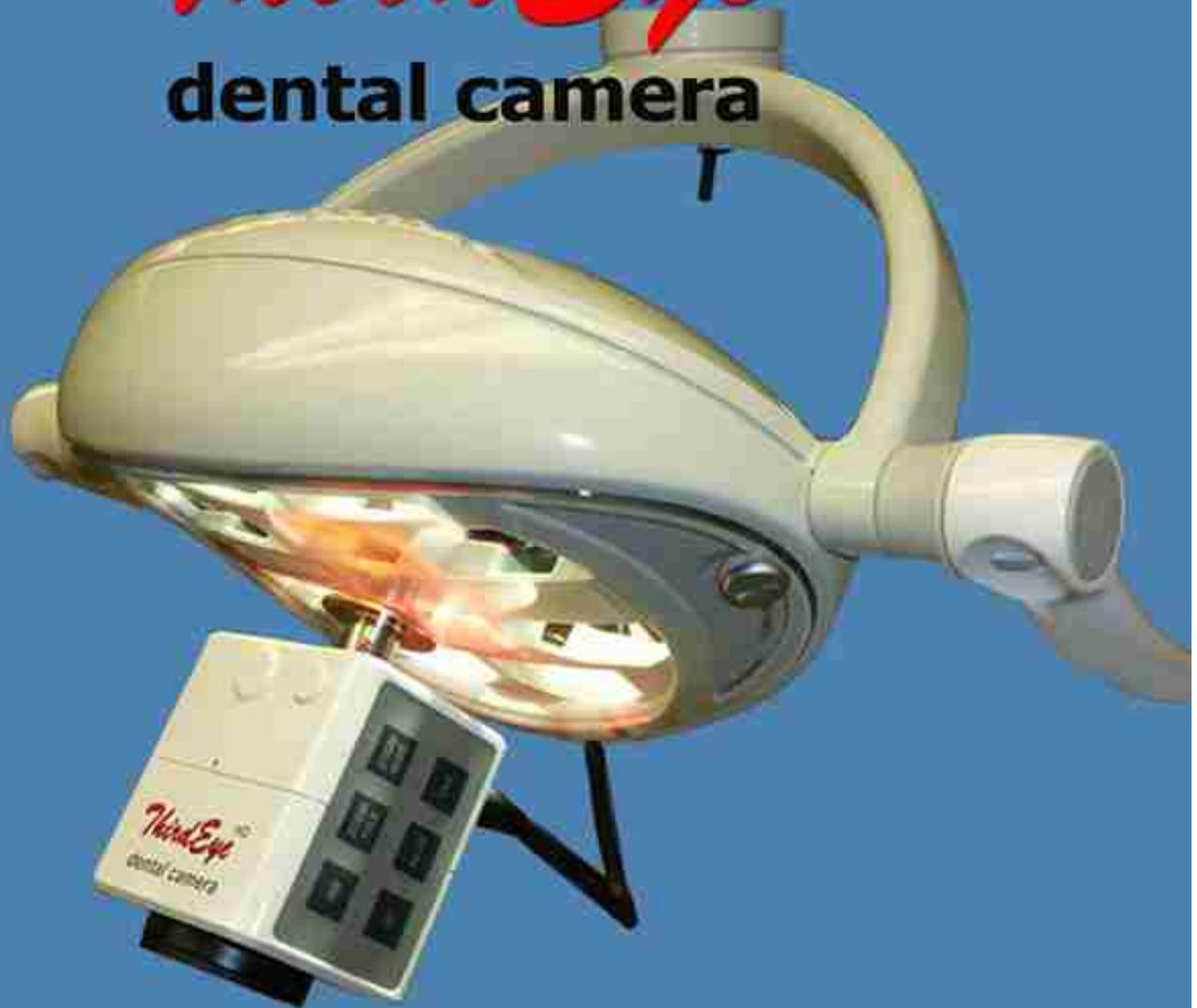


**ThirdEye<sup>HD</sup>**  
**dental camera**



**intra oral shots from extra oral**  
*auto focus and 10x zoom*  
*full-HD 1.920x1.080i*

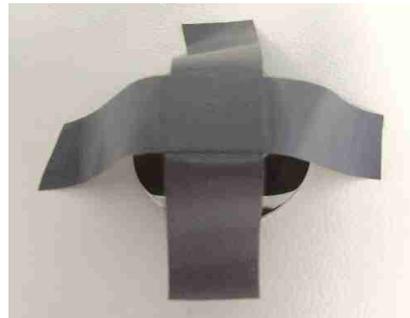
# ThirdEye<sup>HD</sup> the dentist camera of the future

## Mounting the miniature camera stand

Independently of the type of dental light the miniature stand is 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 and a clean cloth.



