 mm), min. 55 kLux (300 mm), min. 30 kLux (400 mm) with a colour temperature of 5.500 K ± 10 %.

User profile:

Examinations and surgical interventions which are carried out using the microscope may only be performed by doctors with appropriate training.

Only qualified personal with a proper hygiene training may prepare the microscope for surgical interventions.

Installation and maintenance may only be carried out by service technicians who were trained and authorised by the manufacturer.

Patient groups:

No restrictions

Application organ:

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

Application time:

Short term use on the patient (up to 30 days)

Application site:

Application sites are clinics, practices and operating rooms for ENT doctors and phoniatrists as well as temporal bone laboratories. The examination with the microscope may only be executed by medically trained persons.

The microscope may only be used in closed rooms, on firm ground, wall-mounted, ceiling-mounted or mounted to ATMOS ENT units.

In ORs an appropriate protective sleeve must be used.

Contraindications:

- No application in ophthalmology.
- Do not use the ATMOS i View PRO on seated patients in combination with an objective (focal length of 200 mm to 300 mm).

The product is:

active

Sterility:

The microscope is not a sterile product.

Single-use product / reprocessing:

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

1.3 Function

The ATMOS i View PRO is a complete microscope system, consisting of optics and lighting. It produces outstanding pictures for examination purposes with the use of latest LED technology and patent registered optics. The interaction between the integrated fanless, high transmission, high performance LED, the apochromatic optics and the precisely fitting options offer best working quality.

The ergonomically assorted buttons, two selectable hand grips and the integrated control panel provides the user with highest level of ergonomic comfort and suitability for daily use as well as an outstanding and intuitive handling. Via the control panel the individual options of the ATMOS i View PRO can be activated. Besides the triggering of the camera (freeze frame) and starting / stopping of possible video sequences, the operator is capable of manually switching the LED light source on and off despite the activated automatic light control. Due to the variety of options which the ATMOS i View PRO has to offer, the user is in a position to configure a microscope to suit his requirements. The following functions can be chosen optionally:

- 4 lenses with different focal distances (200, 250, 300 and 400 mm) with or without fine focussing or a VarioFocus 200-350 mm (easy exchange of the lenses due to the respective thread on the microscope head)
- Binocular straight lens tube, binocular angled lens tube and binocular swivel tube, simple adaption due to the dove tail fixation (0° or 45° angled)
- Pivoting colour filter
- Measuring scale
- Shadowless illumination

Due to the LED light source and the integrable camera solution (SD or HD integrated respectively as HD or endoscope adapter for the connection of an external camera) the ATMOS i View PRO is a guarantor for best image quality.

In connection with the mechanical support arm and the numerous connection possibilities to units and stands the ATMOS i View PRO offers countless system possibilities, which can be individually adapted to suit the users environment!

These operating instructions describe all functions at maximum configuration of the ATMOS i View 31 PRO.

1.4 Explanation of pictures and symbols

Short cuts / symbols contained in these operating instructions

	Follow the arrows	■	General information		Move, plug... in this direction
	● Please press where dot indicates	●	Numeration		Turn, shift... in this direction
	Please read, important information		Check		Replace
					Engage, check correct fit

Graphic symbols contained in these operating instructions

 Warning, special diligent notice

☞ Important information

Symbols ATMOS i View PRO

SN	Serial number	**REF**	Order number
	Manufacturing date		Manufacturer
	Observe operating instructions!		Observe operating instructions!
	Weight adjustment for the carrier arm		Professional disposal
	Alternating current		Fuse
	Single use product - not for reuse. Exchange after use.		This product complies with the relevant requirements of EU Directives
	Do not look directly into the light source of the ATMOS i View		The carrier arm of the mobile stand must be brought into a position suitable for transport. Do not lean against the device.

Control panel ATMOS i View 31 PRO

	Light on / off (independent of automatic light control)		Change between stroboscope - permanent light With an integrated HD camera: Adjusting the light mode of the camera
	Video recording (start / stop)		Freeze frame

Control device ATMOS i View 21 PRO

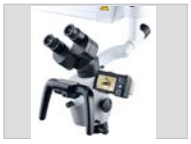
+24V=	Output of the power supply for the electronics in the microscope
	Fuse
	Potential equalisation acc. to IEC 604175021

Control device ATMOS i View 31 PRO

	Fuse
	Microscope
Record	Record function
Strobo	Triggering signal from ATMOS Strobo 21 LED HD camera: not in use
PC/USB	USB port
S-Video	S-video-output (not with an integrated HD camera)
	Potential equalisation acc. to IEC 604175021
	Foot switch
Freeze	Freeze
Sensor	Output signals of the tilt sensor in the carrier arm system
Video In Intern 1 / Video In Extern 2	Input video signal Internal / External (only with an integrated HD camera)
Video Out Out 1 Out 2 Out 3	Output video signal (only with an integrated HD camera)

1.5 Scope of supply

- Prior to dispatch, the ATMOS i View PRO was subjected to an extensive functional test and was carefully packed. Nevertheless, please compare the contents of the shipment on completeness immediately upon receipt (see delivery note).


Microscope


Microscope arm


Operating Instructions


Protective cover

1.6 Transport and storage

- After the transport of the ATMOS i View PRO in temperatures below 0°C or prior to first start up it should be kept at room temperature for at least six hours. If the ATMOS i View is not acclimatized it may not be used as damages to the electronic components could occur.

Only transport the device in a shipping carton, which is padded and offers sufficient protection.

If damage occurs during transport:

- Document and report the transport damage.
- Send the device to ATMOS (Chapter „6.2 Sending in the device“ on page 24).

Ambient conditions:

- Transport / storage:
  - -10...+50 °C;
  - 30...95 % humidity no condensation
  - at an air pressure of 500...1060 hPa
- Operation:
  - +10...+35 °C;
  - 30...95 % humidity no condensation
  - at an air pressure of 700...1060 hPa

