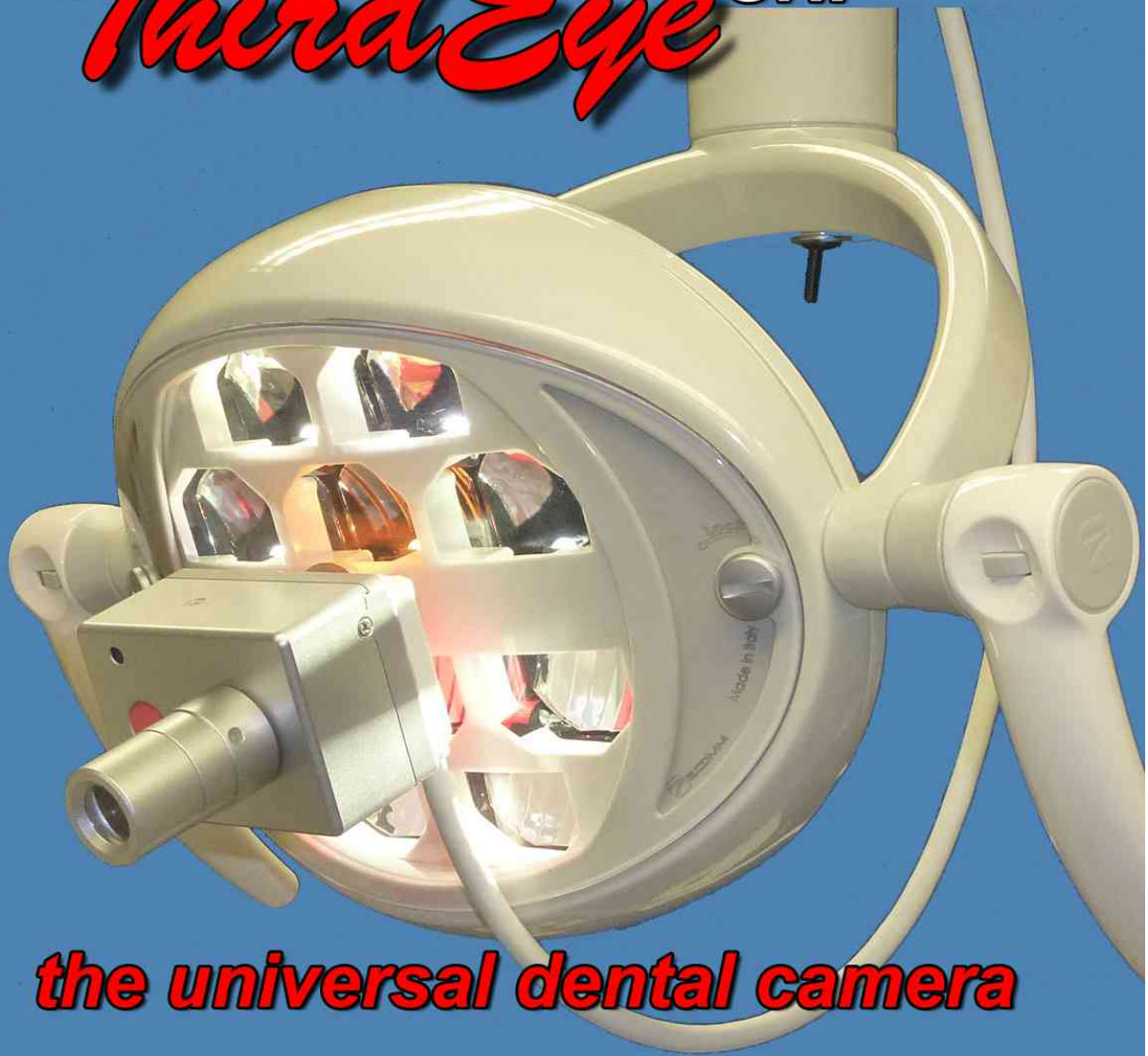


ThirdEye UNI



the universal dental camera

***16 megapixel photo
full-HD video (HDMI)
built-in microphone
record on internal microSD
remote control***

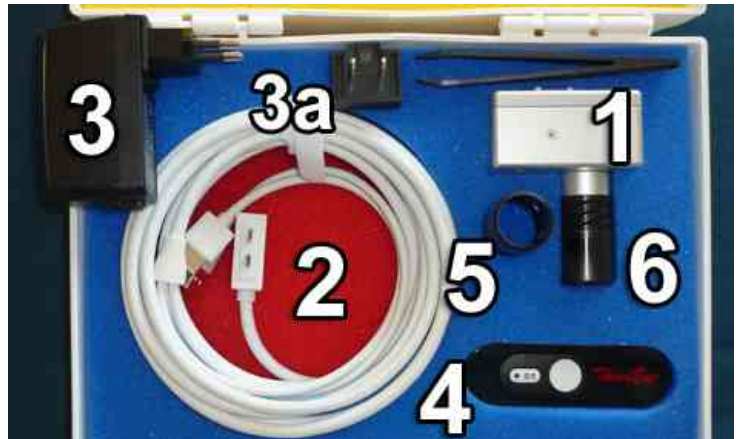
****universal***

ThirdEye^{UNI} your new universal dental camera

ThirdEye-UNI dental camera set

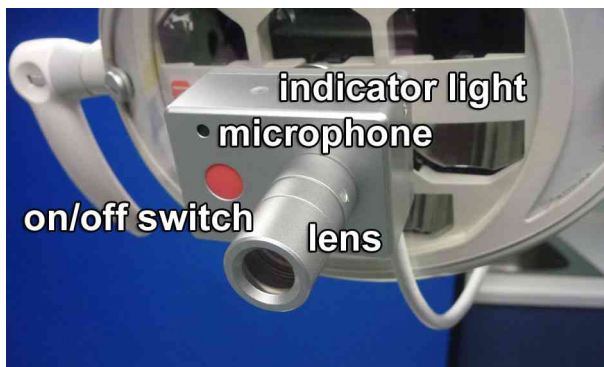
The ThirdEye-UNI dental camera set comes in a white box.

1. ThirdEye-UNI dental camera
2. camera cable (HDMI/USB)
3. medical power supply
- 3a. US adapter plug
4. remote control
5. lens hood (active)
6. lens hood (protection)



ThirdEye-UNI components

front side of ThirdEye-UNI



rear side of ThirdEye-UNI



ThirdEye-UNI Functions

on/off switch

push on/off button once to switch the camera on
push on/off button for three seconds to switch the camera off