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.

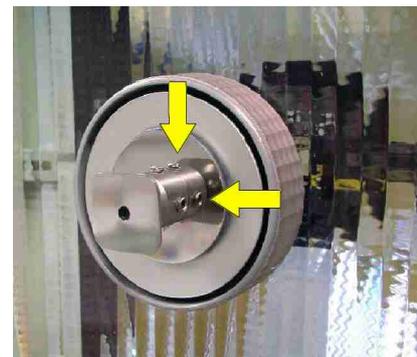


With a cement spatula a thin layer of Hylosil<sup>®</sup> silicone glue is spread onto the surface of the stand baseplate. For dental lights with a relief on their front side (e.g. Siemens M1, Sirona E, Pelton Crane etc.) the silicone layer must be somewhat thicker. The stand fed with silicone adhesive 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<sup>®</sup>.

It is important to fix the stand in the correct positioning, so that the fixing screws are well attainable afterwards. For right handed persons the screws should show to the right and upward (with the view of the light front side)  
Now the ends of the tapes are fixed at the light and the light screen is turned upward.



The curing of the silicone takes 4-12 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 3-4 hours.

## Laying of the camera cable

With its diameter of only 4,5 mm the camera cable can be laid inside the tubing linkage of most dental lights. The outer diameter of the camera sided cable plug is 11,2 mm.



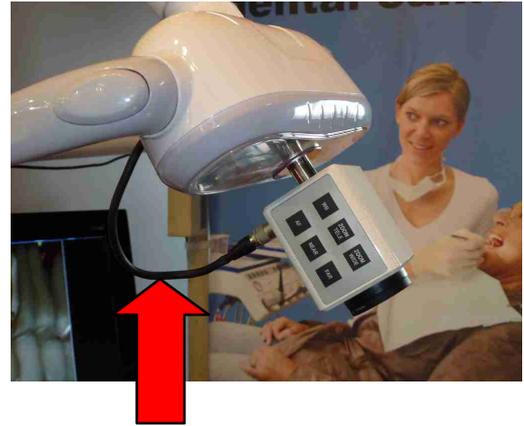
**Please notice:** For laying the camera cable inside the inner tube of the dental light one has to drill a small hole into the front side of the dental light tube (often plastic parts). This bore hole will lead your dental light to lose its registration and warranty (medical products law). We leave 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.

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.

**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 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.

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 to close bends.



**cable reserve**

## Connecting the monitor

ThirdEye-HD delivers an uncompressed analog component video output signal. We have chosen component outputs, because of two reasons. HD component cables can be as long as 60 meters and the standard RCA connectors are more solid than HDMI plugs. HDMI has a maximum cable length of 10-15 meters. We see HDMI as an amateurish standard, which may be good enough, if you do not plan cables longer than 15 meters and if you will not replug the connectors very often.



Connect the three RCA plugs of the camera cable to the component (green, red and blue) RCA input sockets of your HD monitor. As the input source of your monitor choose "component". Most modern HD TV devices have component inputs.

### Another word to the monitor:

Please use HD tv monitors (full-HD monitors at best) with component inputs (green, blue and red RCA sockets). Standard tv monitors won't be able to handle the full-HD signal of ThirdEye-HD

## Attachment of the camera

Once the camera cable is connected the monitor and the camera's power plug (12pin HIROSE) is connected to the power supply the camera can be attached to the dental light.



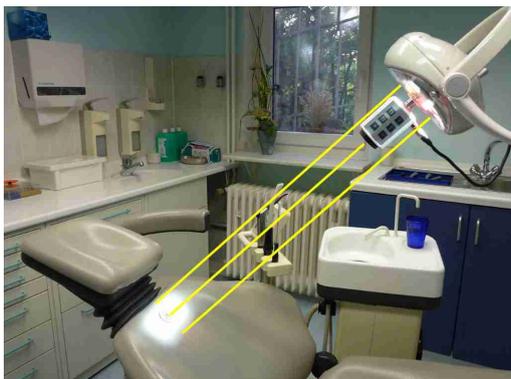
Please, at first connect the 6pin camera cable plug with the socket on the camera housing. Since this is possible in one position only, you should turn the camera in your left hand against the cable plug in your right hand in opposite directions, until the plug engages.

Now the camera with the groove on its rear side can be slid onto the disk of the miniature stand. Secure the position of the light's head with your index finger.

