User Manual

BOP HD8 / BOP HD16

Edition 1.0

Document Reference

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Document History

Index	Page	Date	Reason of Change	Name

Content

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1. INTRODUCTION

1.1 THIS MANUAL

This manual describes the I+ME ACTIA video protection system BOP HD.

Variants:

- BOP HD8   (8 x video in)
- BOP HD16   (16 x video in)
- BOP HD-Reviewer Station

This information serves

- to get close to the video protection system BOB HD
- to operate with the video protection system BOP HD in a safely, suitable and economically manner

Respecting these information will degrade risks, reduce repairs and downtimes and increase the reliability and lifetime of the system and the attached equipment.

Each person operating with the video protection system BOP HD must observe the instructions in this manual.

The manual has to be completed by national regulations (particularly to the data privacy protection).

If necessary a separate documentation for special users must be created by the operating company.

The operating company and the user are responsible for the correct use of the video protection system BOP HD.

Changes, rebuilding or other interferences into the video protection system BOP HD are not allowed. Service is only allowed if executed by qualified technicians. We do not accept responsibility for incorrect service or modifications made by the user or third party.

1.2   WARRANTY

The term of warranty fort he video protection system BOP HD is 24 months from date of purchase unless otherwise agreed. During the term of warranty we will repair all defects the reasons of which are proven to be defects of material or manufacturing. Excluded from the warranty are damages resulting from inappropriate use or normal wear and tear.

Warranty is granted on the basis of legal standards with an expressive authorization for repair work to be effected.

For complains please return the tool to your professional dealer or send it freight prepaid to I+ME ACTIA.

1.3   FOR SAFETY

Only skilled staff may install and commissioning the video protection system BOP HD.

The general safety instructions by handling with electrical equipment must be observed.

At the selection of the mounting place for the ACTIA video protection system BOP HD the corresponding specifications and regulations must be observed.

At the integration and operation of the ACTIA video protection system in a vehicle, interference to the function of the vehicle must be excluded. Especially safety systems may not be disturbed or set out of function.

1.4   INTENDED USE

The ACTIA video protection system BOP HD is designed for the exclusive use of recording and analysing video and audio data as well as the related additional information in vehicles by considering of the legal master regulations

1.5   FUNCTION

The ACTIA video protection system BOP HD records the video and audio data of the attached cameras, microphones and peripheral devices (e.g. GPS) as well as additional information from the vehicle. The data will be stored on removable data storage (hard disk).

The analysing happens directly (live-view, alarm data transfer) or later by checking the stored data by the use of the BOP Reviewer Software.

The data at an alarm are stored separately. This data could be automatically transferred to an external registration office by the use of a external modem.

The system is especially designed for the integration in public transport such as buses and trains.

1.6   USED SYMBOLS AND NOTATION

The following signs and syntax are used in this manual.

Safety instructions and warnings
are marked with the attention sign. A keyword specifies the note.

i   Special information is marked with this symbol.

This reference symbol is used in order to guide the user to other chapters of this manual or additional literature.

>Text<   Text or values in the context of screen forms are marked by pointed brackets.

>**Text**<   Text or values in the context of input fields are bold and marked by pointed brackets.

[OK]   Operating elements – like buttons and switches are marked by square brackets.

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2. GENERAL SYSTEM DESCRIBTION — BOP HD

The BOP HD is a digital video protection system especially for the use in public transport such as buses and trains.

The system is placed in a robust metal case. It allows the real time digital recording from up to 8 (16) analogue video signals (PAL or NTSC) in MPEG4/H.264 format, up to 2 audio tracks, the actual GPS position information (by the use of a optional GPS-mouse) as well as the additional information from environmental systems (IBIS data, CAN information, switch signals, …).

The recording starts by the ignition (clamp 15) or a digital input (wakeup function). The data are stored in a ring buffer (controlled by the capacity or time). This method ensure the recording of the actual data, even the data storage is full.

Data which are recorded during an alarm (triggered by CAN, a digital input or Ethernet broadcast) are stored at a save area. This area could not be overwritten by the ring buffer.

The data could be displayed to the attached monitors during the recording. Data which are stored during an alarm (alarm data) could be transferred automatically by the use of an external modem.

The configuration is made by an easy to use web interface.

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To analyse the data the BOP Reviewer Software from I+ME ACTIA could be used.

Main components

- BOP HD with
  - CPU and graphics processor
  - Linux operating system and BOP HD firmware
  - video- and audio interface electronic
  - Ethernet, USB
  - digital in / digital out
  - integrated power supply without fan for adapted components

- Exchangeable data storage with up to two 2.5'' SATA hard disks
  - for storage of the video- , audio and additional data.

Additional components (not in the scope of delivery)

- BOP Reviewer Software

- additional data storage

- cameras (mini dome, dome and special cameras)

- monitors

- cable sets for connecting cameras, switches, monitors and the power supply.

- adapter sets for easy integration into vehicles

- mounting bracket (to save prior unauthorized removal, the device could only be removed with a key)

2.1 FRONT SIDE - BOP HD

At the front panel all control elements and gauges are arranged. The Ethernet connector for configuration and maintenance is also placed at the front panel. Normally after the integration the BOP HD must not dismounted for maintenance and configuration.
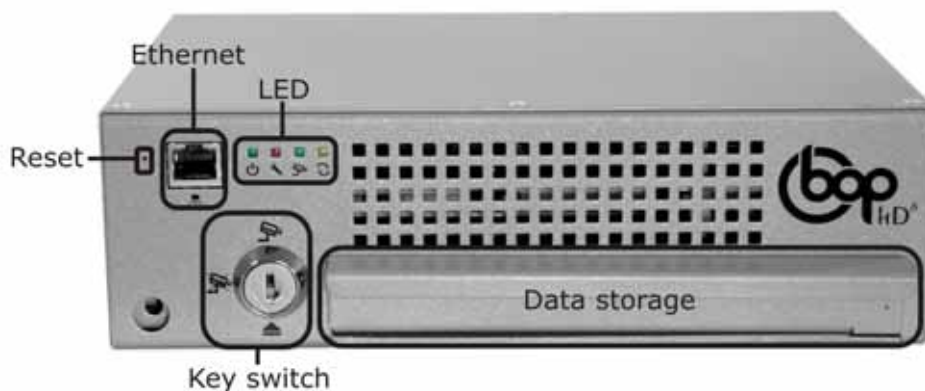
2.1.1. KEY SWITCH

By the key-switch the BOP HD is set to the following operation modes.

Pos.	Symbol	Mode	Note
1	⏏	OFF	The BOP HD is off/ is switched off. After the automatically disabling of the electromagnetic locking the data storage could be detached.
2	📷	PAUSE	The BOP HD switches offline. No data will be recorded. For maintenance and reviewing.
3	📷	RECORD	The BOP HD records video and audio data according to the settings in the configuration.

i Only authorized staff may switch the mode.

Remove the key-switch to protect prior unauthorized change of the operation mode.

i At switch-on a self test is executed (from >OFF< to >PAUSE< or >AUFNAHME<).

At an error the red service LED is flashing and the event is stored into the error file.

i The change of the operation mode is receipted by a short concurrent flash of the LED`s "Record" and "Data transmission". The switching of the operation mode takes same seconds.

2.1.2. OPERATING STATUS DISPLAY

Four light emitting diodes signalling the operation status of the BOP HD.

Pos.	Symbol	Status	Note
1		Power on	Green flashing when power supply is active.
2		Service	Red blinking at a malfunction.
3		Record	Green blinking during data recording.
4		Data transmission	Yellow blinking at an access to the data storage (read / write).

2.1.3. LAN INTERFACE

The Ethernet interface at the front panel is used for

- system configuration (by use of the web interface)
- password protected data transfer via SMB/CIFS
- update of the system

i   The Ethernet interface equates to IEEE802.3 BaseT with automatically detection of the transfer rate of 10/100 Megabit.
A standard network cable with RJ45 plug can be used if the connected PC supports auto crossing. Otherwise a crosslink cable is needed.

See also chapter 8.2.3

2.1.4. DATA STORAGE

The exchangeable data storage contains up to two 2.5'' hard disks.
Depending on the size of the hard disks, the numbers of video channels to be recorded and the image resolution recording, recording times with more then 200 hours are possible.

See also chapter 8.2.4

i   We advise to format the data storage before use. This makes sure that all old data are deleted and the full capacity is useable.

2.1.5. RESET SWITCH

⚠ **Danger of data loss**
By restarting the BOP HD via the reset switch data can be lost.

The BOP HD is reset by the reset switch. The system runs a complete restart. Only use the reset switch in exceptional cases (e.g. the BOP HD is in undefined state).

The reset switch is provided behind the front cover. This protect it prior unintended use. The reset switch can be pressed by a small bolt.

2.2   REAR PANEL - BOP HD

At the rear panel all connectors to connect the BOP HD to the vehicle and the peripheral devices are arranged.
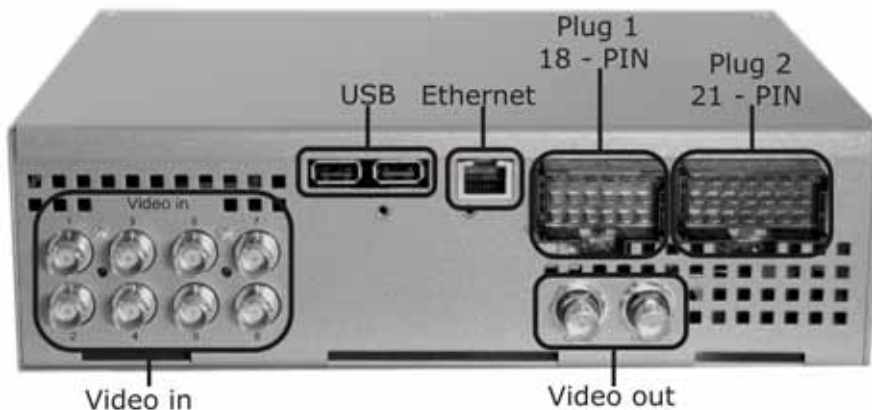
2.2.1. VIDEO IN – CAMERA ADAPTERS

Up to 8 (16) cameras can be attached to the BOP HD.

i   A large range of cameras are available at I+ME ACTIA. We advise to use only cameras which are released by I+ME ACTIA. You obtain detailed information from your specialist dealer or directly from I+ME ACTIA.

2.2.2. VIDEO OUT – MONITOR ADAPTERS

Two analogue monitors can be served by the both video out. A multiplexer is available via software. Therewith the display of one video channel constant or several video channels alternating is possible at each monitor. The alternating display can be switched on/off be the use of a digital input.

Additional an integrated video processor makes it possible to display several video signals at the same time on the monitor.

i A large range of monitors are available at I+ME ACTIA. We advise the only use of monitors which are released by I+ME. You obtain detailed information from your specialist dealer or directly from I+ME ACTIA.

2.2.3. USB PORTS

Two high speed USB ports are available to connect external devices.

Specification of the USB ports
- USB 2.0
- USB Type A plug
- Power supply for external devices: 5V, max. 500mA (with overload protection)
- Transfer rate: 480 MBit
- Overload protection up to 15 kV

2.2.4. LAN INTERFACE

The Ethernet interface at the rear panel is used for
- Integration of BOP HD into a network.
  (streaming, broadcast, download, reviewing, ...)
- Connection of an interface converter Ethernet to WLAN, GPRS, EDGE or UMTS.
  Therefore such devices could be connected to the BOP HD.

i The Ethernet interface equates to IEEE802.3 BaseT with automatically detection of the transfer rate of 10/100/1000 Megabit and auto crossing. A standard network cable with RJ45 plug can be used.