2.0 For your safety

For your safety

- To safely disconnect the unit from the mains, the power cord must be removed from the IEC connector of the control device!
- The ATMOS i View PRO is a device designed in line with IEC 60601-1-1/EN60601-1 and it is a device with protection class I. In order to avoid the RISK of electrical shock, this unit may only be connected to a mains supply with properly installed earth conductor.
- Power cables, accessories and access cables need to be checked for defects prior to setting up the ATMOS i View PRO. Defect cables must be replaced immediately.
- The ATMOS i View PRO may only be operated by qualified personnel.
- The ATMOS i View PRO is not designed to be used in an **explosion-hazardous** environment. Explosion-hazardous areas may be caused by the use of flammable anaesthetics, skin cleansing products and skin disinfectants.
- The ATMOS i View PRO may be operated only in rooms used for medical purposes, but not in areas subject to explosion hazards and in oxygen rich environments.
- If fluids penetrated the ATMOS i View PRO it needs to be sent in and may only be used after the check up of an ATMOS authorised person.
- After the transport of the ATMOS i View PRO in temperatures below 0°C or prior to first start up it should be kept at room temperature for at least six hours. If the ATMOS i View PRO is not acclimatised it may not be used.
- Do not plug in electric connections (plug, socket) under the use of force. If this is not possible check whether the plug fits the socket. If you should ascertain a defect in the connection you should have it repaired by our service.
- Never look straight into the sun with lenses or eye lenses.
- 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!
  Never look directly into the light source!
  > Damage to the eyes due to the strong glare.
- Please pay attention to the period tests in chapter 6 „Service and maintenance“ on page 24.
- Prior to every use the microscope suspension (all joints included) need to be checked for safe connections.
- Take care that the patient does not touch the device or have any contact with it.
- Please note that only the ATMOS Strobo 21 LED may be connected to the strobe port of the ATMOS i View PRO!
- Please observe the EMC Directives. Failure to follow this guideline can result in a hazard.
- Dispose of wrappings accordingly.
- Before connecting the ATMOS i View PRO it needs to be checked whether the requested mains voltage of the ATMOS i View PRO matches the mains voltage of the mains power supply.
- Only proper and undamaged plugs and extension cables may be used.
- To disconnect the ATMOS i View PRO from the power supply, the power cable must be removed from the wall outlet. Only then can the connection cable from the ATMOS i View PRO be disconnected. Never touch plug or line with wet hands.
- Please observe the ambient conditions stated in the technical data (chapter 9.0).
- The ATMOS i View PRO complies with the electromagnetic immunity requirements of standard IEC 60601-1-2 / EN 60601-1-2 „Electromagnetic Compatibility - Medical Electrical Devices“.
- 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.
- Unplug the device immediately if you observe fumes, sparks or weird noises.
- After a longer use of the ATMOS i View PRO in connection with an ear speculum the patient may feel dizzy!
- With every light source a warming of tissue due to absorption may occur. Please make sure to reduce duration of use to a minimum, to switch off the light source when not in use and to check heat development if necessary.
- Take into consideration, when setting up the microscope, that the elastic force of the arm – without microscope head – is exceedingly strong. Operate the break of the height adjustment carefully.
- **Risk of injury!** Take care not to roll the mobile stand over your feet when moving the stand.
- Please note that only PCs and monitors with IEC 606010-1/EN 60601-1 approval may be connected to the video outlet of the ATMOS i View PRO supply module!
- During operation, the user is obliged to regularly check the microscope for proper function. In the unlikely event of failure the user must take precautions to continue the treatment of the patient with suitable methods.
- Make sure that the unit is positioned so that all the controls and the on/off switch are always accessible.

3.0 Setting up and starting up

3.1 Overview

	ATMOS i View 21 PRO	ATMOS i View 31 PRO
		
Description	Examination microscope with an integrated, fanless, high transmission, high performance LED light in the microscope head	Examination microscope with an integrated, fanless, high transmission, high performance LED light in the microscope head
Integrated high performance white light LED	■	■
Automatic light control	■	■
Optimised stereo effect	■	■
Measuring scale	optional	optional
Integrated operating panel	optional	optional
Stroboscope mode	-	optional
Colour filter	optional	optional
Integrated camera	-	optional SD camera or optional HD camera
45° angled tube	optional	optional
Swivel tube 0-220°	optional	optional
Binocular rotary disk	optional	optional
HD adapter for an external camera	-	optional
Endoscope adapter	-	optional
Mains voltage	100–240 V	100–240 V
Light output	min. 120 kLux (200 mm) min. 80 kLux (250mm) min. 55 kLux (300 mm) min. 30 kLux (400 mm)	min. 120 kLux (200 mm) min. 80 kLux (250mm) min. 55 kLux (300 mm) min. 30 kLux (400 mm)
Operating life of the LED	50,000 hours	50,000 hours
Colour temperature	5.500 K ± 10 %	5.500 K ± 10 %
Scope of delivery	Dust cover, operating instructions	Dust cover, operating instructions

3.2 Assembly

⚠ Please make sure that the static conditions stated by ATMOS MedizinTechnik are met (for details see the separately enclosed document „Static requirements for installing the ATMOS i View“). The fulfilment of these requirements must be confirmed by an authorized expert.

Mains voltage and fuse: Mains voltage: 100-240 V; 50/ 60 Hz, fuse: 2 x T 3.15 A

Please note that only PCs and monitors with IEC 606010-1/EN 60601-1 approval may be connected to the video outlet of the ATMOS i View PRO supply module!

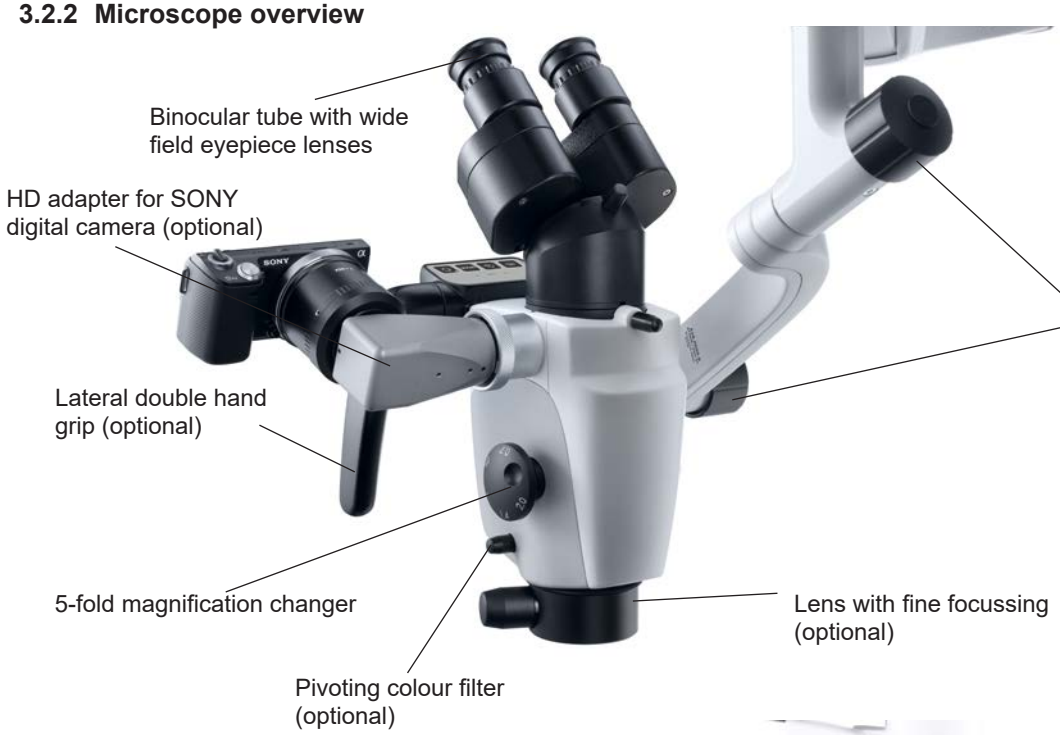
Please note that only the ATMOS Strobo 21 LED may be connected to the strobe port of the ATMOS i View PRO!