camera being switched on, this button changes from video to photo modus (and vice versa)

indicator light

the indicator light is lit in video mode only
the indicator light is blinking in video recording mode !

microphone

the microphone records stereo audio

IMPORTANT

please do not spray disinfectant on the microphone or dive the camera in any fluid
use a paper cloth with disinfectant to disinfect camera.

camera mount slot

this slot is used to slide the camera on the miniature camera mount

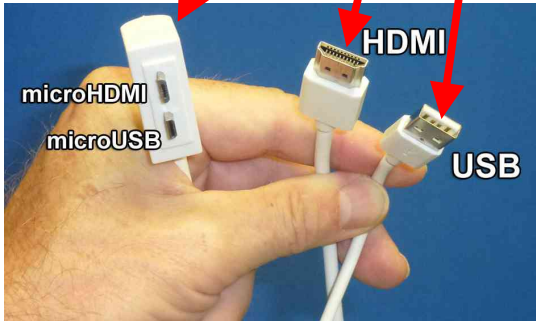
micro HDMI and microUSB socket

the camera cable connects in one push into these microHDMI and microUSB sockets

microSD card slot

Camera cable

HDMI/USB camera cable, length 3,5m with combined HDMI/USB camera connector and 30cm break-out cable



Remote control

ThirdEye-UNI is used with a wireless remote control. It has two buttons only.