⇨ Also the web interface for the system configuration could be connected via the Ethernet at the rear panel (see chapter 6).

⇨ See also chapter8.7

2.2.5. PLUG 1 – 18 PIN

Plug 1 is engaged with

- connectors for the microphones
- power supply for cameras
- digital outputs

Plug connection: see chapter 3.4

2.2.5.1 MICROPHONES

Two microphones can be attached for recording of audio data.

i Microphones are available at I+ME ACTIA. We advise to use only microphones which are released by I+ME. You obtain detailed information from your specialist dealer or directly from I+ME ACTIA.

2.2.5.2 DIGITAL OUT

Four digital switch signals are available. These signals are realized by relays and therefore galvanically decoupled.

Specification of digital out

- Relays with normally open contact
- maximum current: 1A (max. 125 VAC resp. 30W / max. 110 VDC resp. 37,5W)
- no overload protection, no internal spark suspension

2.2.6. PLUG 2 – 21 PIN

Plug 2 is engaged with

- connector for power supply (clamp 30 and 31)
- ignition (clamp 15)
- IBIS interface
- CAN interface
- digital inputs

Plug connection: see chapter 3.5

2.2.6.1 POWER SUPPLY (CLAMP 30)

The power supply for the BOP HD occurs from the on-board electrical system of the vehicle. All internal voltages are generated by an integrated voltage converter.

2.2.6.2 IGNITION (CLAMP 15) - BOP HD ON/OFF

The BOP HD is switched on / switched off via the ignition. Precondition is that the BOP HD is switched to the mode >RECORD< or >PAUSE< by the key switch.

The changeover between >RECORD< and >OFF< via ignition can be delayed. This means that the recording is still active for a certain time after the vehicle is parked.

2.2.6.3 IBIS INTERFACE

The BOP HD provides an interface according to the IBIS specification.

i Further information about the use of IBIS you obtain from your specialist dealer or directly from I+ME ACTIA.

2.2.6.4   CAN-INTERFACE

To connect the BOP HD to a CAN bus a high speed CAN interface is available.

Specification of the CAN interface
- according to ISO 11898
- data transfer rate: max. 500 kBaud
- cycle time: max. 100ms
- supports 11Bit and 29Bit message identifier (CAN 2.0A/CAN 2.0B)
- integrated SJA 1000 CAN controller
- integrated PCA82C251 CAN amplifier

i   For the use of the CAN interface an adaption to the conditions of the customer is necessary. Please contact I+ME ACTIA.

2.2.6.5   DIGITAL IN

The behaviour of the BOP HD can be affect from external sensors or switches which are connected to the digital inputs. Three of the digital inputs (IN 1 – IN 3) can be used to set on or wakeup the BOP HD. The other 5 digital inputs are only available in active mode.

Logical 1: battery voltage
Logical 0: vehicle ground

Wakeup-Function (IN 1, IN2, IN3)

A logical 1 at one of the three inputs switch the BOP HD into the via key switch preselected mode >PAUSE< or >RECORD<. If the level rise down to zero the BOP HD switches to the mode >OFF<, after the shut down delay.
The function of the digital inputs IN 1, IN 2 and IN 3 equates to ignition (clamp 15).

IN 4 up to IN 8

These inputs are for the evaluation of environmental data such as door contact, reverse gear engaged or not. Depending on the configuration an alarm can be set. All state changes will be logged and can be displayed in the BOP Reviewer Software.

i   It's possible to use the inputs IN 4 and IN 5 for analysing of analogue signals. Please contact I+ME ACTIA for further information.

3. INSTALLATION

Beware of damage, malfunction or failure

Please observe following notes for protection against damage, malfunction and failure at the video protection system BOP HD as well as at the vehicle in which the system is integrated.

- Only trained staff may install and set into operation the ACTIA video protection system BOP HD.
- The general safety instructions for handling electrical voltage must be observed.
- On selecting of a mounting place of the ACTIA video protection system BOP HD the corresponding specifications and regulations must be observed.
- The function of the vehicle must not be affected by the integration and operation of the ACTIA video protection. Particularly safety systems must not be disturbed or set out of function.
- During connection of peripherical devices, regard their specifications, advices for mounting and information about the handling of.

i If you have any question about the installation of the ACTIA video protection system, please ask your specialist dealer or contact I+ME ACTIA.

3.1   ASSEMBLY

Observe the following notes during selection of the mounting place of the BOP HD.

- The BOP HD may not be directly exposed to climatic influence.
- To prevent condensed water and excessive heat the mounting place must be vented.
- Ensure the access to connect peripherical devices, do maintenance and exchange the data storage.
- Avoid hard shocks and exceeding vibrations during the operation of the BOP HD.
- To prevent damage to persons the BOP HD must be mounted safely. A loosening by a crash must be impossible.
- Unauthorised persons should not have access to the mounting place.

For the mounting the BOP HD, there are four drills with M6 thread at the lower side.

- Drill the holes according to the drawing
- Mount the BOP HD with four M6 screws. Please note that the screws may rise up to the case at a maximum of 20mm. Use tension rings or tooth lock washers to safe the screws.
- Tighten screws hand tight.

See also chapter 8.3- Drawing IR11919 B

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3.2   CONNECTION DIAGRAMM
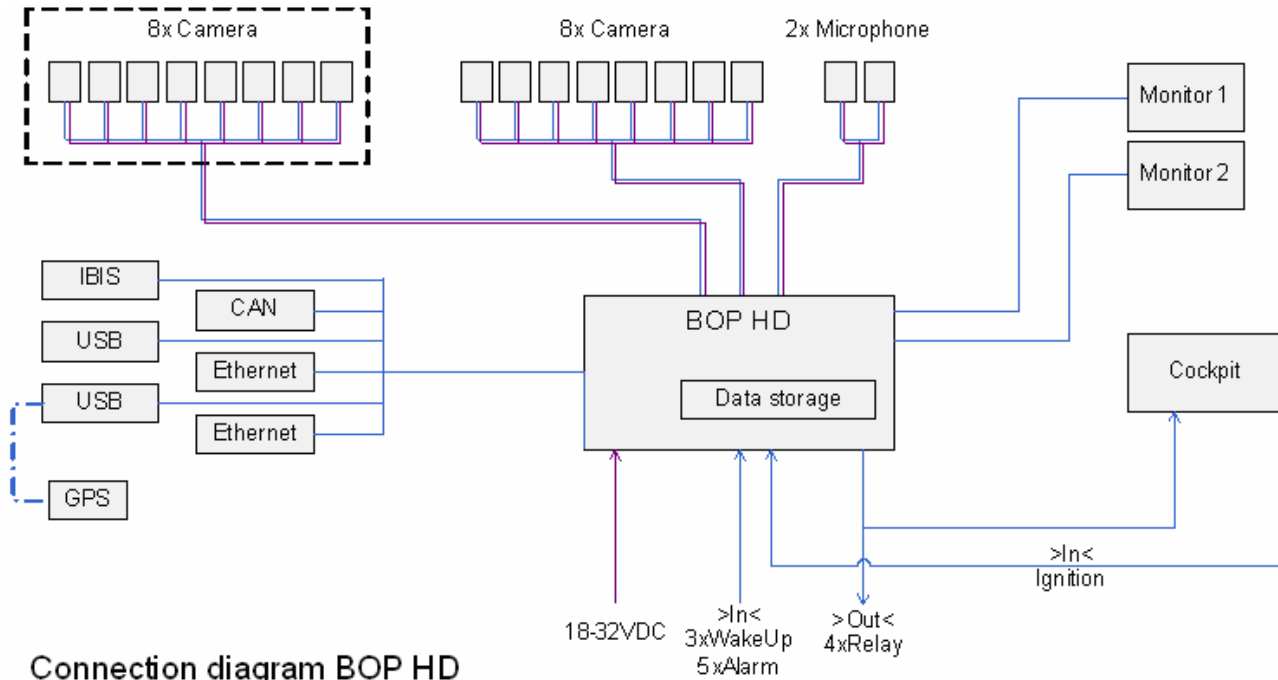
Connection diagram BOP HD

3.3   INTERFACES / INTEGRATION OF THE BOP HD
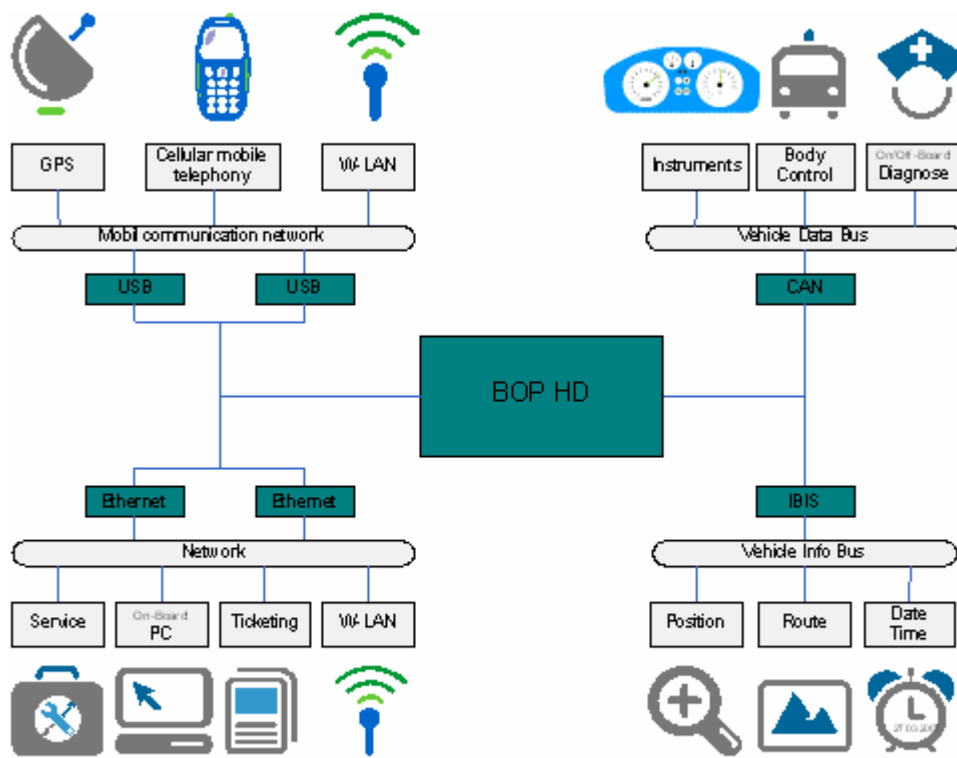
Interface BOP HD

3.4 PLUG 1 – 18PIN
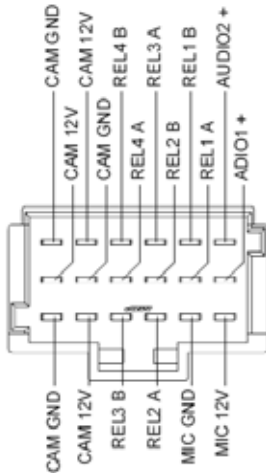
i For Customer specific Cables, please contact I+ME ACTIA.

Type of plug: TYCO 966140-1F

PIN	Description	Note
1	MIC 12V	12V-DC for microphones
2	AUDIO 1+	Signal microphone 1
3	AUDIO 2+	Signal microphone 2
4	MIC GND	Ground for microphones
5	REL1 A	Relay 1 – normally open contact*
6	REL1 B	Relay 1 – normally open contact*
7	REL2 A	Relay 2 – normally open contact*
8	REL2 B	Relay 2 – normally open contact*
9	REL3 A	Relay 3 – normally open contact*
10	REL3 B	Relay 3 – normally open contact*
11	REL4 A	Relay 4 – normally open contact*
12	REL4 B	Relay 4 – normally open contact*
13	CAM 12V	12V-DC for cameras (max. 2A)
14	CAM GND	Ground for cameras
15	CAM 12V	12V-DC for cameras (max. 2A)
16	CAM GND	Ground for cameras
17	CAM 12V	12V-DC for cameras (max. 2A)
18	CAM GND	Ground for cameras

* Load: 1 A at max. 125 VAC e.g. 30W / 1 A at max. 110 VDC e.g. 37,5W

3.5 PLUG 2 – 21PIN

Type of plug: TYCO 966140-6F
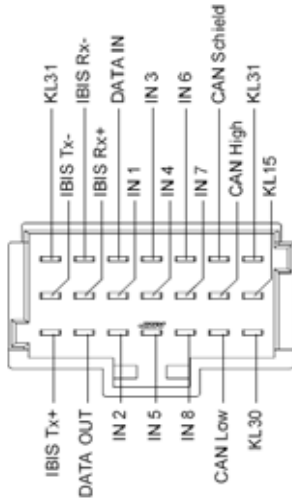
i Several sets of connection leads are available at I+ME ACTIA.