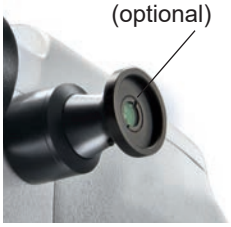
3.2.1 Connection to the mains supply

Potential equalisation:

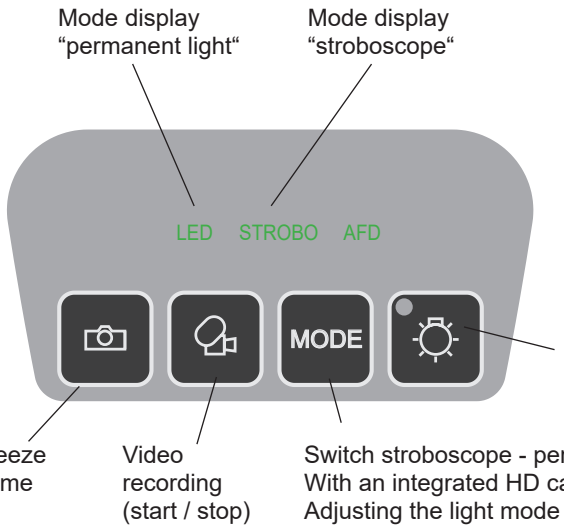
The ATMOS i View supply module has a rear connection for potential equalisation which can be connected to the potential equalisation rail in the room if need be. Hereby user/patient safety can be increased especially in the case of a defective earth conductor. For connecting the device's potential equalisation plug with the potential equalisation rail of the room, use the potential equalisation cord with REF 530.0030.0.

3.2.2 Microscope overview





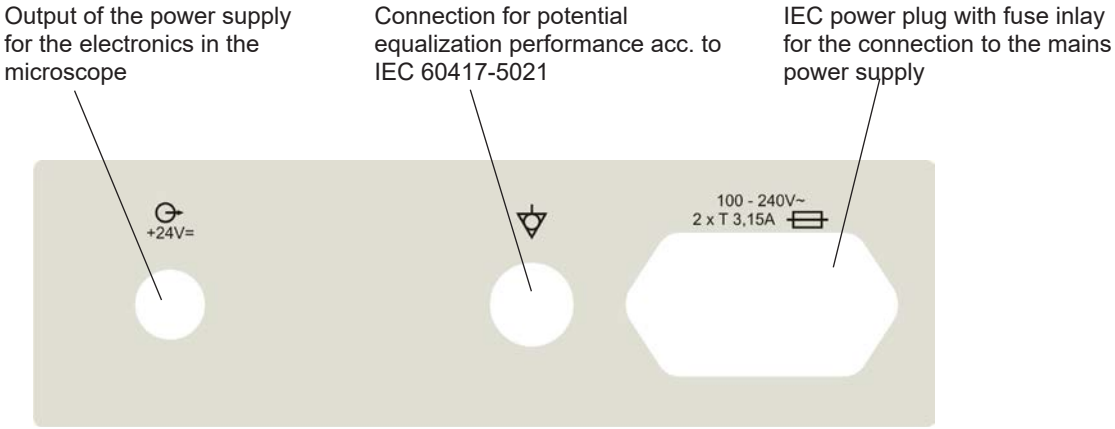
3.2.3 Operating elements at the microscope



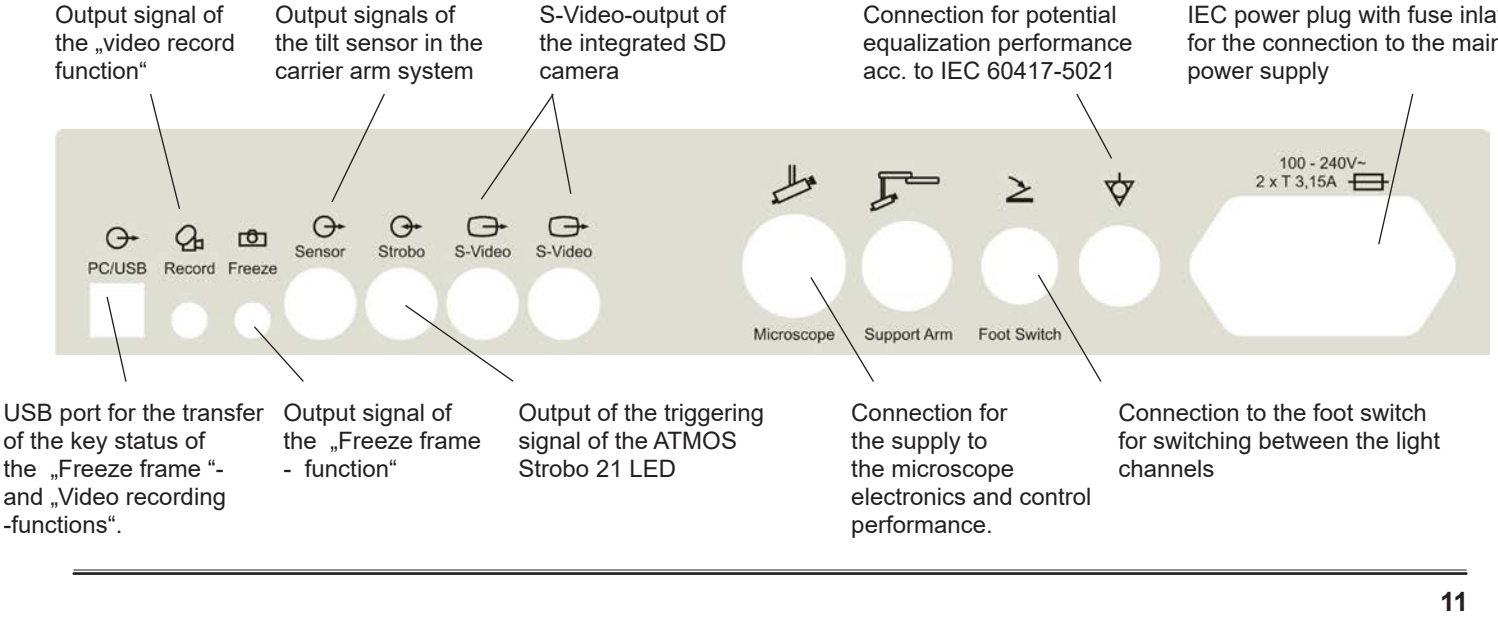
Display of the „permanent light“ mode - by pressing the MODE button a single time, the „permanent light“ mode can be switched on.

Display of the „stroboscope“ mode - by pressing the MODE button again, the mode switches from „permanent light“ to „stroboscopy“. In this mode the integrated LED is controlled by the connected ATMOS Strobo 21 LED.