Now switch the monitor on.

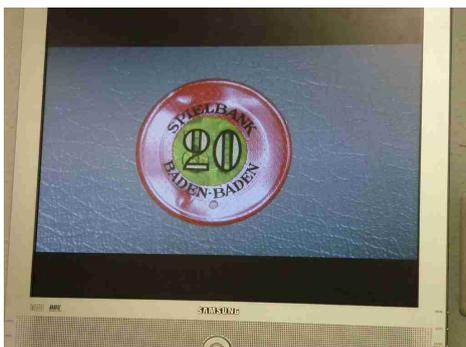
## Adjustment of the camera

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!***



### Manual white balance

White balance is very important to get optimal color reproduction and contrast. Since light and color temperatures are changing during the day (sunny, cloudy sky, night with tungsten light etc.) it is very important to adjust the white balance from time to time, so that the camera reproduces a white color as a white color and all other colors in a perfect manner.

To do the white balance take a white matt sheet of paper and put it in front of the camera lens in a distance of 40-50cm. Switch the dental light on and guide the light on the white paper sheet. Zoom-in (**TELE**), so that the camera image on the monitor is within the light beam of the dental light. Now push the manual white balance **WB** button for at least 3-4 seconds, till you see the colors switching. Check the colors with the test pattern or better with an intraoral scene.

### Zoom

You can zoom using the push buttons **TELE** or **WIDE** on the camera side or you can use the cable bound remote control (a wireless remote control for the zoom is in preparation, optional)

### Use of close-up lenses

For working distances\* closer than 80cm. Always use the close-up lenses you need to use close-up lenses. Without the close-up lenses the camera wouldn't be able to focus in TELE photo shots

- close-up lens # 1 (mounted) is for working distances\* of 40-80 cm
- close-up lens #2 (in the package) is for working distances of 30-60 cm
- without close-up lens is only for working distances > 80 cm

\*distance between front lens of camera and object (e.g. patient's mouth) to be filmed

### Focussing

We recommend always working with autofocus !

**Important:** The object to be filmed has to be in the *center* of the scene for the autofocus working correctly.

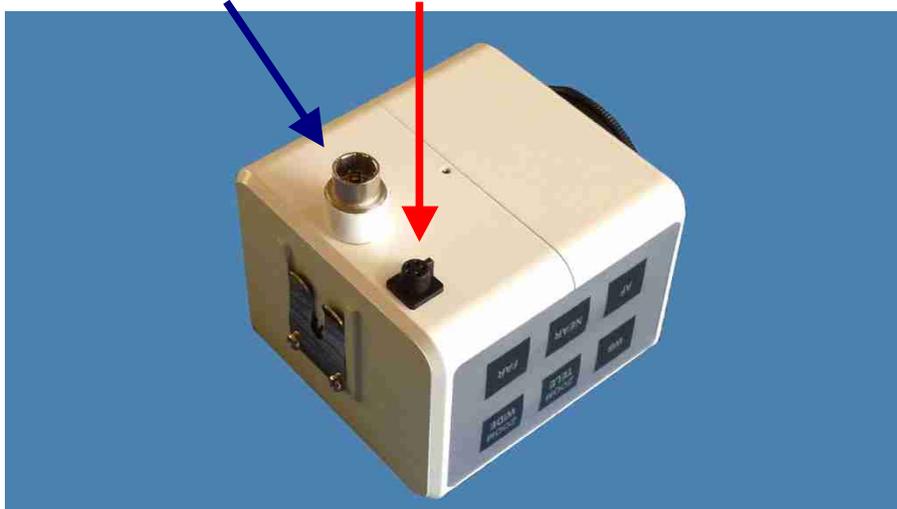
To focus manually push **AF** and focus with **NEAR** or **FAR** buttons.

## Connecting the receiver for wireless zoom remote control

ThirdEye-HD has two connectors at the bottom

for the camera cable

for zoom remote control



To connect the receiver to the black 5pin socket just put the bottom of the receiver box parallel to the bottom of the camera housing and push till it connects.

**Important:** Always connect the receiver to the camera *before* switching power-on or connecting the camera cable to the camera



To unplug the receiver box pull the box straight off the connector without turning the box against the camera body.