PIN	Description	Note
1	KL30	Battery (KFZ) / Power supply +
2	KL15	Ignition (KFZ) / switch-on/switch-off
3	KL31	Ground (KFZ) / Power supply -
4	CAN_L	High speed CAN-bus low signal
5	CAN_H	High speed CAN-bus high signal
6	CAN_SHD	High speed CAN-bus shield
7	IN 8	Digital Input
8	IN 7	Digital Input
9	IN 6	Digital Input
10	IN 5	Digital Input (analogue input)
11	IN 4	Digital Input (analogue input)
12	IN 3	Digital Input – wakeup
13	IN 2	Digital Input – wakeup
14	IN 1	Digital Input – wakeup
15	--	Only for service
16	--	Only for service
17	IBIS WBSD	IBIS-system / Receive (Rx+)
18	IBIS WBMS	IBIS-system / Receive (Rx-)
19	IBIS WBED	IBIS-system / Transmit (Tx+)
20	IBIS WBME	IBIS-system / Transmit (Tx-)
21	KL31	Ground (KFZ) / Power supply -

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3.6   CONNECTION OF THE POWER SUPPLY

Specification of the power supply

- Input voltage 10-32 VDC (typical 12VDC or 24VDC)
- max. current: 8A at 12VDC

Connection at

- +   plug 2 - pin 1
- -   plug 2 - pin 3

3.7   IGNITION CONNECTION

After the installation and the commissioning the BOP HD can be switched on/switched off by the ignition. Precondition is that before the BOP HD is switch to the mode >PAUSE< or >RECORD< by the key-switch.

Specification ignition signal

- Steady signal with input voltage 10-32 VDC (typical 12VDC or 24VDC)

Connection at

- Ignition on   plug 2 - pin 2
- Ground   plug 2 - pin 3

3.8   CONNECTION OF DOOR CONTACT, REVERSE GEAR, ALARM SWITCH, ETC.

Signals which should be evaluated and/or recorded by the BOB HD must be connected to the digital inputs. Three signals can be used to activate the BOP HD (wakeup function).

Specification wakeup signal (BOP HD switches to >PAUSE< or >RECORD<)

- Steady signal with input voltage 10-32 VDC (typical 12VDC or 24VDC)

Connection at

- Wakeup   plug 2 - pin 12, 13 or 14
- Masse   plug 2 - pin 21

Specification contact signal

- Input voltage 10-32 VDC (typical 12VDC or 24VDC)

Connection at

- Signal   plug 2 - pin 7, 8, 9, 10 or 11
- Ground   plug 2 - pin 21

Entry of analogue values see chapter 2.2.6.5

3.9   CONNECTION OF CAMERAS

Beware of faulty function

On cameras, which are not obtained from I+ME ACTIA or which are not approved by I+ME ACTIA, the specification must be obtained. Ask your specialist dealer or I+ME ACTIA whether the desired camera could be used.

Specification of video in

- BNC receptacle , 75 Ohm, 1Vss
- FBAS signal in
- PAL or NTSC
  - selected by automatic detection
  - mixed mode not allowed (either PAL or NTSC)

3.10 CONNECTION OF MICROPHONES

⚠ **Beware of faulty function**

If microphones are used, which are not obtained from I+ME ACTIA or which are not approved by I+ME ACTIA, the specification must be obtained. Ask your specialist dealer or I+ME ACTIA whether the desired microphones could be used

Specification

- 3-wire connection lead (+ / - / signal)
- 12V power supply via 1kΩ

Connection at

- + for microphone 1 and 2   plug 1 - pin 1
- - for microphone 1 and 2   plug 1 - pin 4
- Signal microphone 1   plug 1 – pin 2
- Signal microphone 2   plug 1 – pin 3

3.11 CONNECTION OF MONITORS

⚠ **Beware of faulty function**

If monitors are used which are not obtained from I+ME ACTIA or which are not approved by I+ME ACTIA the specifications must be obtained. Ask your specialist dealer or I+ME ACTIA whether the desired monitors could be used.

Specification video out

- BNC-jack, 75 Ohm, 1Vss
- FBAS signal out
- Integrated video amplifier
- PAL or NTSC (corresponding to video in)

3.12 CAN CONNECTION

Connection at

- CAN-L   plug 2 - pin 4
- CAN-H   plug 2 - pin 5
- Shield   plug 2 – pin 6

➦ See also chapter 2.2.6.4

3.13 GPS RECEIVER

For recording of GPS Position Information a GPS receiver could be connected.

Connection at USB port

i Only GPS receivers, which are approved by I+ME ACTIA should be used. Ask your specialist dealer or I-ME ACTIA for further information.

3.14 IBIS

Connection at

- IBIS WBSD (Rx+)   plug 2 - pin 17
- IBIS WBMS (Rx-)   plug 2 – pin18
- IBIS WBED (Tx+)   plug 2 – pin19
- IBIS WBME (Tx-)   plug 2 – pin20

➦ See also chapter 2.2.6.3

3.15 OTHER PERIPHERAL DEVICES

For the connection of other peripherical devices such as WLAN, cellular mobile telephony, On-board PC etc. under circumstances deep engagements to the system have to be done. Ask your specialist dealer or I+ME ACTIA about the possibilities and approaches.

4. COMMISSIONING / CONFIGURATION

⚠ **Beware of faulty function**

If the configuration is faulty, the system could work incorrect.

Therefore -> Commissioning and system modifications only by authorized and trained staff.

Commissioning

No special steps must be done for commissioning the BOP HD. All relevant data are preinstalled at the factory.

Configuration

To configure the BOP HD a web interface exists.

The connection is made via the front or rear panel Ethernet interface and a web browser. The access is secured by password.

ⓘ Check and correct the configuration of the complete system during the first commissioning of BOP HD. We advice to save the configuration data to an external data storage. We also advice to change the passwords.

⇨ Ethernet – see chapter 8.2.3

⇨ Passwords – see chapter 6

⇨ Saving and loading of configuration data – see chapter 6.4

4.1 EXTERNAL ACCESS

4.1.1. VIDEO STREAMING

By using the RTSP protocol an external access to the video channels is possible (password protected). The selection of the video cannels is made via TCP/IP. In principle each active recording channel could be transferred. The quality of the transferred data equates to the settings for data recording.

The video channels are dedicated to the ports 85xx in ascending sequence.

- Port 8501   video stream channel 01
- …
- Port 8516   video stream channel 16

The video player must access to the port via the RTSP protocol.

Example: rtsp://xxx.xxx.xxx.xxx:8501/bop4

(whereas xxx.xxx.xxx.xxx is the TCP/IP address of the BOP HD)

i Additional settings are necessary to transfer not active recording video channels or the output signal of the video processor. Please ask your specialist dealer or I+ME ACTIA for further information.

4.1.2. ALARM OVER ETHERNET

The BOP HD can receive an external alarm by LAN (broadcast) and thereupon the BOP HD himself can switch into alarm mode. The external alarm can be dispatched from another BOP HD or any PC. By this way it is possible that all BOP HD inside a network are starting with the recording of alarm data at the same time.

i Only if it is set in the configuration the BOP HD responds to the external alarm. See chapter 6.4.10.6.

5. OPERATION OF THE BOP HD

After commissioning the BOP HD is set to the mode >PAUSE< or >RECORD< by the key-switch. At the normal course of operation the BOP HD is now set to on or off by the ignition (clamp 15).

BOP HD is set to >RECORD< via key-switch

- Ignition on -> BOP HD switch to >RECORD<
- Ignition off -> BOP HD switch to >OFF< (shutdown delay)

BOP HD is set to >PAUSE< via key-switch

- Ignition on -> BOP HD switch to >PAUSE<
- Ignition off -> BOP HD switch to >OFF< (shutdown delay)

BOP HD is set to >OFF< via key-switch

- Ignition on -> BOP HD stay off

See also the cart in chapter 2.1.1

5.1 DATA STORAGE - ASSEMBLE AND CHANGE

The data storage is locked electromagnetically and can only be removed whether the BOP HD is set to >OFF< via the key-switch.

To change the data storage

- Switch off the BOP HD by the key-switch.
- Wait about 1 - 2 minutes until the system is down (green power LED off) and the electromagnetically lock is disabled.
- Pull out the data storage from the slot.
- Insert the new data storage and make sure that it is inserted all the way to the Stop position (positive Stop).
- Start up the BOP HD by the key-switch.

i   We advise to format the data storage before use. This ensures that all old data are deleted and the complete capacity can be used.

⇨   Formatting the data storage see chapter 6.6.3

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5.2 DATA STORAGE - STORAGE AND TRANSPORT

The BOP HD data storage is equal to the requirements of the automotive industry.

The integrated hard disks are shock damped mounted. For all the robust design, damage can not be excluded by improper handling.

Beware of damage / data loss

The data storage can be damaged by improper handling. A data loss can happen if the worst case comes to the worst.

Therefore save the data storage during storage and transportation of:

- humidity and wetness

- strong solar radiation and heat

- dust and dirt

- hard shocks

i To protect the data storage by transport and storage we advise to use a flight case from I+ME ACTIA.

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6. THE BOP HD WEB INTERFACE

- Live pictures
- Maintenance
- Configuration
- Configuration load/save
- Firmware update
- Passwords
- Format the data storage
- Access to the data storage by >/hdd<

The connection to the BOP HD web interface is made by the Ethernet interface at the front or the rear and a web browser.

The access to the web interface is password protected.

Username	Standard Password	Rights
user	user	Live pictures, maintenance
cfg	conf	Live pictures, maintenance, Configuration, Configuration load/save Firmware update
admin	bop-i+me	Live pictures, maintenance, Configuration, Configuration load/save Firmware update Passwords, Formatting the data storage Access to the data storage by >/hdd<
review	view	Access by SMB / Reviewer-Software

⚠ **Beware against unauthorized access to the system**

To protect against unauthorized access the passwords should be changed and stored on a save place. (See chapter 6.6)

6.1 START OF THE BOP HD WEB INTERFACE

- Connect the front or rear Ethernet interface of the BOP HD via a network cable to your PC (see also chapter 2.1.3, 2.2.4 and 8.7).

- Switch on the BOB HD.

- Wait some minutes until the BOP HD starts up and is in action.

- Start your browser and call the BOP IP-address
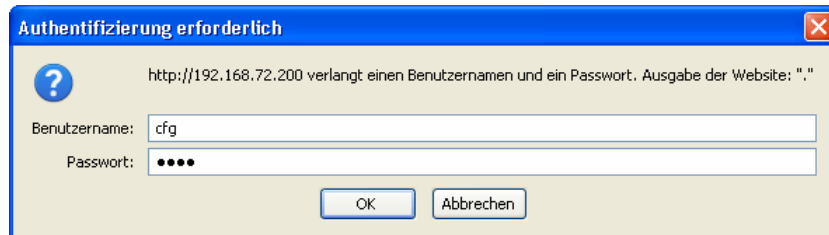
- Write in the username and the according password.