The **record/stop/release** button and the **change mode** (video/photo) button

With the change mode button you can switch from video to photo mode and vice versa.

In video mode

start a video recording push the record button (the indicator light on top will start flashing).

In photo mode

push the release button to take a still shot /photo (you'll hear the sound of a shutter release)

Changing the microSD card

Always switch off camera ! (press on/off button for three seconds) before changing microSD card. Unplug the camera cable plug.

With your fingernail push on microSD card.



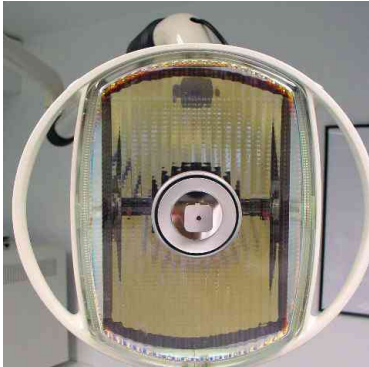
Use the (plastic) or a metal forceps to remove microSD card.

Put the microSD card into the provided SD card adapter and insert it into the SD card slot of your computer.

Always use recommended microSD cards only (now: **Samsung EVO 16GB or 32 GB microSD cards**, only)

Mounting the miniature camera stand

Independently of the type of dental light the miniature stand shall always be mounted in the center of the dental light front.



Before glueing the miniature camera stand to your dental light all the adhesive surfaces of the light and stand baseplate must be cleaned and degreased with alcohol (isopropylalcohol) and a clean paper tissue, cloth or cotton swab

For the later adjustment of the camera stand on the dental light a cross from adhesive tape is stuck on the camera plate of the stand, so that all free ends of the tape exceed at least one centimeter over the stand baseplate.

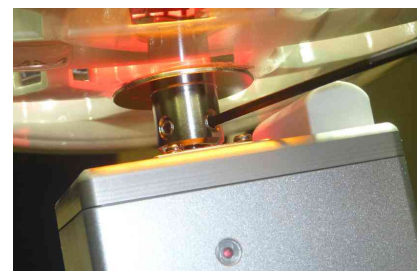


With a cement spatula a thin layer of Hylosil[®] silicone glue is spread onto the surface of the stand baseplate. For dental lights with a relief on their front side (e.g. Siemens M1, Sirona E, Pelton Crane etc.) the silicone layer must be somewhat thicker. The stand fed with silicone adhesive is put on the center of the light front and pressed on slightly, until some silicone outpours the baseplate at the edges.

Recommendation:

For temporary attachment of the miniature stand you can use a polyether impression material like e.g. Impregum[®].

It is important to fix the stand in the correct positioning, so that the fixing screws are well attainable afterwards. Since the plug of the camera cable is on the right side (topview) of the camera, the screws should show V-formed to the top or to the left side (topview). Now the ends of the tapes are fixed at the light and the light screen is turned upward.



The curing of the silicone takes about 4 hours (with heat) to 12 hours depending upon thickness of the silicone joint (the more thickly the joint, the longer the hardening by precipitation phase). The hardening by precipitation can be accelerated however by warmth. For this reason the light should remain switched on for at least 4 hours.

Laying the camera cable

The white camera cable for ThirdEye-UNI (length 3,5m) contains both HDMI and USB connectors and wires. On the camera side HDMI and USB plugs are molded in one connector to make the socket waterproof.

The camera cable itself is only 6mm in diameter ! Because of the size of the camera connector and the distant break-out cable it will/might be impossible to lay the cable inside the tubing linkage of your dental light. We recommend laying the camera cable along the dental light tubings in a cable tunnel or using cable clamps.