### Remote transmitter

push **tele** to zoom-in

push **wide** to zoom-out



## Technical Data for *ThirdEye* HD

### camera

|                       |  |
|-----------------------|--|
| image sensor          | 1/3" CMOS Sony   |
| CMOS total pixels     | 2 mega pixel   |
| video resolution      | 1.920x1.080i (= full-HD)                                 |
| video signal          | 1.080i/59.94 full HD & NTSC<br>1.080i/50 full HD & PAL   |
| video system          | HD analog component Y/Pb/Pr                              |
| signal-to-noise ratio | > 50 dB  |
| camera iris           | ½ - 1/10.000 sec auto iris                               |
| white balance         | AWB (automat. white balance)<br>and manual white balance |

### power supply

power consumption 110-240 volts AC → 12 Volts DC +/- 10%

3,8 Watts

### housing

|                    |                     |
|--------------------|---------------------|
| colour             | white, stove enamel |
| material           | aluminum anodized   |
| dimensions (wxhxl) | 64x52x73,5mm        |
| weight             | 230 grams           |

### zoom lens

|                     |   |
|---------------------|---|
| focal length / zoom | 5.1-51mm (= 10x zoom)<br>12x digital zoom (= 120fold) |
|---------------------|---|

### focussing

|                  |   |
|------------------|---|
| working distance | autofocus or manual focus<br>30cm- 80 cm (w. close-up lens)<br>80cm - infin. (wo close-up lens) |
|------------------|---|

### delivery contents

miniature camera mount  
camera cable (length 6m)  
component (YUV) with  
6pol plug camera side  
3x RCA (YUV) plugs + power  
power supply 110-240V - 12V  
close-up lens 1 (40-80cm)  
close-up lens 2 (30-50cm)

### optional accessories

component camera cable (up to 25m)  
component-HDMI adaptor  
HD-distributor/amplifier 1:3 (or other)  
HD digital recorders  
wireless zoom remote control (in preparation)

## The following diagrams show the Installation of ThirdEye-HD

- a. with HDMI cables using Avermedia Game Capture HD2 (no computer needed)
- b. with component cables using component distributor/amplifier and component recorder (computer/laptop needed)

**surgery room**



ThirdEye-HD zoom & auto focus

camera cable component

length of camera cable from camera to Avermedia?

Avermedia HD recorder



HDMI distributor/amplifier

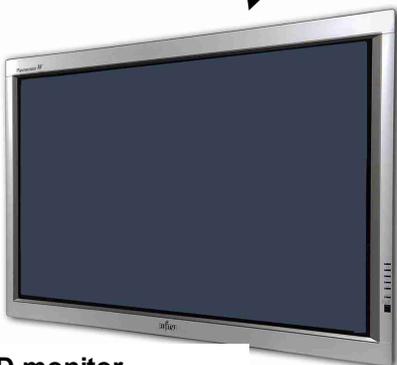


preview monitor in surgery with HDMI-in

*ThirdEye-HD can be connected directly to an HDMI monitor (at best full-HD) via Avermedia HD Recorder or to connect more than one monitor or video projectors, the camera signal can be distributed via Avermedia HD recorder by using an HDMI distributor/amplifier (e.g. 1:4)*

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

**seminar room**



full-HD monitor HDMI-in

or



full-HD video projector HDMI-in

**surgery room**



component-in

camera cable length ?  
from camera to splitter



preview monitor  
in surgery room  
with component-in YUV



1:3 component  
splitter  
in surgery room

component-out 1

good \* component cable  
YUV (green, red and blue)  
can be up to 50m long



e.g. Öhlbach or Belden cable

component-out 2



H.264 Encoder Pro or Hauppauge HD PVR  
to record HD-videos on PC or Mac  
in surgery room

USB

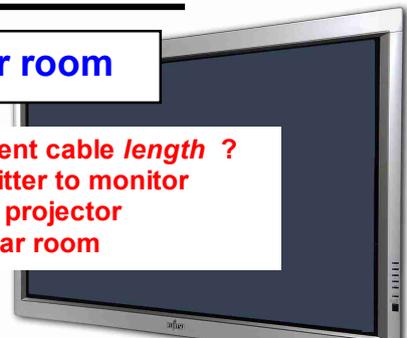


laptop/pc (Windows/Mac)  
in surgery room (USB2.0)

component-out 3

**seminar room**

component cable length ?  
from splitter to monitor  
or video projector  
in seminar room



full-HD monitor  
in seminar room  
with component-in YUV

or



full-HD projector  
with component-in YUV



## Declaration of Conformity

### The manufacturer / importer

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

hereby declares, that the product

*ThirdEye*<sup>HD</sup> video 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**

---

Durmersheim, 01/01/2009

Dr. Benno Raddatz, C.E.O.