The main page of the BOP HD Web interface will be opened.
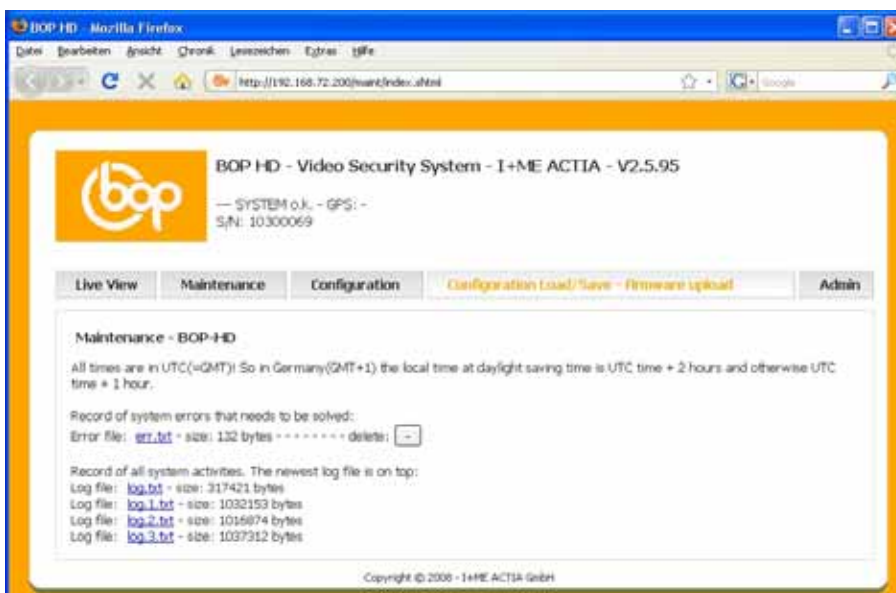
The Following information are on the top of the main page.

- Version of the firmware

- Status information
  - SYSTEM STARTS   -> the BOB HD is activated, but is not completely ready for action
  - SYSTEM OK   -> no important messages exist
  - MAINTENANCE   -> a message is stored in the file err.txt
  - ALARM   -> alarm data exist
  - CAMERA ERROR   -> one or more cameras are faulty
                          for more information see err.txt

- GPS-coordinates (only if a GPS receiver is connected)

- BOB HD serial number

6.2 LIVE PICTURES

In the [Live View] mode it is possible to display a video channel directly at the web browser. Precondition is the installation of the newest VLC media player at the PC.

Live pictures will be displayed in the mode >PAUSE< and >RECORD<.
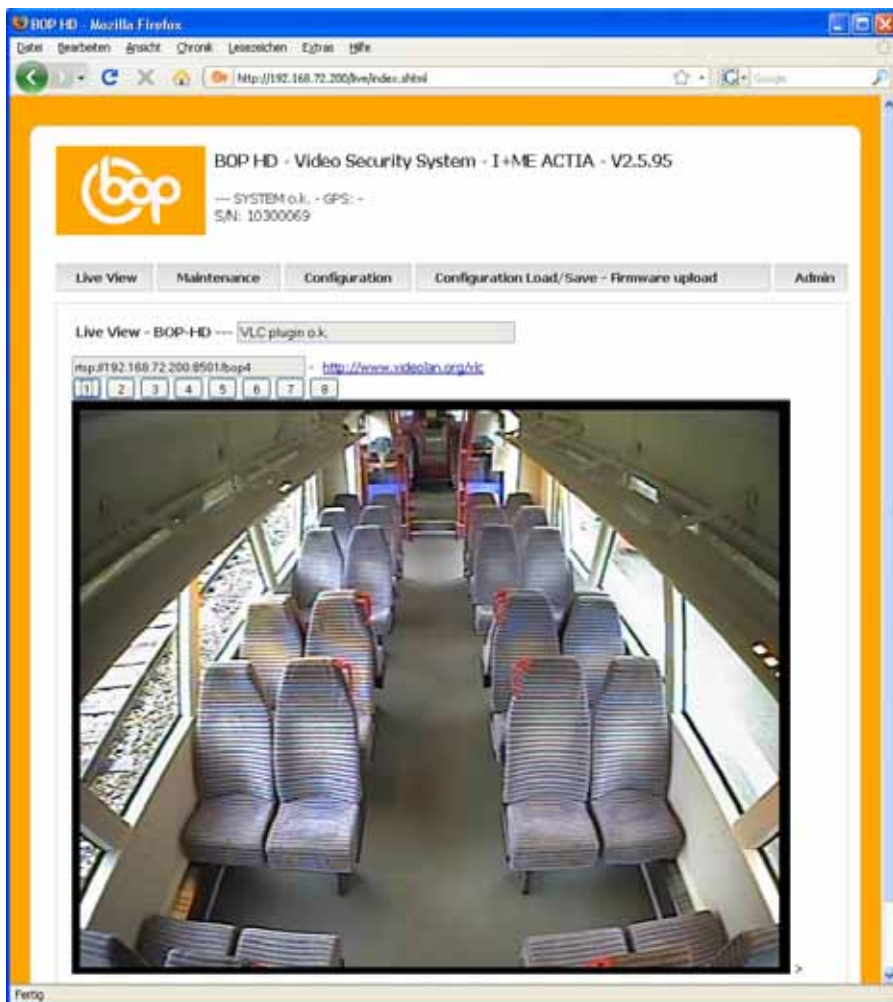
The video channels can be switched by the buttons [1] up to [x].

➔ You can find the newest VLC media player at www.videolan.org/vlc

i Configure the web browser in that way that no proxy is used. See also chapter 8.7

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6.3   MAINTENANCE

On the [Maintenance] tab you have access to the error file and the log files.
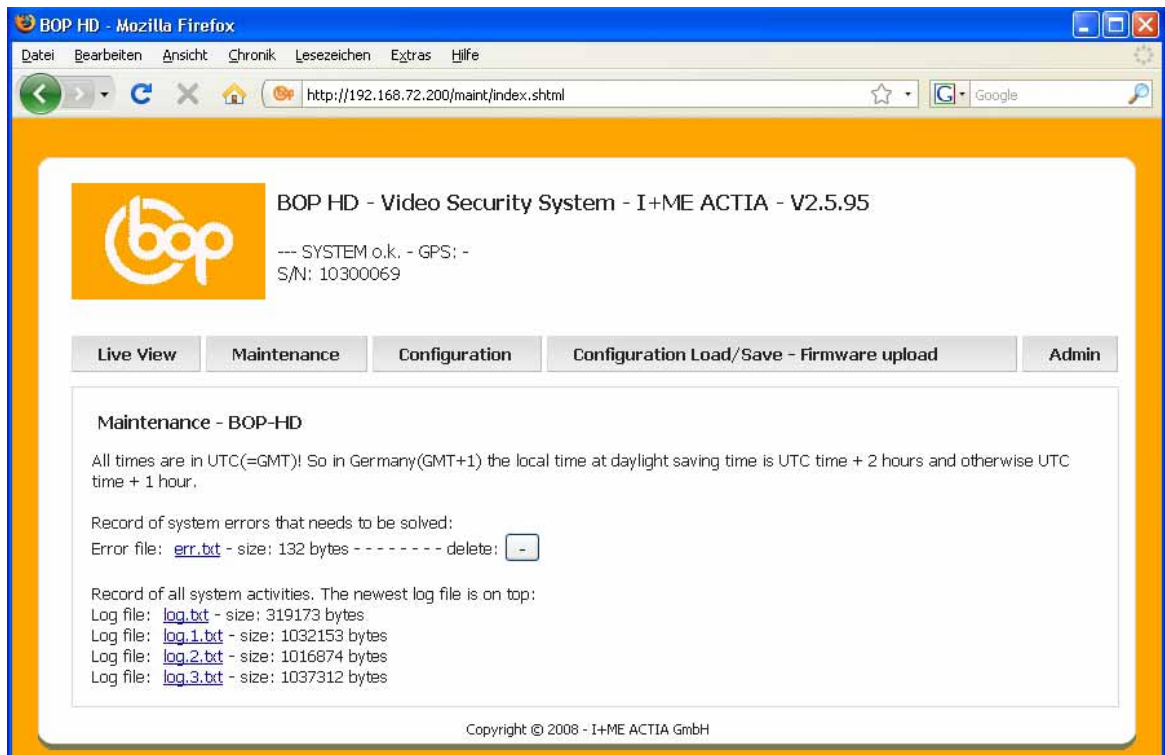
6.3.1.   ERROR FILE   ERR.TXT

At the error file err.txt all events are legged which make an error while data recording. If an event is stored at the file the hint MAINTENANCE at the main page is highlighted.

6.3.1.1   HOW TO OPEN THE ERROR FILE
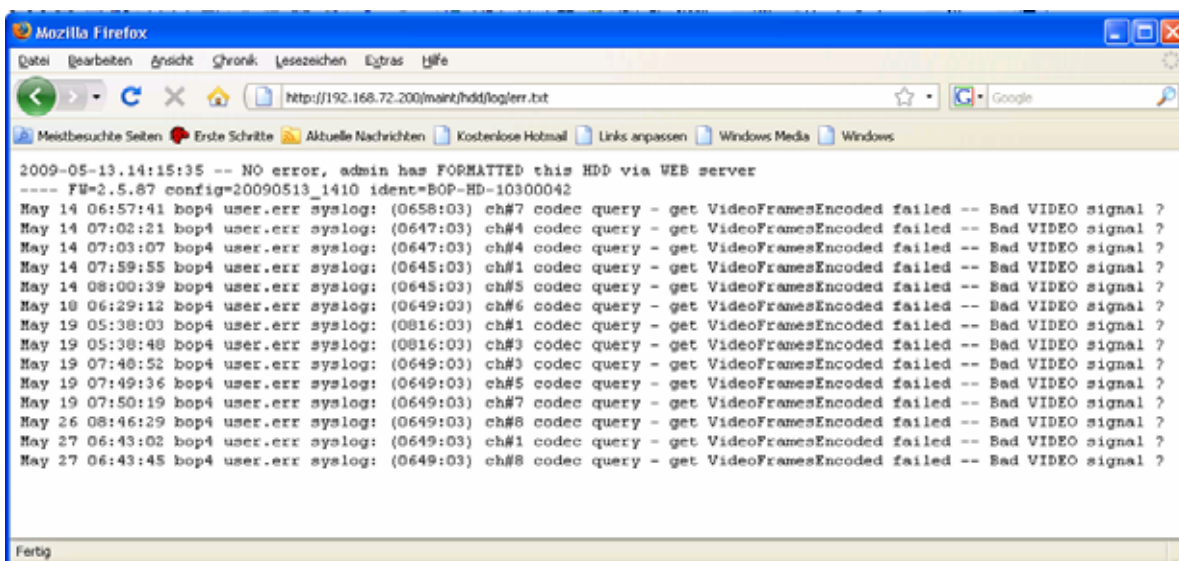
- Click at the entry err.txt

6.3.1.2   HOW TO DELETE THE ERROR FILE

- Click at the button [-] in the line >error file<

i   The error file err.txt could be seen and deleted by all users.

6.3.1.3 DESIGN OF THE ERROR FILE

First line

The first line informs about the date of creation of the error file or the last delete of the error file.

Second line

The second line informs about system information

- current firmware
- date and time of the actual configuration file
- Identification of the vehicle

Third and following lines

Up from the third line the occurred errors are listed (including date and time).