The advantages:

- no drilling wholes in dental light tubings
- no time consuming installation
- and
- fast replacement of cable in case of broken wires



Please notice: For laying the camera cable inside the inner tube of the dental light one has to drill a small hole into the front side of the dental light tube (often plastic parts). This bore hole will lead your dental light to lose its registration and warranty (medical products law). We leave it up to you to drill this hole by yourself or have a technician from your dental supplier drill this hole and lay the cable for you (in any case: check if the cable plugs will fit through the tubings!). A more comfortable, but less attractive way to lay the camera cable is through the use of cable clamps, cable channels or adhesive tape stuck to the outside of the dental light tubes.

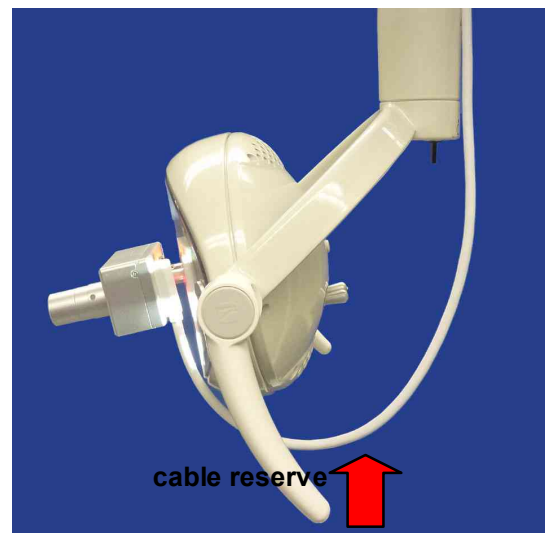
The standard length of the camera cable is 3,5m (this is the average distance from the camera to the lower third of the vertical pipe of your dental light. At this place you can connect to a (unit mounted) monitor or a recording device.

If you want to have the preview monitor and/or recording in any other place, we provide a 5m HDMI extension cable (or longer) and for the medical power supply a 3m USB extension cable.

Important: In order to ensure the full mobility of the light head, a cable reserve must be present. The best way to test the length of the necessary cable reserve is to attach the camera to the stand, connect the camera cable plug to the camera socket and hold the camera cable to that point, where the cable is to be laid into the light tube or cable tunnel.

Now move the light head to any possible direction. The cable should not be strained in any position or be in contact to hot surfaces of the dental light.

Note: The camera cable may be broken when squeezed or be laid in very close bends.

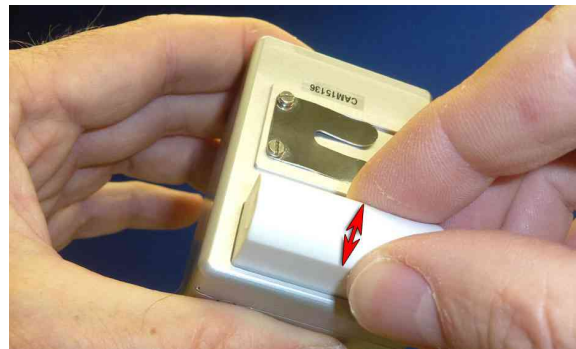


Connecting a monitor

ThirdEye-UNI delivers clean HDMI output with full-HD video and audio. So, you can connect the camera directly to any tv, monitor or video projector as well as to any full-HD recording device with HDMI input (→ flowchart of **Avermedia Game Capture HD2**)

Attachment of the camera

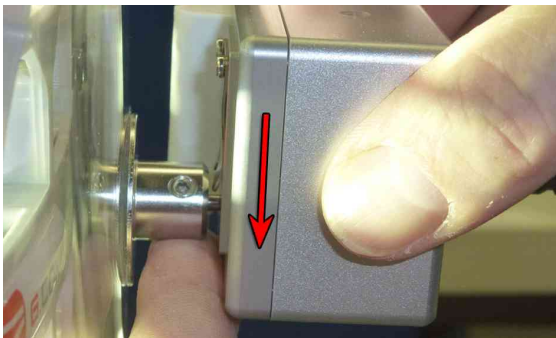
Once the HDMI camera cable is connected to the monitor and the camera's USB power plug is connected to the medical USB power supply the cable connector can be connected to the camera.