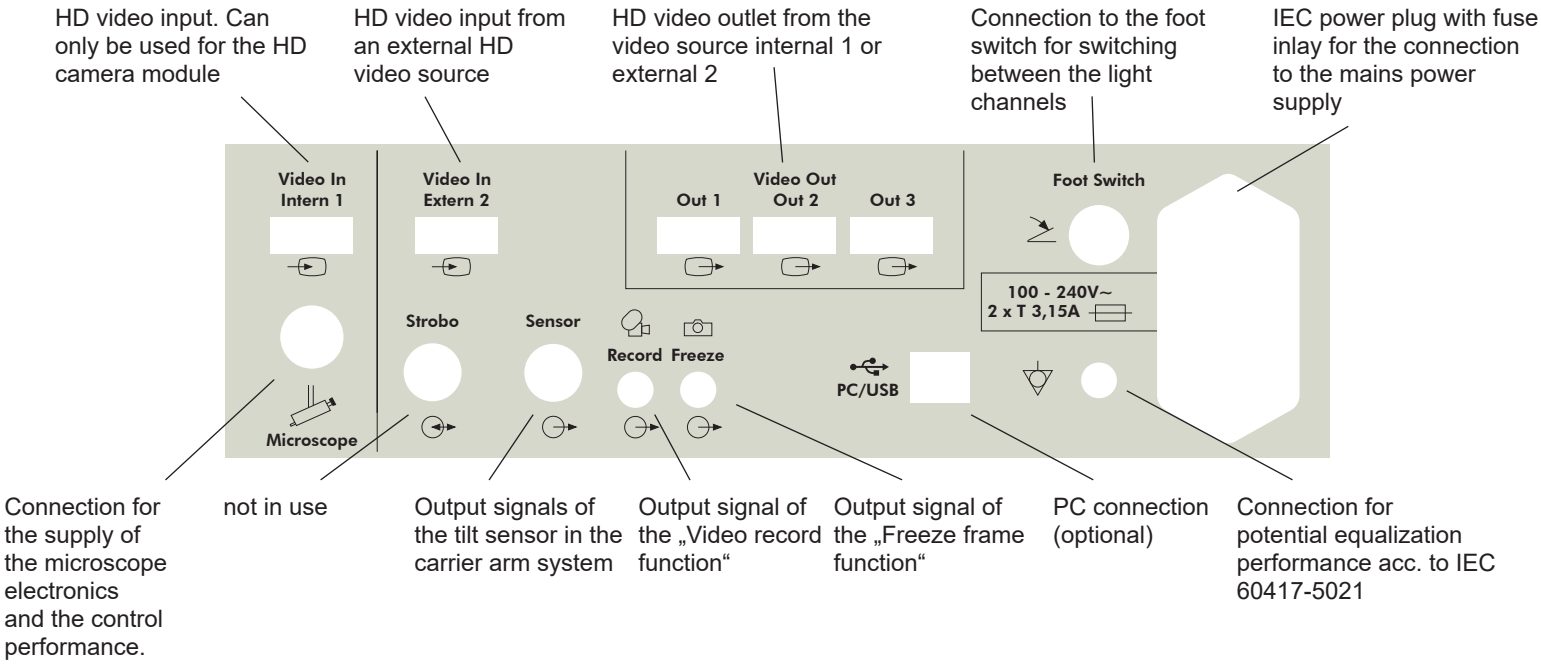
3.2.4 Rear view of the control device of the ATMOS i View 21 PRO



3.2.5 Rear view of the control device of the ATMOS i View 31 PRO (not with an integrated HD camera)



3.2.6 Rear view of the control device of the ATMOS i View 31 PRO with an integrated HD camera



3.3 Integration options

Please note the assembly instructions for the integration options.

Mobile stand PRO

When moving the roller stand please make sure that the microscope arm is in a retracted position and the screws are tightened.

⚠ **Risk of injury!** Take care not to roll the mobile stand over your feet when moving the stand.

When the device is placed in the working position the brakes must be locked.

Only monitors which do not exceed the following specifications can be adapted to the mobile stand.

Maximum dimensions H x W x D: 60 x 40 x 10 cm, weight: 9.8 kg

The stability of the mobile stand cannot be guaranteed for monitors which do not match these specifications.

Wall stand

Affix to wall by use of a guide rail. The mounting of the microscope head is height adjustable.

Recommendation: Please use a water level to align the wall stand!

Ceiling mount

Mounting with mounting plate and pipe system on the ceiling. The structural requirements must be met.

The ceiling mount is suitable for receiving the ATMOS i View PRO and a monitor up to 10.5 kg.

Only the supply module of the ATMOS i View PRO and the monitor may be connected to the power supply of the ceiling mount.

⚠ **Risk of injury!** Do not burden the ceiling support with additional weight. Do not lean against the carrier arm or microscope and do not hang any objects on it. The ceiling mount can otherwise crash and you or patients can be seriously injured!

3.4 Starting up

- Remove the microscope from the packaging. Check whether the mains current on the type label corresponds to the mains power supply.
- Check the scope of delivery.
- Peruse safety information in part 2.0 prior to starting up the device for the first time.
- After the transport of the microscope in temperatures below 0°C it must be kept at room temperature for at least six hours. If the microscope is **not** acclimatized it **must** not be used.
- Consider, when setting up the microscope, that the elastic force of the arm – without microscope head – is exceedingly strong. Operate the break of the height adjustment carefully.
- To activate the ATMOS i View PRO please use the power switch on the front side of the control device.

3.5 Operating requirements

Please note that following the installation of the device, the following requirements are met for further operation of the device:

- All joints and connection parts which are responsible for the safety of the device are securely fastened.
- All electronic connections (cables, plugs, power cables etc.) are in good order and condition.
- The specified mains voltage and frequency on the microscope corresponds to the supply network.
- The microscope is connected to a safety connection socket with the provided mains cable.

⚠ Attention, never point or direct the beam into the patients eyes. Do not look directly into the light source.

- With every light source a warming of tissue due to radiation and absorption could occur. This could result in damage to the biological tissue. Please keep the luminosity and duration of use to a minimum. Switch off the light source when not in use and check the heat development if necessary.

3.6 Starting up at a glance

Adjust microscope to initial position on the microscope suspension by use of the fixing wheel.
Adjust microscope horizontally and vertically.

Adjust all the clamps on the carrier and float arm to secure the movability of the arm in compliance with the requirements.

Swing in microscope into the working space.

Adjust the interocular distance by pressing or pulling the lens tubes together or apart. The interocular distance is perfectly adjusted when you look through and a circular picture is perceived!

Adjusting the eyepieces.