➡ The most important error messages are listed at chapter 8.4

6.3.2. LOG FILE   LOG*.TXT

In the log files all important system events are logged.

To interpret these information additional background knowledge is necessary.

i   The information in the log files are important for trouble shooting. If necessary the support will ask for the files.

i   The log files can only be deleted by formatting the data storage.

6.4 CONFIGURATION

At the [Configuration] tab the peripherical devices and the behaviour of the BOP HD is defined.

⚠ **Beware of malfunction**

The configuration affects to the behaviour of the BOP HD. Don't change the settings blindfold.
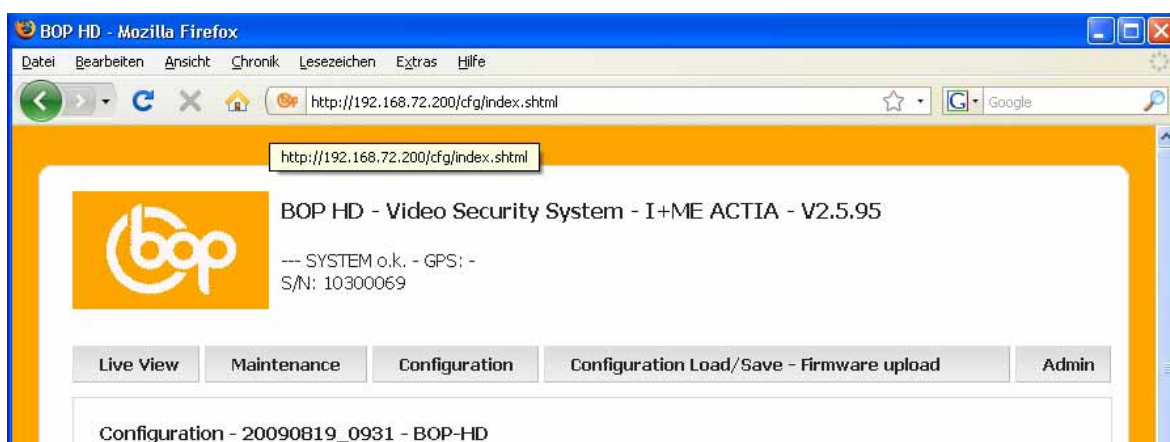
The configuration is arranged in the sections

- Info line
- Date and time
- General settings
- Video settings
- Audio settings
- Video out
- Relays
- IBIS
- Network access parameters
- Error log and alarm video file transfer
- Reload / Save / Save + Restart

6.4.1. INFO LINE

Konfiguration - 20090602_0935 - BOP-HD

The info line shows

- Date and time when the configuration was saved last.

6.4.2. DATE AND TIME

The BOP HD contains a real time clock (RTC). This clock should be calibrated otherwise the time specification of the recorded data have no conclusion to the real recording time. Precondition for the calibration is the exact time at the connected PC or the calibration by IBIS-System.

The calibration of the real time clock results by saving the configuration. (See chapter 6.4.12).

Date and Time		
PC date and time - UTC:	2009-08-19.09:44:11	[save]-button stores the PC time in the BOP HD RTC
BOP HD-RTC date and time - UTC:	2009-08-19.09:44:11	RTC = Real Time Clock
BOP HD-SYSTEM date and time - UTC:	2009-08-19.09:44:09	with next restart here the RTC time will be taken

ℹ You can get the actual time (atomic clock) from the Physikalisch-Technischen Bundesanstalt. http://www.ptb.de/de/zeit/uhrzeit.html

ℹ All time specifications are UTC (Universal Time Coordinated).

In Germany:

Wintertime = UTC + 1 h

Summertime = UTC + 2 h

ℹ Time calibration by IBIS see chapter 6.4.9.1

ℹ The time calibration can also be done by GPS. For more information contact your specialist dealer or I+ME ACTIA.

6.4.2.1   PC DATE AND TIME

Actual date and time at the connected PC.

6.4.2.2   BOP HD-RTC DATE AND TIME

Actual date and time on the BOP HD real time clock.

6.4.2.3   BOP HD-SYSTEM DATE AND TIME

Actual date and time inside the BOB HD system.

This values are used while data recording.

The values are synchronised from the BOP HD real time clock at a reboot of the BOP HD.

6.4.3. GENERAL SETTINGS

The general settings particularly influence the alarm data recording, error messages and the shut down delay of the BOP HD.

General Settings

Language	English	
vehicle identifier	BOP-HD	
sequence time	10	[min], *5..30, influences the file sizes
shutdown delay	0	[min], *0..30, Power-OFF time after KL15/Ignition is switched off
post-alarm time	10	[min], *5..180
pre-alarm time	10	[min], *5..180
alarm buffer limit	10	[%], 5..*10..90, Not a hard limit. If reached, it produces an error message to activate the maintenance.
max. buffer time	0 : 0	[h]:[min], *0:0(off)..23:59..
24V-lost check	0	0=tolerate KL30/24V power-off, *1=generate an error
Error signalling time	3	[min], 0=infinite, 1..*3..60..1440(=24h) minutes
Single Error signal	0	*0=off, 1=single impulse, 2=error by MAINTENANCE , overrides error signalling time
CAM problem -> error	1	0=no, *1=yes

6.4.3.1 LANGUAGE

Select the language fort the web interface from the drop down list.

The setting will be active after storing the configuration. Maybe the browser must be refreshed (reloading the page).

6.4.3.2 IDENTIFICATION OF THE VEHICLE

The vehicle identification is used for allocation of the video data. Enter a clear description for the vehicle in which the BOP HD is integrated (e.g. licence number, wagon number). The vehicle identification is shown at the BOP Reviewer Software.

6.4.3.3 SEQUENCE TIME

The sequence time is the period for which the video data are stored in one file. At the End of that sequence time a new file with the next consecutive number will be created.

This value in conjunction with the video settings has a leading affect to the size of the video files.

6.4.3.4 SHUTDOWN DELAY

The video protection system BOP HD does not shut off directly with the drop out of the ignition. Not until after the shutdown delay the BOP HD is switched off. If the ignition is engaged during the shutdown delay the BOP HD is not switched off and the shutdown delay is reset.

6.4.3.5 PRE-ALARM / POST-ALARM

If an alarm occurs all recorded data are additional stored in a separate folder (/hdd/alarm/) for a specific time.

- Pre-alarm – recording time before the alarm signal
- Post-alarm – recording time after the alarm signal
- Total time length of the recording at an alarm = Pre-alarm + Post-alarm

i Only the data which are recorded in the case of an alarm will be stored inside the write protected alarm buffer. For this the values for pre-alarm and post-alarm should be set to a reasonable size.
Therefore set the periods
- As big that all important information are captured
- As small that the alarm buffer gets no needless size

6.4.3.6 ALARM BUFFER LIMIT

The alarm buffer limit specifies the size of the alarm buffer from the total size of the data storage (value in percent). If the limit is reached a message is written into the error file err.txt and therefore a maintenance advice is activated. However the alarm data are stored if the limit is reached. By this the ring buffer is reduced.
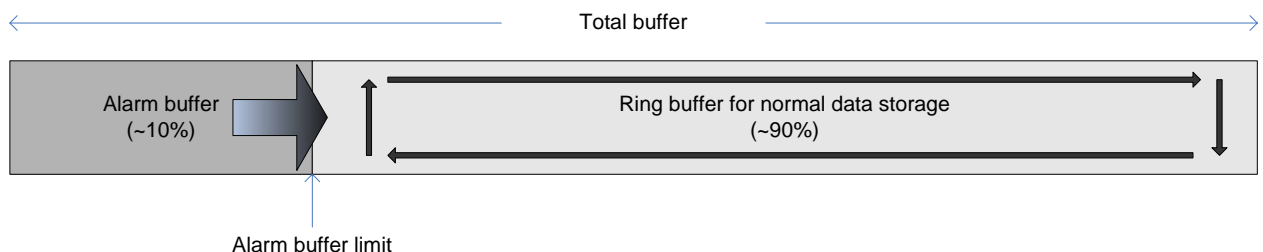
6.4.3.7 MAXIMUM BUFFER TIME

The maximum buffer time specifies how long the data will be stored on the ring buffer. All data which are older as the specified period will be deleted automatically. The BOP HD system time is relevant for the comparison of time.

i Please note the legal appointments for the storage of surveillance data.

⚠ Beware of data loss
If a data storage is used after a longer time on stock and the maximum buffer time of the BOP HD is activated (value greater 0:00) the data will be deleted without any request. The same happens if the time of the real time clock is not set correctly.

6.4.3.8 24V ERROR CHECK

If the power supply is interrupted (clamp 30 – battery) the BOP HD shuts off without any delay. This could be evaluated and logged as an error.

- 0   Interrupt of power supply is not an error
- 1   Interrupt of power supply is an error

⚠ Beware of data loss
If the power supply interrupts, current open files can not be closed correct. Such files are not readable.

6.4.3.9 ERROR SIGNALING TIME

The error signalling time specifies how long an error is showed by the service LED and the relay 4.

The effect of the error signalling time depends on the >Single Error Signal<. (See chapter 6.4.3.10).

- ▪ 0   error will be signalized until the error file err.txt is deleted
- ▪ 0 … 1440   error will be signalized during the specified time.
                          (value in minutes, 1440 = 24 hours)

6.4.3.10 SINGLE ERROR SIGNAL

The single error signal replaces the error signalling time (See chapter 6.4.3.9).

- ▪ 0   Setting inactive
                  The error signalling time is active
- ▪ 1   An error will be signalized as a 2 second single pulse via the service LED and relay 4. The error is logged in the error file err.txt.
- ▪ 2   Relay 4 and the service LED are active from the first error message in the err.txt, until the error is eliminated.

6.4.3.11 CAM PROBLEM -> ERROR

Statement whether a problem of a connected camera (e.g. no video signal) is an error or not.

- ▪ 0   The malfunction of a camera is not an error.
- ▪ 1   The malfunction of a camera is an error.

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6.4.4. VIDEO SETTINGS

The video settings (settings of the codec) have affect to all video sources.

Video Recording Settings

frame size	0	*0=720x576/480, 1=720x288/240, 2=352x288/240
frame rate divisor	1	*1=25fps-PAL/30fps-NTSC, 2=12.5fps-PAL/15fps-NTSC, .. 30
compression/quality	10	3(300kbps - high/bad - small files)..*10..60(6000kbps - low/very good - big files) - total < 15Mbps!
GOP(group of pictures) time	80	4(400ms)..*80(8sec)..100(10sec - best quality)
adaptive frame rate	0	*0=off, 1=on - good for very high compression like 100kbps for Modem transfer
streaming mode	1	0=off - file size-based rate control, *1=on - stream buffer-based rate control
text insertion (OSD)	0	*0=off, 1=on - inserts vehicle identification, channel number and date/time in to the video files and streams.

Video Output #1 is switched on input ○ off ○ V#4 ⦿ V#8 - for recording

V-Input ON/OFF	Name
☑ V#1	CAM-1
☑ V#2	CAM-2
☑ V#3	CAM-3
☑ V#4	CAM-4
☑ V#5	CAM-5
☑ V#6	CAM-6
☑ V#7	CAM-7
☑ V#8 <- VOut#1	CAM-8

6.4.4.1 FRAME SIZE

Resolution of the video frame

- 0   Frame size 720x576 Pixel   4CIF/D1
- 1   Frame size 720x288 Pixel   2CIF
- 2   Frame size 352x288 Pixel   CIF

6.4.4.2 FRAME RATE DIVISOR

The number of recorded frames per second can be reduced by the frame rate divisor.