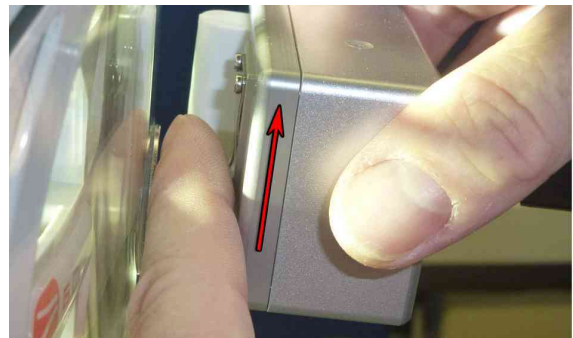
Align the two microHDMI and microUSB plugs to the camera's connector shaft.
Push the connector with low force into the shaft jiggling the connector a little bit (see red arrow).
If inserting the connector is very tight, loosen the cross-head screw on the side of the camera housing a bit and try again. Do not use much force inserting the connector.
Having the camera connected and reconnected several times will make the insertion of the connector smooth-going.
The cable connector is fitting so tight to make the connection water-proof.

Now the camera with the groove on its rear side can be slid onto the disk of the miniature camera stand.
Secure the position of the light's head with your index finger below the mount.
To remove the camera from the miniature mount secure the light with your index finger laying on the mount.

sliding the camera on the disc of the miniature mount



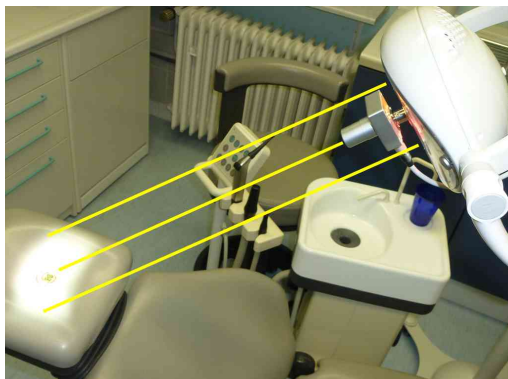
removing the camera from miniature mount



Now switch the monitor on.

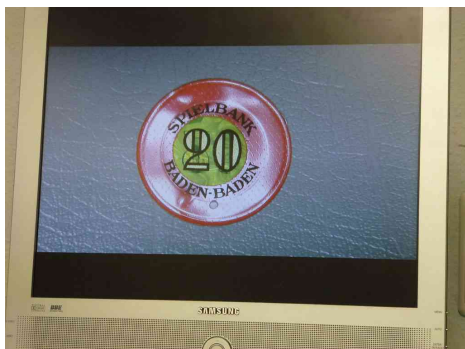
Adjustment of the camera

To get perfect illuminated and brilliant images it is crucial that the optical axis of the camera lens is perfectly aligned to the central beam of the dental light.



Place a coin on the dental chair (or it's neck restraint). Switch the dental light on and direct the light beam of the dental light towards the coin. Zoom-in (tele-shot) the camera so that all the monitor image is within the borders of the light beam. The coin should be in the centre of the light beam. Loosen the M2 fixing screws of the miniature camera mount with the enclosed Allen screw driver.

Guide the camera with your left hand till the coin appears in the center of the light beam on the monitor. If the coin appears both in the centre of the light beam and in the center of the monitor tighten the fixing screws of the miniature camera stand with your right hand with the allen screw driver (*this explanation is for right-handed dentists only*)



To prevent dazzling of your patient the coin should be placed something *above* the center of the light beam. Check the stability of the camera by shaking the camera a bit. The image on the monitor always should remain fixed in the centre of the light beam of the dental light !

Finished!

Recording video

ThirdEye-UNI can record full-HD video to an internal microSD card. Please see, that not any microSD card will work. We deliver the cameras with 32 GB Samsung EVO microSD cards, which we have tested. We will test other microSD cards soon and list them here.