Persons without glasses	Persons with glasses		
Eyepieces remain in initial position (eyepieces are pulled out). Dioptre scale adjusted to zero	People with defective vision and glasses	People with defective vision without glasses (refraction values known)	People with defective vision without glasses (refraction values unknown)
	Keep glasses on, push eyepieces in direction of the lens tube until they engage audibly. Adjust dioptre scale to zero.	Remove glasses and adjust dioptre scale to matching number (eyepieces are pulled out).	Remove glasses and adjust both eyepieces to +5 dpt. Remove the lens tube from the microscope head and focus on an object* in the distance. The object still looks blurred. Turn the dioptre ring of the first eyepiece slowly in clockwise direction until the object is sharp. Keep your other eye closed while adjusting the eyepiece. Repeat this procedure for a couple of times to determine an average value. Adjust the second eyepiece by the same procedure and reattach the lens tubes to the microscope head with the connective screw (eyepieces are pulled out). * Never use the sun as an object!

Set the 5-fold magnification changer unit to maximum zoom (2.0). Approach the object with the microscope (according to the chosen focal distance) until the image is sharp. If the zoom level is changed the grade of sharpness is retained.

Brightness can be adjusted by the rotary knob on the bottom of the device if necessary.

4.1 Microscope suspension

By means of a corresponding suspension the microscope head is connected laterally to the microscope arm. The complete range of cables run through the suspension - therefore no disturbing cables are visible from the outside (with the exception of the connection to the HD adapter and direct connection to a monitor). Due to a rotating knob, which is situated on the side of the suspension, the microscope can be adjusted vertically to suit the individual requirements of the user. The 30° swivel unit allows to rotate the microscope head around its own axis and sway it to the side. The „weightless motion brake“ included into the 30° swivel unit provides a sensitive, individual adjustment of the motion strength, so that the microscope head remains in every position, even with installed accessories and thus enables you to continue with the examination. To fix the microscope head turn the rotating knob towards you in a clockwise direction.

To loosen the microscope head turn the rotating knob towards you counter-clockwise.

Attention: Check the secure connection of the microscope to the suspension prior to every use!

4.2 Mechanical arm

The mechanical microscope arm can be adjusted via four set screws according to the individual requirements of the user. Choose the strength of the clamping so that the free movement of the arm suits your requirements. Turn the set screw in clockwise direction to fix the arm. To loosen the arm turn counter-clockwise. To align the arm please observe the assembly instructions for the integration possibilities.

Attention: Prior to use ensure that the brakes of the support arm are set correctly.

Automatic light switching: Once the arm is in the upper position the LED light switches off automatically.

4.3 Hand grips

When purchasing the ATMOS i View PRO you may choose between two versions of handles.

4.3.1 T-hand grip

(see figure)

4.3.2 Lateral double hand grip

The position of the lateral double hand grip can be gradually adjusted by simultaneously pulling and turning the handle (see figure).

4.4 Adjusting the interocular distance

The interocular distance is adjustable between 50-75 mm.

- Swivel the microscope into the work space.
- Look through the eye lenses and push or pull the eye lens tubes together or apart with both hands.

The interocular distance is perfectly adjusted when you look through with both eyes and a circular field is visible!

4.5 Adjusting the eye pieces

Persons without glasses:

- Eyepieces remain in initial position.
  Initial position = The eye steering of the eyepieces are pulled out.
- Make sure that the zero of the dioptre scale complies with the index on the eyepieces.

Persons with glasses:

- People with defective vision and glasses keep their glasses on and push the eyepieces in direction of the lens tube until they engage audibly. Adjust dioptre scale to zero.
- People with defective vision (with known refraction values)should take their glasses off and adjust the dioptre scale on the eyepieces to the matching number (the eye steering of the eyepieces are pulled out).
  The process of focussing is performed as described in Chapter 4.9.
- People with defective vision without glasses adjust both eyepieces to +5 dpt. Remove the binocular tube and the eyepiece from the microscope head and focus on a distant object*. The object still looks blurred. Slowly turn the dioptre ring of the first eyepiece in clockwise direction until the object is sharp. The other eye must remain closed. Repeat this procedure for a couple of times in order to determine on an average value. Adjust the second eyepiece by the same procedure. Reattach the lens tubes to the microscope head with the connective screw. The process of focussing is performed as described in Chapter 4.10.

* Never use the sun as an object!

4.6 Exchanging the lenses

The designated thread on the microscope head allows for easy exchange and fixation of the different lenses. Due to the integrated screw mount lenses can be loosened by turning it to the left hand side and fixated by turning it to the right.

4.7 Exchanging the lenses with manual fine focussing

Mount lens as described above and secure it with the intermediate screwed ring.

4.8 Exchanging the VarioFocus lens

To loosen the VarioFocus lens from the microscope head, turn it to the left. To tighten the VarioFocus lens on the microscope head, turn it to the right onto the thread.

Position the setting dial

The dial can be positioned on either side of the VarioFocus lens.

Attention! During the process firmly hold the VarioFocus lens just in case it may loosen itself from the microscope head and fall off.

Loosen the three grub screws on the lens. Continue to hold the lens and turn the setting dial in the desired position. Tighten the three grub screws.

4.9 Adjustment of the 5-fold magnification changer

The 5-fold magnification changer from ATMOS enables free range zoom between 0.5x up to 2.0x.

- Select the desired zoom factor by selecting one of the lateral rotating knobs.
- Pay attention that the chosen zoom factor engages audibly with the groove.
- Freely adjustable zoom factors: 2.0 - 1.4 - 1.0 - 0.7 - 0.5.
- The magnification which points in the direction of the eyepieces is the current magnification.

4.10 Focussing

- Adjust the zoom to maximum (2.0) on the magnification unit.
- Approach the object with the microscope until the image is sharp.
- If the zoom level is changed the pre-adjusted degree of sharpness is still maintained.

4.10.1 Fine-focussing

The optional fine focussing allows for sensitive and precise focussing in a 17 mm range. Fine focussing is necessary in order to focus accurately while zooming in.

- Replace the mounted lens with the appropriate lens for fine focussing (simple mounting due to the screw mount at the microscope head. Secure with the intermediate screwed ring).
- Conduct the focussing as described above.
- Adjust focus by use of the lateral adjusting disk.

4.11 Exchanging the binocular tube

The tubes focal distance of 200 mm allows for a comfortable and fatigue-proof observation of the object with both eyes. Working is made easier due to the exceptionally large exit pupil and an increased stereo base of 24 mm.

Please hold the lens tube with one hand while loosening the screw. Otherwise the lens tube could drop.

- Loosen the screw on top of the lens tube and remove the tubes from the microscope head.
- Make sure that the gudgeons and grooves of the dove tail fixation engage and the tubes lie flat.
- Tighten the screw again.
- Check for a secure fit.

4.12 Binocular rotary disk with detent

The rotary disk allows to raise the swivel tube at an angled position of the microscope head and should therefore simplify to look through the tubes. If the tubes are rotated over the detent a loss of light or vignetting could occur.