- 1   PAL 25 fps   NTSC 30 fps.
  High quality

- 2   PAL 12.5 fps, NTSC 15 fps
  A little bit bumpy pictures but less storage space necessary.

- 3,4,...   The picture is bumpier, as much as the divisor is higher but the needed storage space is less. Please check out by testing how much frames per second are enough for your use case.

6.4.4.3   COMPRESSION / QUALITY

The compression and therefore the picture quality follow the data rate. A smaller data rate causes a higher compression.

3 = small data rate (0.3 MBit) / … /   60 = high data rate (6 MBit)

- High data rate
  Low compression, therefore better quality.
  Following from the higher data volume, the recording time is lower.
- Low data rate
  High compression, therefore worse quality.
  Following from the lower data volume the recording time is larger.

i   The value of (data rate) x (number of video channels) should not be greater then 150.

The data rate has an important influence to the total recording time.

See chapter 8.2.4 – calculation of the recording time

6.4.4.4   GOP TIME

Time distance for a group of pictures existing from one full frame and additional differential frames.

4   = shorter time interval to the next full frame / lesser differential frames
…
80   = longer time interval to the next full frame / more differential frames

- More full frames
  Higher quality but more data volume and therefore lower recording time.
- Lesser full frames
  Lower quality but lesser data volume and therefore longer recording time.

i   All the more full frames are recorded the performance of the BOP Reviewer software is better.

6.4.4.5   ADAPTIVE FRAME RATE

Adaptive Frame Rate can reduce compression artefacts. Compression artefacts are caused by low data rates and much movement on video file. Adaptive Frame Rate will reduce the frames per second to minimise compression artefacts.

- 0   Adaptive Frame Rate not active
         Risk of compression artefacts at high compression caused by low data rate.
- 1   Adaptive Frame Rate active
         Less compression artefacts at high compression caused by low data rate, but also less frames per second. This can cause a jumpy video.

6.4.4.6   STREAMING MODE

The internal video processing (Video Codec) try exposure tries to produce a constant data rate. Dependent on the video signal the compression is more ore less high.

- 0   Streaming Mode not active.
         Temporary big variation of data rate, but over a longer time constant maximum data rate. Ideal for video recording.
- 1   Streaming Mode active
         Constant data rate at any time caused by temporary high compression. Optimal for video Streaming.

6.4.4.7   TEXT INSERTION (OSD)

OSD allows the user to overlay a text including Vehicle-ID and System time in the video signal. The information will be shown in the recorded video files and also at the analogue video output.

- 0   OSD not active
- 1   OSD active
         Shows BOP ID, channel, timestamp (yyyy-mm-dd hh:mm:ss:ff).
         Frame counter (ff).

6.4.4.8 VIDEO OUT #1 MAPPING

The multi picture view of Video Output 1 also can be recorded.

- out   no record of multi picture view
- V#4   record of multi picture view on channel 4
- V#8   record of multi picture view on channel 8

6.4.4.9 V-INPUT ON/OFF

The Checkbox on the left side of each line activates the corresponding channel for recording.

At the Name field of V#1 to V#8 a label for each camera can be typed in. This label will be shown in the Reviewer Software.

6.4.5. AUDIO SETTINGS

At the Audio Settings, the number of recorded audio channels can be set.

Audio Settings

| audio channels | 0 | *0..2 |

6.4.5.1 AUDIO CHANNELS

Number of recorded audio channels

- 0   no recording of audio signals
- 1   recording of audio channel 1
- 2   recording of audio channel 1 and 2

6.4.6. VIDEO OUTPUT 1

All the Video Inputs can be shown automatically in a cycle on the Video Output 1. A reverse camera and a door camera can be defined with a display priority.

Video Output #1

automatic cycling	1	*0..1, 1=always active, 0=only active if digital input #8 is switched on
cycling control	v1-t3,v2-t3,v21-t50	
		*v1-t10,v2-t10,v3-t10,v4-t10,v5-t10,v6-t10,v7-t10,v8-t10 --> vinput#1, wait 10sec, vinput#2, ..., repeat
non-cycling video input	1	0..*1..8, video input if automatic is off, 0=keep last chosen video input
reverse camera	0 *0=off 1..8 priority 0	*0..5, 0=low,5=high. camera active if digital input #7 is switched on
door camera #1	0 *0=off 1..8 priority 0	*0..5, 0=low,5=high. camera active if digital input #5 is switched on

6.4.6.1 AUTOMATIC CYCLING

Automatic cycling activates the automatic display cycle on Video Output 1, according to the definition in the field >cycling control<. If automatic cycling is not activated, the <non cycling video input< will be shown.

- 0 Automatic cycling is not active. The BOP will do one step in the >cycling control< sequence if input #8 gets high. If digital input 8 gets low, automatic cycling will be active anymore for about 10 seconds. After that the >non-cycling video input< will be shown

- 1 automatic cycling is active

6.4.6.2 Cycling control

The single steps of the sequence are separated by a comma. The whole sequence will be repeated if >automatic cycling< is activated.

- v.. = video signal
  v1 ... v16 = Video Input 1 to 16
  v20 ... v23= Multi Picture View

- t.. = display time

Multiscreen Video Output 1

V=20 V=21 V=22
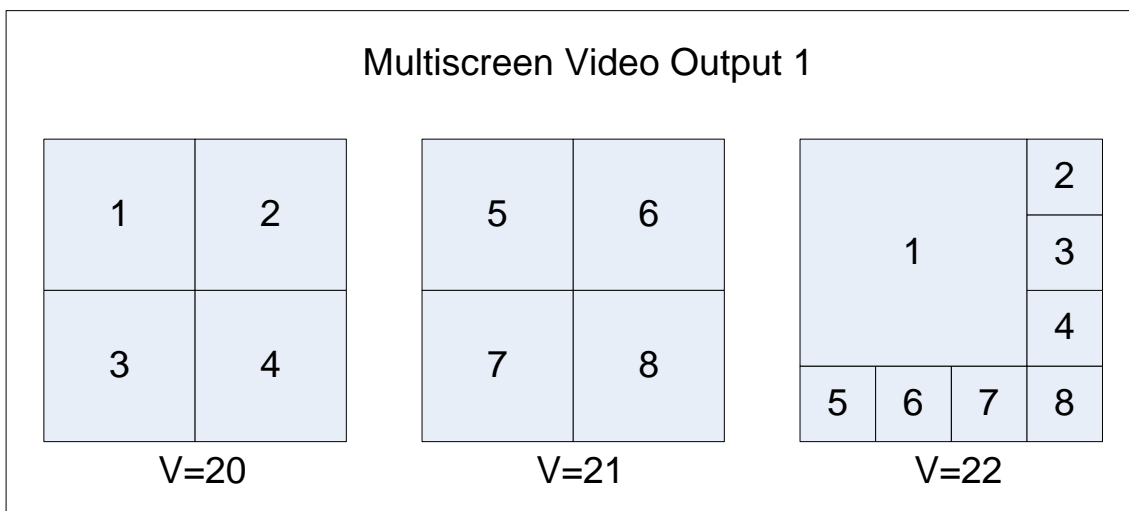
Example of a part of the sequence

V1-t10

Video Input1 1 will be shown for 10 seconds.

V20-t5

A Quad Screen of Video Input 1 to 4 will be shown for 5 seconds.

Example of a sequence

v1-t10,v2-10,v3-t10,v4-t10,v20-t10

Video signal 1 to 4 is shown for 10 seconds after each other. After that a quad screen of video input 1 to 4 is shown for 10 seconds.

6.4.6.3 NON-CYCLING VIDEO INPUT (STANDARD VIDEO IN)

The Non-Cycling Video Input is the Input which is shown when automatic cycling is not activated.

- 0   The last video signal is shown anymore
- 1 … 8   The chosen Video Input is shown

6.4.6.4 REVERSE CAMERA

To observe the area behind the vehicle, a Reverse Camera with priority can be defined.

⚠ **Warning of human and material damages**
The Reverse Camera is **no reversing aid** and must not be used as this. It does not add or replace any action which has to be done during reverse drive.

- 0   no Reverse Camera
- 1 … 8   Video Input where the Reverse Camera is connected to

Priority

If Door Camera and Reverse Camera are activated at the same time, the Camera with the highest Priority will be shown.

6.4.6.5 DOOR CAMERA

To observe the area at the doors of the vehicle, a Door Camera with priority can be defined.

- 0   no Door Camera
- 1 … 8   Video Input where the Door Camera is connected to

Priority

If Door Camera and Reverse Camera are activated at the same time, the Camera with the highest Priority will be shown.

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6.4.7. VIDEO OUTPUT 2

Video Output #2

automatic cycling	1	0..*1, 1=always active, 0=only active if digital input #3 is switched on
cycling control	v1-t1,v2-t1,v3-t1,v4-t1,v5-t1,v6-t1,v20-t50	
	*v8-t60,v1-t2,v2-t2,v3-t2,v4-t2,v5-t2,v6-t2,v7-t2 --> vinput#8, wait 60sec, vinput#1, wait 2sec, ..., repeat	
non-cycling video input	1	0..*1..8, video input if automatic is off, 0=keep last chosen video input

6.4.7.1 AUTOMATIC CYCLING

Equal to Video Output 1. See Chapter 6.4.6.1

6.4.7.2 CYCLING CONTROL

➡ Equal to Video Output 1 with the restriction that only quad screen can be shown in Multipicture view. See Chapter 6.4.6.2

Multiscreen Video Output 2

1	2
3	4

V=20

5	6
7	8

V=21
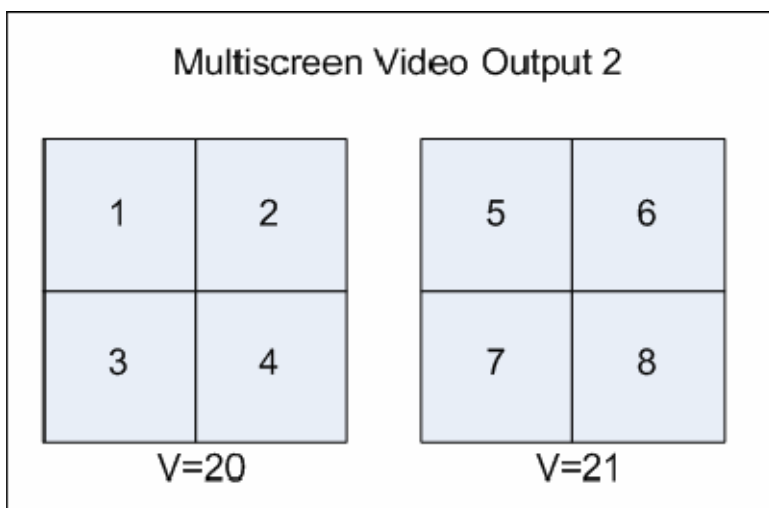
6.4.7.3 NON-CYCLING VIDEO INPUT (STANDARD VIDEO IN)

Equal to Video Output 1. See Chapter 6.4.6.3

6.4.8. RELAYS

The Relays can signal events or the system state to other devices.

Default Relay Function:

Relay 1: BOP Active Relay. Close when BOP is active. Only open if BOP is out of service

Relay 2: While Recording Relay. Close while recording. Open in Pause mode.

Relay 3: BOP Active Relay. Close when BOP is active. Only open if BOP is out of service

Relay 4: Error Relay. Signals an Error according to the >General Settings<

Relays

automatic relay control	.	
		*o30-t10,o31-t10 --> out3=0, wait 10sec, out3=1, wait 10sec, repeat
alarm output	0	*0=off, 1..4 --> if alarm is active relay#1..4 is switched on
alarm signalling	0	*0=quiet, 1=flashing the "while recording" relay#2

6.4.8.1 AUTOMATIC RELAY CONTROL

The automatic Relay control can switch the relays in a configured sequence. The sequence will be repeated.