Since the microSD card is within the camera, you can review the recorded videos only, when removing the microSD card (with the enclosed plastic tweezer) and putting it in the **SD card slot of a computer/laptop**. (using the enclosed microSD card adapter).

If you directly want to check or show the recorded videos to your patient, we recommend using a digital full-HD video recorder (→ Avermedia). Connect the HDMI cable coming from the camera to the recorder and lay an HDMI cable from the recorder to your monitor.

Another possibility would be using a digital video recorder with integrated touchscreen monitor, so there will be no need of special monitor. Both solutions come with remote controls for video recording and playback.

To start a video recording change to video mode and push the record/stop/release button on the remote control (the yellow indicator light on top of the camera will flash regularly now)

You want record a time stamp together with the video the date and time will appear on the lower right side of the preview monitor (→ software settings).

Shooting photos

To take a photo you change to photo mode (the yellow indicator light on top of the camera will go off) and push the record/stop/release/record button. You'll hear a shutter noise.

Handling the ThirdEye-UNI

Focus

Focussing is done by turning the focus ring.

Focus ring in most **backward position** is for wide shots.

Focus ring in **anterior position** is for close-up shots.

For hygiene always use lens hood.



You can shoot from 3 teeth (working distance 30cm)... to full mouth (working distance 60cm) format filling.



Zoom

ThirdEye-UNI has no zoom. The advantage: No zoom means not many lenses, which means more light (each lens absorbs light) falling on the CMOS chip, which means a small focal aperture (high f-stop) can be used, which entails a wide depth-of-focus. No zoom also means less weight and smaller camera dimensions.

You can "zoom" by moving the dental light closer to the patient's mouth (tele-photo shots) or moving the dental light away from the patient's mouth (wide-angle shots, in fact it is not a wide-angle shot, but a lesser telephoto shot).

White balance

Automatic white balance of ThirdEye-UNI is excellent.

If you should need a manual white balance ? Switch off the camera. Take a white sheet of paper (not glossy paper). Put the paper in front of the light beam (30-40cm). Then switch on the camera again. It will take 2-3 seconds for the camera to adopt the new white balance (the paper appearing perfectly white on the monitor).

Software settings

The camera settings can be changed by software. But we *do not* recommend this !

Your camera is configured to best video (1.920x1.080 pixels) and photo (16 mp) quality. The camera is adjusted to your local time, so you need not changing the clock inside the camera to your home time zone.

Important:

The camera *cannot* connect to a cell phone/tablet, while the WLAN of your cell phone/tablet is switched on → disconnect the WLAN of your cellphone or tablet!

First start the camera (press the red push button on the camera front)
It will take about 10-20 seconds till the camera's internal WiFi is activated.

Now start the camera software (please, ask for download link) on your cell phone or tablet.

The (smart phone/tablet) monitor will show the wifi connecting process.

As soon as the camera is connected to your cell phone or tablet, you'll see the camera image on the screen.

Now the camera already is synchronized to the tablet's/cell phone time (zone).
(Make sure your cell-phone tablet shows the correct local time)

To change other configurations (video, photo etc), choose the camera configuration menu.

Time stamp

Go to the settings button and choose time stamp on/off. This will display (or not display) date and time on your monitor and record/not record these data on the video/photo. This feature might be important in court for cases of recourse.

Technical data

camera

housing dimensions weight	CNC grinded, anodized aluminum, silver varnishing 65 x 46x 34 mm 170 grams (with lens and cable plug)
sensor	Sony CMOS 16 megapixels
resolution video	1.920x1.080 25fps* PAL or 30fps NTSC <i>*fps = frames per second</i>
video format	16:9
video signal	digital, clean HDMI-out
video recording	<i>internal microSD card: mp4 format (H.264)</i>
resolution photo	16 megapixels
photo format	4:3
audio (built in microphone)	stereo, 96 khz
white balance	automatic, manual reset
auto iris	CMOS auto iris
electronic iris	1/60 - 1/20.000 sec.
working temperature	-20° - 50° C
humidity	> 85%
power supply	(medical) USB power supply 5 volts DC +/-10%

lens

material	aluminum anodized, silver varnishing
lens iris	fix iris (d= 1,8mm)
focal length	fix focus f:50mm = three teeth format filling at 25cm working distance = full mouth format filling at 60cm working distance
focussing	manual focussing with focus ring (easy and fast going)
range of focus	25-80cm
depth-of-focus	6-10cm (depending on brightness & working distance)