4.13 Pivoting colour filter

The pivoting colour filter enhances contrast of the microscopic picture for better visibility of vessel structures.

- Turn the function knob by 90° in clockwise direction to swing in the colour filter.
- By turning the knob by 90° in an anti-clockwise direction the filter is removed from the optical beam path of the microscope.

4.14 Shadowless illumination

The option shadowless illumination prevents instruments from causing shadows in the field of view. This option cannot be retro-fitted.

- For the shadowless illumination no operating steps are required.

4.15 Microscope zoom and object field size

Lens f in mm equals the approximate working distance	Factor display on the magnification unit					Eyepieces with lens tubes f = 160 mm
	0.5	0.7	1*	1.4	2.0	
	Total zoom / visual field Ø in mm					
200	4 / 50	5.6 / 35	8 / 25	11.2 / 18	16 / 12.5	10 x
250	3.2 / 63	4.5 / 45	6.4 / 31	9 / 22	12.8 / 16	10 x
300	2.7 / 75	3.7 / 54	5.3 / 38	7.5 / 27	10.7 / 19	10 x
400	2 / 100	2.8 / 70	4 / 50	5.6 / 36	8 / 25	10 x

* Read off at factor 1 when using the microscope zoom without the zoom unit.

4.16 Measuring scale

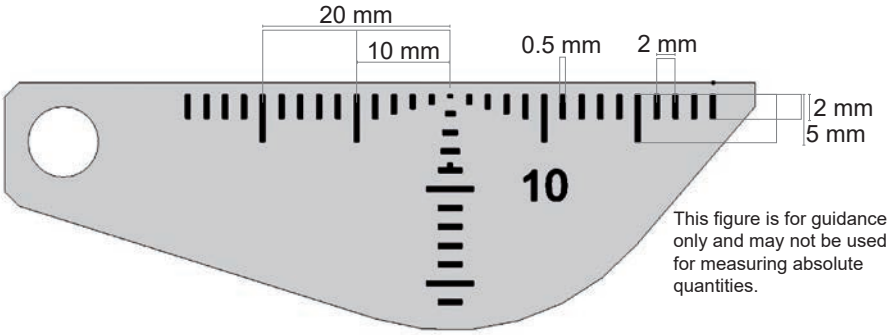


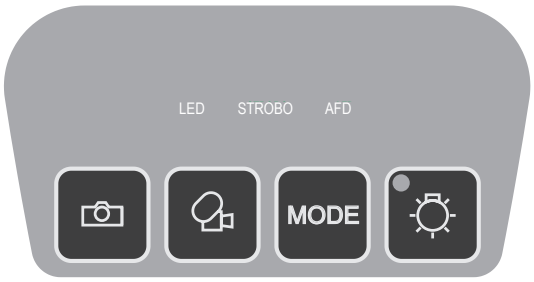
Figure not true to scale

Via a small turning knob beneath the lens a true to scale dimension scale can be faded into the field of the illumination light path. This documentation display enables the measurement of objects regardless of the selected magnification. The scale will be displayed in both the 3D picture and on all camera pictures and if required it can be faded out at any time.

- To fade-in the scale turn the knob by 45° in a clockwise direction.
- Via a 45° rotation in anti-clockwise direction the scale can be faded out from the path of illumination.

The following measures have to be observed: - Distance 2 mm, - Line width 0.5 mm

Please note that these specifications are only correct for the following combinations: Measuring scale for 200 mm lenses, 200 mm lenses with or without fine focusing or wide angle eyepieces 10x



4.17 Image and video recording

Integrated camera: If desired an SD camera or a HD camera can be integrated in the ATMOS i View 31 PRO.

External video sources: External video sources can be controlled via the panel buttons if they are connected to the jack plugs “Freeze” and “Record”.

Control panel buttons:

Save image.

Start / stop the recording of a video frequency

Adjusting the light mode of the integrated HD camera.

The data are transmitted to a connected PC (USB interface). The ATMOSoft software can process the data.

Only with an integrated HD camera:

You can change between the integrated HD camera and external video source by switching the LED light on or off. As soon as the LED light goes off the integrated camera is switched off and the data from the external video source is displayed (Video Out 1 - 3).

Also observe this within the automatic light switching.

4.17.1 Adjusting the light mode of the integrated HD camera

By pressing the MODE button once the current light mode of the integrated HD camera is displayed on the monitor. By pressing the MODE button again the light mode can be changed.

Light mode	Display on the monitor
Standard	LED light remains unchanged. When the power is switched on, the default setting is automatically selected.
Center	LED light will be displayed with less reflections. Suitable for recordings through an ear speculum.
Warm	LED light appears warmer.

4.18 Endoscope adapter

The standardized endoscope adapter allows for an easy connection to an external ATMOS Cam or other external endoscope or digital camera (third party products). The ATMOS Cam can be easily and swiftly attached to the endoscope adapter by means of a special clip seal. Other endoscope cameras which provide a standardised connection interface can also be adapted without any trouble. To attach an external digital camera a special adapter (which is suitable for the respective digital camera) is required.

4.19 HD adapter

Due to the especially developed HD adapter it is possible to connect a SONY digital camera with e-mount bayonet to your ATMOS i View PRO. This camera enables you to take and archive HD resolution pictures.

At dispatch the HD adapter is covered with a cover cap. This cap is to protect against contamination and has to be re-attached at any time e.g. if the camera is removed or when the adapter is unused.

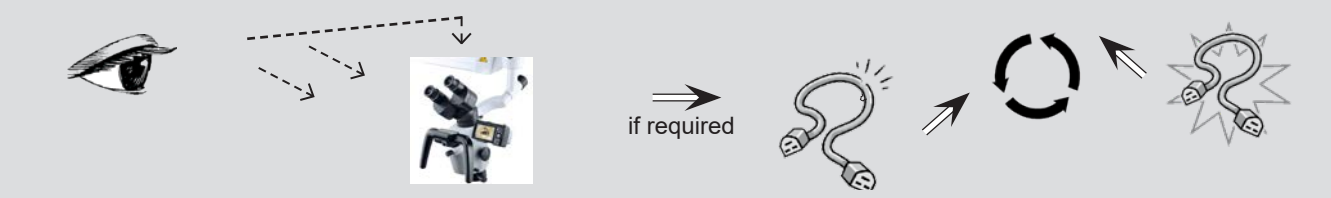
Please make sure that externally connected cameras do not exceed a weight of 300 g.

5.0 Cleaning and care

5.1 General information on cleaning and disinfection

Prior to cleaning

Medical devices like the ATMOS i View PRO must be fail safe at all times. Therefore we recommend prior to every use:



☞ The described action relating to cleaning and disinfection resp. sterilisation do not substitute the relevant instructions which must be adhered to prior to operation!

• All disinfectants used for the disinfection of the ATMOS i View PRO must be approved.

☞ Always observe the concentration specifications and instructions by the respective manufacturer!