- oxy   = Relay x shows the state y (0 .. open, 1 .. closed)
- t..   = time to hold the stat of the Relay

Example of a part of a sequence

o31-t10

Relay 3 will be closed for 10 seconds.

Example of a sequence

o30-t10,o31-t10

Relay 3 will be toggled with a period of 10 seconds.

6.4.8.2 ALARM OUTPUT

An alarm state can be signalled by a Relay.

- ▪ 0   No Alarm signalisation by Relay
- ▪ 1 … 4   The configured relay signals the Alarm

6.4.8.3 ALARM SIGNALING

Relay 2 is closed while recording by default. With this setting the "while recording relay" can also be configured to show an alarm state

- ▪ 0   Relay 2 is closed while recording and do not show an alarm state
- ▪ 1   Relay 2 is closed while recording and flashes at alarm state. This setting is useful if only 1 Relay should be used

6.4.9. IBIS

i   BOP HD can be connected to the IBIS-BUS by using the BOP HD IBIS interface. Please ask your specialist dealer or I+ME ACTIA for further information.

IBIS - Integrated On-Board Information System		
IBIS time adjustment	0	*0(off), 1(on) = IBIS time adjusts the RTC time, a restart takes this as SYSTEM time
Automatic system restart	24	*24(off), 0..23 = the UTC hour the system will be restarted. (2 = at 02:00 UTC in the night)

6.4.9.1 IBIS TIME ADJUSTMENT

This setting activates the time synchronisation to the IBIS-BUS time.

- ▪ 0   IBIS Time Adjustment not active
- ▪ 1   BOP HD does a synchronisation of the real time clock to the IBIS-BUS. The system time will be set after a restart.

6.4.9.2 AUTOMATIC SYSTEM RESTART

To synchronise the system time with the real time clock, a restart has to be done. This can be done automatically to a specified time.

- 24   No Automatic System Restart
- 0 … 23 hour of Automatic System Restart (UTC)

i   All time designations are UTC

6.4.10. NETWORK ACCESS PARAMETERS

The Network Access Parameters define the parameters of the Ethernet interface on the front and rear panel.

⚠ **Warning of communication failure**

The settings of the >Network Access Parameters< affect the external communication with BOP HD. The settings should only be changed under instruction of a network administrator. Please note all changes.

Also see chapter 8.2.3

Network Access Parameters - Modify this *only* with the network administrators permission! Note down the modifications!

IP address	192.168.72.200	*192.168.72.200
Netmask	255.255.255.0	*255.255.255.0
IP address (rear panel)	10.30.0.69	10.x.x.x - the character * results in automatic IP + netmask calculation
Netmask (rear panel)	255.0.0.0	*255.0.0.0
Gateway		*(empty), 192.168.72.1
Nameserver1		*(empty), 172.27.10.1
Nameserver2		*(empty), 172.27.10.2
Broadcast tx dest addr	10.255.255.255	*192.168.72.255, (empty)=off - ALARM (digital input #6) events and on request identification packets will be send as UDP datagram on port 30603
ALARM rx OFF/ON	1	*0,1 - 0=normal, 1=ALARM can be triggered via ethernet broadcast message

6.4.10.1 IP - ADDRESS / NETMASK

IP – Address and Netmask of the front panel Ethernet interface.
Is set by default to 192.168.72.200

6.4.10.2 IP - ADDRESS / NETMASK (REAR PANEL)

IP – Address and Netmask of the rear panel Ethernet interface.

Is set by default to 10.30.xx.yy and xxyy are the last 4 numbers of the series number of the BOP HD (SN: 1030xxyy).

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6.4.10.3 GATEWAY

i Special Network setting. Please contact your Network Adminidrator.

6.4.10.4 NAMESERVER1 / NAMESERVER2

i Special Network setting. Please contact you Network Adminidrator.

6.4.10.5 BROADCAST DESTINATION ADDRESS

If the BOP is in alarm state a Broadcast message will be send to the configured IP-Address.

The structure of the alarm message is defined in I+ME document IR12051

6.4.10.6 ALARM RX OFF/ON

An alarm can be triggered via Ethernet to the BOP HD. The BOP reacts to this alarm signal like an alarm signal on a digital input. With this feature all BOP in a Network can be set in Alarm state by each other.

- 0   Alarm via Ethernet not active.
- 1   Alarm via Ethernet active.

The structure of the alarm message is defined in I+ME document IR12051

6.4.11. ERROR LOG AND ALARM VIDEO FILE TRANSFER

After an alarm or an error, special files can be transferred to an ftp server automatically. This Option is only active when the IP-Address of the FTP Server is configured.

⚠ Warning of communication failure

The settings of the >Error log and alarm video file transfer< affect the external communication with BOP HD. The settings should only be changed under instruction of a network administrator. Please note all changes.

Error log + Alarm video file transfer: eth -> WLAN-client/repeater -> WLAN-AP -> FTP-server

VideoFTP host	10.0.0.33	*192.168.72.33, (empty)=off
VideoFTP port	21	*21
VideoFTP user	bopftp	*bopftp
VideoFTP pass	bopftp	*bopftp
VideoFTP basepath		*(empty), VSSalarm
ALARM video transfer OFF/ON	0	0,*1 - 0=Only transfer the LOG directory, 1=Also transfer the ALARM directory - after transfer the files are stored back as none-ALARM files

Video FTP host / port / user / pass

FT Server connection settings

- host   IP-Address of the FTP-Server
               (FTP transfer is not active, when no IP-Address is entered)
- port   connection port of the FTP-server
- user   User Name of the FTP-Server
- pass   User Password of the FTP-Server

Video FTP base path

The Video FTP base path is a folder on the FTP Server, where the alarm data will be transferred to.

ALARM video transfer OFF/ON

- 0   Only all files of the log directory will be transferred.
- 1   All files of the log and the alarm directory will be transferred.

i   In alarm state all Data will be marked and saved in the Alarm directory. After a successful transfer the alarm data will be written back to the ring buffer.

6.4.12. Reload / Save / Save + Restart

The Buttons on the bottom of the page will save configuration or set the real time clock to pc time.

i   Changes in the cofiguration will be active after a restart of the system.

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[Reload]

The current system configuration will be reloaded. All not saved changes will be set back.

[Save]

The configuration data of the web interface will be saved.

The current pc time will be set to the real time clock. A synchronisation to the BOP HD system time will be done after a system restart.

[Save + Restart]

The configuration data of the web interface will be saved. A system restart will be done automatically.

6.5 CONFIGURATION LOAD/SAVE – FIRMWARE UPLOAD

At the Tab [Configuration Load/Save – Firmware upload] a system configuration can be saved or reloaded from the PC. Also a firmware update can be done.
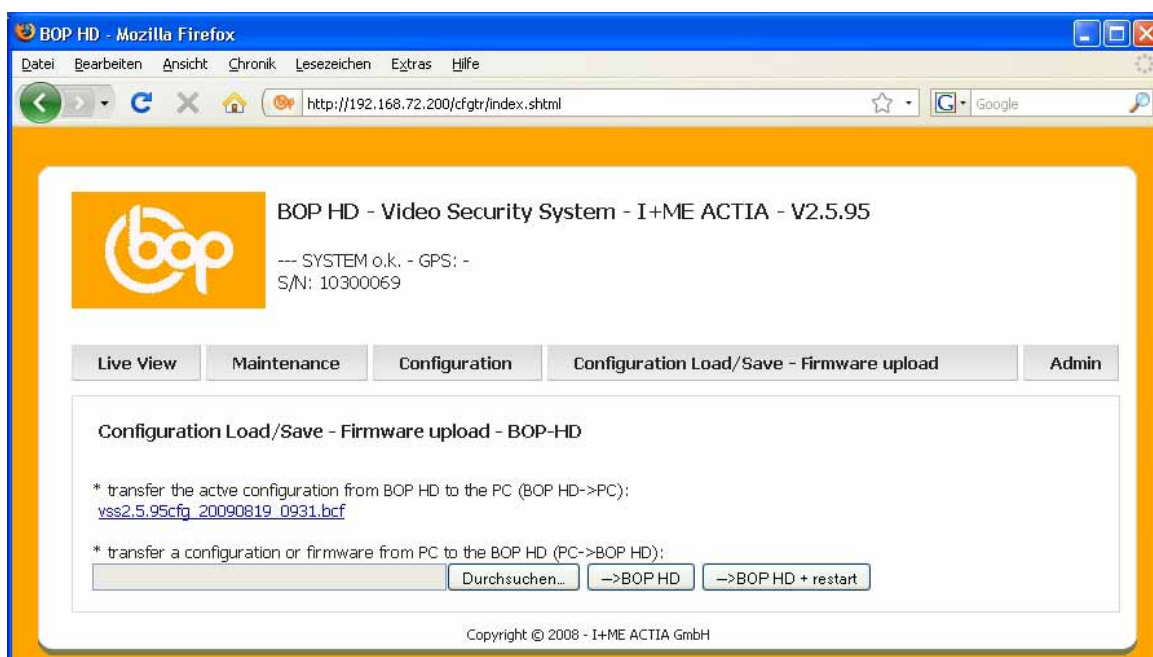
6.5.1. HOW TO SAVE THE CURRENT CONFIGURATION

To download the current configuration, the link to the configuration file (*.bcf) can be used.

Structure of the configuration file name: e.g. vss2.5.88cfg_20090602_0935.bcf

- vss2.5.88   Version of the firmware
- cfg   Stands for configuration
- 20090602   Date of the configuration (yyymmmdd)
- 0935   Time of the configuration (hhmm)
- bcf   File extension (bop configuration file)

6.5.2. HOW TO LOAD A CONFIGURATION / HOW TO LOAD A CONFIGURATION WITH RESTART

Click [Browse] and select the configuration file on your pc. After that click [->BOP HD] to save the configuration on the BOP HD or click [->BOP HD + restart] to save and restart.

Structure of the file name of a default configuration file: e.g. vss2.5.88cfg_default_de.bcf

- vss2.5.88   Version of the firmware
- cfg   Stands for configuration
- default   Stand for default configuration
- de   Language or Country or customer code
  - de   German
  - en   English
  - es   Spanish
  - pl   Polish
  - br   Brazil
- bcf   File extension (bop configuration file)

i   Changes in the cofiguration will be active after a restart of the system.

6.5.3. HOW TO LOAD A FIRMWARE

⚠️ **Beware of malfunction and failure**
Firmware update should not be interrupted. During the Firmware update do not switch off the BOP or cut the power supply.

i   As a precaution, we advice customers to save the configuration before update the Firmware. (See chapter 6.5.1)

Click on [Browse] and select the Firmware file to update. After that click [->BOP HD] or [->BOP HD + restart] to update the Firmware.

Structure of the file name of a Firmware file: e.g. jiimg-VSS4-2-5-91en

I + M E   A C T I A   G m b H
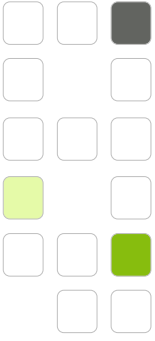
- jimg   Image file
- VSS4   Video surveillance system 4
- 2-5-91   Firmware Revision
- en   country or customer code

6.6 ADMINISTRATOR

Access to the BOP web interface is saved by password.