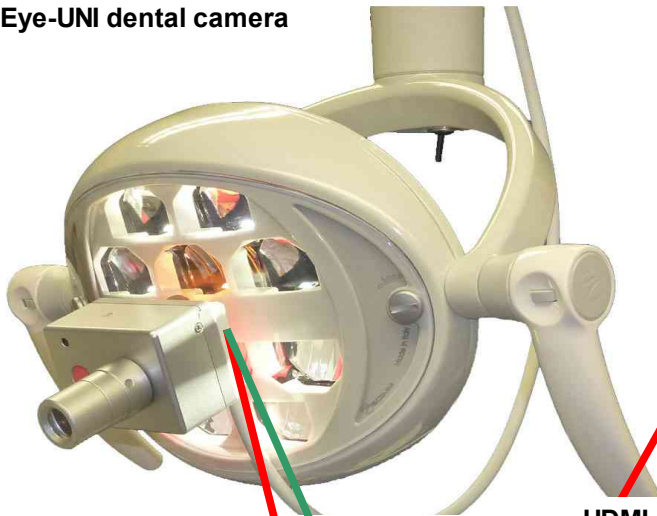
extras & accessories

camera mount	minature camera mount with ball joint (stainless steel)
camera cable	USBpower/HDMIout in one cable, white, 3,5 m standard
power supply	USB power supply 110V/220V input to 5 V output
longer cables by extension cables	
Hylosil silicone glue	Hylosil® transparent, high heat resistant (-180° C)
diverse digital video recorders	for all, who want to record 10bit 4:2:2 broadcast quality !
not necessary for full-hd video recording !	

Using *Avermedia Game Capture HD2* to record & instantly review full-HD videos

surgery room

ThirdEye-UNI dental camera



HDMI camera length & USB cable 3,5 m

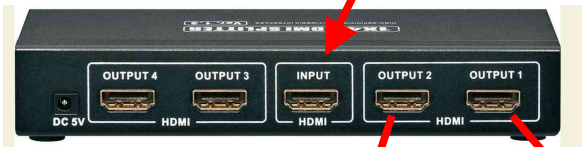


preview monitor in surgery room with HDMI-in

Avermedia recorder



HDMI distributor/amplifier



ThirdEye-UNI can be connected directly to any HDMI monitor (at best full-HD) or to the *Avermedia recorder*

To connect more than one monitor or video projector, the camera signal can be distributed using an *HDMI distributor/amplifier* (e.g. 1:4)

Maximum cable length of HDMI = 15m
Over longer distances the HDMI signal can be transmitted by using an *HDMI to CAT5/6 adapter*

seminar room



full-HD monitor HDMI-in

or



full-HD video projector HDMI-in



Declaration of Conformity

The manufacturer /importer

Dr. Benno Raddatz
Verlag Neue Medien
Grenzstr. 60
76448 Durmersheim
Germany

hereby declares, that the product

ThirdEye^{UNI} dental camera

is in conformity with the protection requirements of the following EC Council Directives:

89/336/EEC EMC directive
Elektromagnetic compatibility
73/23/EEC LVS directive
Low voltage safety

based upon compliance of the product with the following harmonized norms/standards:

EN 50081-1:1992
EN 50082-1:1997
EN 55022:1998
EN 55024:1998
EN 60950:2000

Manufacturer/Importer

Durmshheim, 01/09/2016

Dr. Benno Raddatz, C.E.O.