5.2 Cleaning the mechanical microscope surface

All mechanical surfaces of the ATMOS i View PRO must be wiped and disinfected after each application.

Do not use aggressive or abrasive cleansing agents.

Residues can be removed with a mixture made from equal parts of ethyl alcohol and distilled water to which a drop of standard washing-up liquid is added.

⚠ If fluids penetrated the ATMOS i View PRO it needs to be sent in and may only be used after the check up of an ATMOS authorised person.

⚠ Disconnect the plug from the mains current prior to cleaning and disinfecting the microscope surface.

For a sterile covering of the device the single-use sterilization drapes may be used. The sterilization drapes may only be used once. Affix the cover loosely so that there is enough room left for the microscope support and the unit. The drapes must be especially loose around the hand grips as the physician must be able to use the operating elements though the cover.

5.3 Cleaning of lenses / eyepieces

5.3.1 Cleaning optical surfaces

The multilayer T* coating of optical components (e.g. eyepieces, lenses) results in optimum image quality.

Image quality could be reduced even by the slightest contamination of the optics or by fingerprints. In order to protect the internal optics from dust, the instrument should never be left without a safety cover, HD adapter, lens, binocular tube or eyepiece installed when it is not in use.

After use the microscope should be covered in order to protect it from dust. Always store lenses, eyepieces and accessories which are not being used in clean, dust-free cases.

The external surfaces of optical components should only be cleaned when required.

• Dust which has accumulated on the optical surfaces can be blown off or removed with a soft, clean brush.

5.3.2 Optical surface of the endoscope connection

The endoscope connection is protected against contamination and humidity by an end glass cover. This glass cover must also be cleaned like the other optical surfaces of the ATMOS i View PRO. This can be done by following the instructions for cleaning optical surfaces.

On delivery the endoscope connection is protected with a cover against contamination and humidity. If you do not use the endoscope connection over a long period of time, reattach this cover to protect it.

5.3.3 Fogging of optical surfaces

To prevent the eyepiece optics from fogging, we recommend using an anti-fogging agent.

Note:

Anti-fogging agents used by opticians for eyeglass lenses are also suitable for the ATMOS i View PRO.

- Please observe the instructions supplied with each anti-fogging agent.

Anti-fogging agents do not only ensure fog-free optics they also clean and protect them against dirt, grease, dust, fluff and fingerprints.

5.4 Recommended surface disinfectants

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

Do not *use*

- Disinfectants which contain organic or inorganic acids or bases as they could cause corrosion damage.
- Disinfectants which contain chloramines or phenol derivatives as they could cause stress cracks in the material which is used for the housing.

Disinfectant	Suitable for				
	Microscope	Handle	Control unit	Other mechanical surface treatment	Optical surfaces
Green & Clean SK				x	x
Bacillol® 30 Foam				x	
Kohrsolin® FF (Application concentrate)	x	x		x	
Kohrsolin® extra (Application concentrate)	x			x	x
Mikrobac® forte (Application concentrate)	x	x		x	
Mikrozid® Sensitive Wipes			x	x	
SaniCloth® Active	x			x	

5.5 Hygiene Plan

WHAT	HOW			WHEN				Details
	C	D	S	after each application	daily	weekly	monthly	
Housing	X	X		X				Manual wiping and disinfection
Lens / Optics	X	X			X			Manual wiping and disinfection
Operation parts*	X	X		X				Manual wiping and disinfection
Protective covers (disposables)				X				Single-use product -> not for reprocessing, change after use ⊗
Hand grips	X	X		X				Manual wiping and disinfection

C= Cleaning, D= Disinfection, S= Sterilization

* Operation parts

Knobs to adjust (colour filter, measuring scale, 5 fold magnification changer, operator panel, adjusting screws on the arm)

6.0 Maintenance and Service

6.1 General advice

- Prior to every use a visual inspection of the microscope and microscope connection line must be performed. **Damaged cables must be replaced immediately!**
- Maintenance, repairs and period tests may **not** be carried out while the product is used on the patient.
- 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 24 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.
- ATMOS neither guarantees for fault-free operation nor for personal injuries 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 not been executed by ATMOS authorised personnel.
- There are no warranty claims whatsoever on defects or malfunctions which arise from the use of third party accessories or consumables.
- The instructions and regulations for the respective field of application should be observed.

6.2 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**.

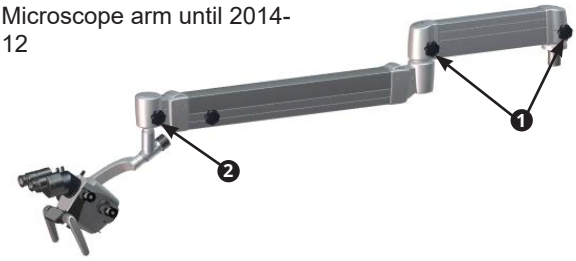
☞ This form is enclosed to each delivery and can be found at www.atmosmed.com.

- 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.

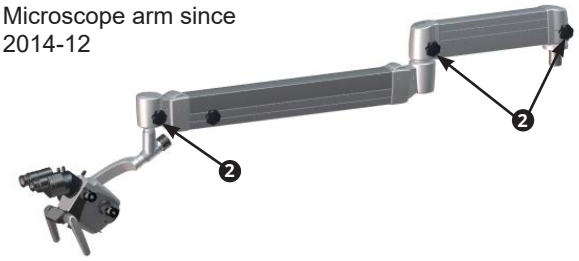
6.3 Exchange of spare parts

❶ Brake star grip with copper REF 538.2013.0
❷ Brake star grip with POM REF 538.2015.0

Microscope arm until 2014-12



Microscope arm since 2014-12



Fuse T 3.15 A/H 250 V REF 008.0751.0

Prior to exchanging the main fuse the system must be disconnected from the power supply. For this it is necessary to unplug the power cord from the power outlet.

Fuse exchange

7.0 Troubleshooting

Description	Possible causes	Remedy
ATMOS i View PRO cannot be switched on	Mains cable is not connected Defect fuse	Connect mains cable exchange fuse
ATMOS i View PRO is hot		Please ensure sufficient air ventilation.
		Switch off and let cool down for 2-3 hours
ATMOS i View PRO is overheated		Please contact the ATMOS service.
No function whatsoever	ATMOS i View PRO is switched off	Switch on the ATMOS i View PRO at the connection box.
5-fold magnification changer is defective		Contact the ATMOS service.
Arm follows	Tie bar is not vertically adjusted The coverings of the set screws are worn out or not fixed into place	Adjust tie bar, Exchange or fix the extensions of the set screws
		Contact the ATMOS service.
Too little or no light at all	The ATMOS i View PRO was moved into „parking position“ and thereby the light was switched off.	Pull ATMOS i View PRO into working position.
	Malfunction of the LED light source	Contact the ATMOS service
	Extreme decline in the LED light source. Light source	
	Light source is dimmed down too low.	Increase brightness of the light source.
Screen displays text.	Only with an integrated HD camera: Button „mode“ has been pressed for a longer time	Press button „mode“ once again

8.0 Options and Accessories

Lens

	REF
Lens 200 mm	538.1000.0
Lens 250 mm	538.1100.0
Lens 300 mm	538.1200.0
Lens 400 mm	538.1300.0
Lens 200 mm with manual fine focussing (17 mm)	539.1700.0
Lens 250 mm with manual fine focussing (17 mm)	539.1800.0
Lens 300 mm with manual fine focussing (17 mm)	539.1900.0
Lens 400 mm with manual fine focussing (17 mm)	539.2000.0
VarioFocus lens (200-350 mm)	538.4000.0

Lens tube

	REF
Binocular straight tube 10-times, f = 160 mm	538.3900.0
Binocular straight tube 16-times, f = 160 mm	605.2000.0
Binocular swivel tube 0-220°, f = 160 mm	538.9200.0
45° adaption for binocular tubes	606.1106.0
Binocular rotary disk with detent	538.3300.0

Cable (only for the ATMOS i View 31)

	REF
S-VHS cable professional, 5 m (not with an integrated HD camera)	008.0882.0
Cable HDMI type A/C, L = 5 m (only with an integrated HD camera)	538.1902.0
Cable HDMI extension, L = 5 m (only with an integrated HD camera)	008.0909.0
USB cable A/B, L = 5 m (only with an integrated SD camera)	008.0910.0

Accessories

	REF
LogiLink, VG0001, USB 2.0 video grabber with audio function	534.1200.0

Consumables

	REF
Sterile microscope cover, 10 pcs.	539.2206.0

9.0 Technical data

Voltage	100-240 V~ ± 10 %; 50/60 Hz
Power consumption	max. 45 VA
Fuses	2 x T 3.15 A / 250 V
Operation time	Continuous operation
Light intensity	
F 200	min. 120 kLux
F 250	min. 80 kLux
F 300	min. 55 kLux
F 400	min. 30 kLux
Colour temperature	5000 K ± 500 K
Cooling	Fanless / passive
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	
Temperature	-10...+50°C
Humidity without condensation	30...95 %
Air pressure	500...1060 hPa
Ambient conditions operation	
Temperature	+10...+35°C
Humidity without condensation	30...95 %
Air pressure	700...1060 hPa
Maximum operational altitude	≤ 3000 m
Contamination level	2
Overvoltage category	II
Weight	3.65 kg - 5.6 kg
Period tests	Repeat test of the electrical safety every 24 months. Recommended: inspection according to the manufacturer‘s specifications.
Safety class (EN 60601-1)	I
Degree of protection	No application part available
Safety type	IP X0
Classification according to Appendix IX EC Directive 93/42/EEC	Class I (according to regulation no. 12)
CE marking	CE
GMDN code	35191
UMDNS code	12-536
ID No. (REF)	538.9000.0, 539.9000.0

Issue of the Technical Data: 20.12.2017

10.0 Disposal

- The ATMOS i View PRO does not contain any hazardous materials.
- The housing is recyclable.
- Pay attention to a careful separation of the different materials.
- Please observe national disposal regulations (e.g. waste incineration).

Disposal within the EC

The device described above is a high-quality medical product with a long service life. After its life cycle it must be disposed of professionally. According to the EC directives (WEEE and RoHS) the device may not be disposed of in domestic waste. Please observe existing national laws and rules for disposal of old devices in the respective country.

Disposal within the Federal Republic of Germany

In the Federal Republic of Germany the law for electrical devices (ElektroG) regulates the disposal of electrical devices. It must be assumed that these devices could be contaminated. Therefore, according to the regulations of the EAR (Stiftung Elektro-Altgeräte Register) is this type of device excluded from the ElektroG regulations. In order to guarantee a proper disposal of your old device, please either pass on your old device to your specialised dealer or send it directly to ATMOS MedizinTechnik for a professional disposal.

Before disposal respectively before transport, the device surface must be disinfected.

11.0 Notes on EMC

- Medical electrical equipment is subject to special precautions with regard to EMC and must be installed acc. to following EMC notes.
- Portable and mobile HF communication facilities can influence medical electrical equipment.
- The use of other accessories, other converters and cables than stated may lead to an increased emission or a reduced interference immunity of the equipment or system.

11.1 Guidelines and Manufacturer´s Declaration - Emissions

The ATMOS i View PRO is intended for use in the electromagnetic environment specified below. The customer or user of the ATMOS i View PRO 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 i View PRO 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.
RF Emissions acc.to CISPR 11	Class B	The ATMOS i View PRO 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	
Flicker IEC 61000-3-3	Corresponds	

11.2 Guidelines and Manufacturer´s Declaration - Immunity

The ATMOS i View PRO is intended for use in the electromagnetic environment specified below. The customer or user of the ATMOS i View PRO should ensure that it is used in such an environment.

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

11.0 Notes on EMC

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

11.3 Guidelines and Manufacturer´s Declaration - Immunity

The ATMOS i View PRO is intended for use in the electromagnetic environment specified below. The customer or user of the ATMOS i View PRO 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 Veff 150 kHz to 80 MHz	3 V	Portable and mobile communications equipment should be separated from the ATMOS i View PRO incl. the cables by no less than the distances calculated/listed below. Recommended distances: d = (3.5 / V1) * √(P) d = [3,5 / E1] √P from 80 MHz to 800 MHz d = [7,0 / E1] √P from 800 MHz to 2500 MHz where „P“ is the max. power in watts (W) and D is the recommended separation distance in meters (m). Field strengths from fixed transmitters, as determined by an electromagnetic site (a) survey, should be less than the compliance level (b). Interference may occur in the vicinity of equipment containing following symbol: 
Radiated RF IEC 61000-4-3	E1 = 3 V/m 80 MHz to 2.5 GHz	3 V/m	

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.
a The field strength of stationary transmitters, such as base stations of radio telephones and land mobile radio devices, amateur radio stations, AM and FM radio broadcast and TV broadcast cannot be accurately predicted theoretically. 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 i View PRO is used exceeds the above compliance level, the ATMOS i View PRO 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 ATMOS i View PRO. b Within the frequency range of 150 kHz to 80 MHz the field strength should be below 3 V/m.

11.4 Recommended safety distance between portable and mobile RF Communications equipment and the ATMOS i View PRO

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

	Safety distance, depending on transmit-frequency m		
Nominal output of the transmitter W	150 kHz to 80 MHz d = [3.5 / 3] √P	80 MHz to 800 MHz d = [3.5 / 3] √P	800 MHz to 2.5 GHz d = [7.0 / 3] √P
0.01	0.12	0.12	0.233
0.1	0.37	0.37	0.74
1	1.16	1.16	2.33
10	3.69	3.69	7.38
100	11.66	11.66	23.33
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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