On the tab [Admin] passwords can be changed, a direct connection to the HDD is supported and the HDD can be formatted.
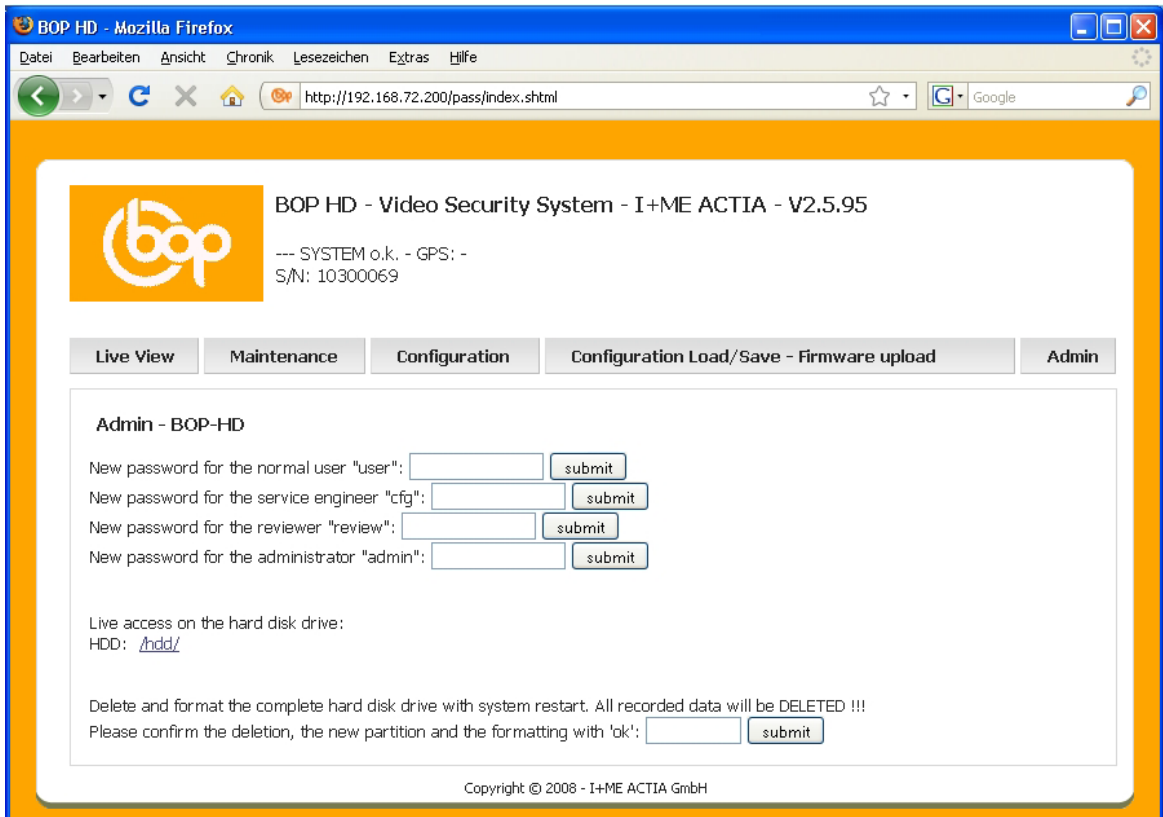
i   For Access to [Admin] tab, user has to be loged in as admin.

6.6.1. PASSWORDS

⚠ **Beware of unauthorised access**

As a protection against unauthorised access, all passwords should be changed and saved confident. If passwords are lost, please contact your specialist dealer or directly I+ME ACTIA.

On the BOP HD four users with special rights are installed.

⇨ For a Table of user, rights and default passwords please see chapter 6

To change a password, type in the new password in the open field and confirm with the [submit] button.

A password has to fulfil the following properties:

- Minimum length   3 characters
- Maximum length   16 characters
- Valid characters   upper and lower case letters, numbers

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6.6.2. ACCESS TO THE DATA STORAGE

By the link >/hdd/< you have read only access to the main folder /hdd. This folder contains among other things the recorded video and audio data. The data are stored in a subfolder structure.

i   Only the administrator has direct access to the data storage.
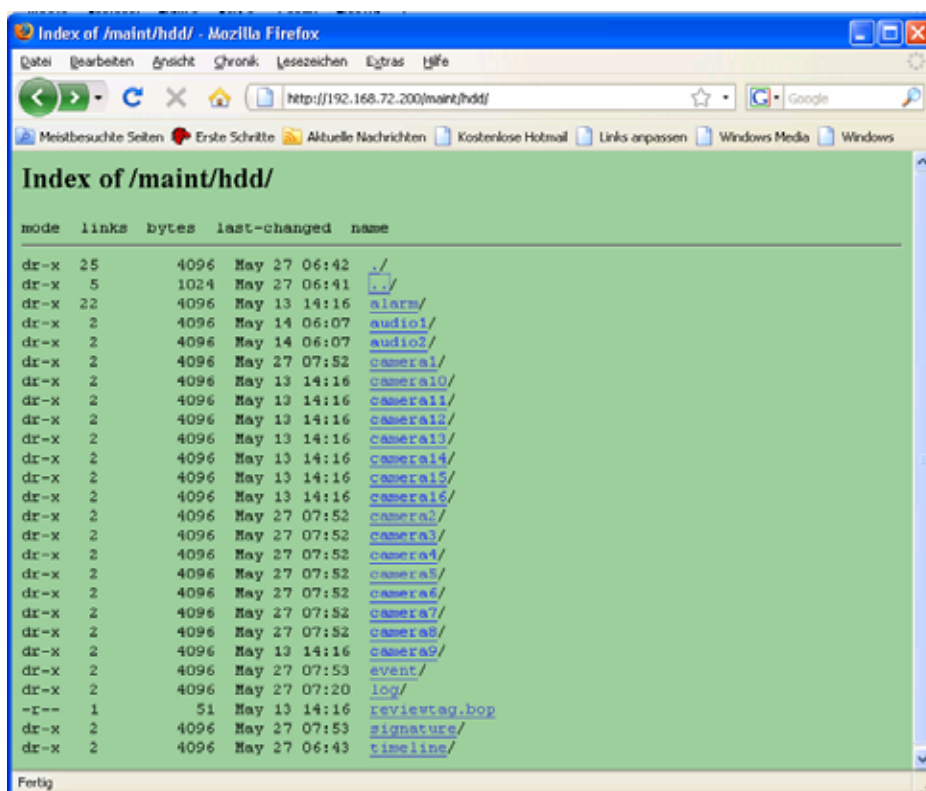
6.6.2.1 OPERATION

- Open a folder   -> click at his name
- Close a folder   -> click at ../
- Back to the maintenance screen   -> close all folder and click once more
                                                              at ../
- Open a file   -> click at the file name
- Copy a file   -> right click at the file name and choose the
                                                              corresponding command at the context
                                                              menu of your browser.

6.6.2.2 STRUCTURE AND CONTENT

Folder - alarm

The alarm folder contains all files which are stored at an alarm.

Folder - audio*

The folders audio1 and audio2 containing the audio data of the corresponding audio sources.

The audio data are split into packets and stored in consecutively numbered files, according to the video data.

Folder - camera*

The folders camer01 up to camera16 contain the video data of the corresponding video sources. The video data are split into packets and stored in consecutively numbered files.

Folder - log

The folder log contains the files err.txt, log*.txt as well as additional log files.

i   The additional information are not available on the PC if only the video files are transferred to the external PC. The complete information are only available after downloading the complete folder structure and if the BOP Reviewer Software is used.

6.6.3. How to format the data storage

Warning of lost data

Formatting the HDD will delete all data on the HDD.

To format the HDD, type >**ok**< in the open field and confirm with the [submit] button.

7. DATA ANALYSIS

The BOP Reviewer Software with a BOP Reviewer Station is the most comfortable way to analyse the footage of BOP HD.

The BOP Reviewer Station gives the possibility of a central data analysis independent of the recording system.
A safe working place according to the guidelines privacy is needed.

i   Data analysis with the BOP Reviewer Software can be done directly with the BOP HD. The BOP HD hast to be put into >PAUSE< mode.

7.1 THE BOP REVIEWER SOFTWARE

The BOP Reviewer Software of I+ME ACTIA realizes a comfortable way to analyse the footage of BOP HD.

To use the BOP Reviewer Software a PC has to fulfil the following requirements:

- Operating System   Windows XP® or Windows Vista®
- Processor   DualCore 1.8 GHz
- RAM   2 GByte RAM
- Graphics Card   512 MByte Memory

i   Further information about the BOP Reviewer Software you can obtain by your specialist dealer or directly at I+ME ACTIA.

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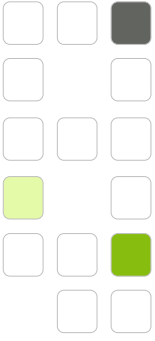
8. ANNEX

8.1 ABBREVIATIONS AND GLOSSARY

Abbreviation	Comment
BOP HD	Best Of Protection – High Definition
BOP HD 8	BOP HD with 8 x video in
BOP HD 16	BOP HD with 16 x video in
BOP Reviewer Station	BOP Reviewerstation for data analysis
CAN	Controller Area Network
CCTV	Closed Circuit Television
EDGE	Enhanced Data Rates for GSM Evolution
Ethernet	Cable bonded network for LAN
FBAS	Composite video signal
FPS	Frames per second
GPRS	General Packet Radio Service
GPS	Global Positioning System
IBIS	Integrated on board information system
JPEC	Joint Photographic Experts Group
LAN	Local Area Network
LED	Light Emitting Diode
MPEG4 , H264	Moving Picture Experts Group
NTSC	National Television System Committee / American television standard
OSD	On Screen Display
PAL	Phase Alternative Line / European television standard
RTC	Real Time Clock
UDP	User Datagram Protocol
UMTS	Universal Mobile Telecommunication System
USB	Universal Serial Bus
UTC	Universal Time Coordinated
WLAN	Wireless Local Area Network

8.2 TECHNICAL DATA — VIDEO PROTECTION SYSTEM BOP HD

8.2.1. SYSTEM DATA

Key switch	OFF
	PAUSE
	RECORD
Interfaces	2 x Ethernet (10/100 Megabit and 10/100/1000 Megabit)
	2 x USB
	1 X High-Speed CAN
	1 x IBIS
Inputs	8 (16) x Video (PAL or NTSC)
	2 x Audio (microphone)
	3 x digital with wakeup
	5 x digital (there from 2 for analogue data logging)
	1 x ignition (clamp 15) with wakeup function
Outputs	2 x video (PAL or NTSC)
	4 x digital (Relays)
Display	1 LED green - Power
	1 LED red - Service
	1 LED green - Record
	1 LED yellow - Connectivity
Operation system	Linux
Data storage	Slide-in module with 1 or 2 hard disks

8.2.2. TECHNICAL DATA

Camera supply	12 VDC / max. 6A
Monitor interface	BNC / 75 Ohm / 1Vss / FBAS / PAL or NTSC
Microphone interface	12 VDC / max. 1,5A
Power supply	10-32 VDC (typical 12VDC or 24VDC)
Max. power consumption	Active: 3 A at 24 VDC / 8 A at 12 VDC Standby: 0,5 mA at 24 VDC / 1 mA at 12 VDC
Dimensions	250 x 80 x 230 mm w/h/d (depth measured with plugs, data storage and key)
Weight	~ 3,5 kg
Operation temperature	-10° to 70°C
Storage temperature	-25° to 85°C
Humidity	10% ... 95% relative, non-condensing
Video recording	Parallel recording up to 16 channels
Vibrations	0,2 G / 5-150 Hz in use 1,0 G / 5-150 Hz out of service
Shock stress	1,5 G / half sinus / 11ms in use 50 G / half sinus / 11ms out off service
Recording format	MPEG4/H.264
Resolution	PAL 720x576 (FULLD1), 352x288 (CIF) NTSC 720x480, 352x240
Frame rate	PAL 25 fps to 1 fps NTSC 30 fps to 1 fps
Video Bit Rate	300 - 6000 kBps
Video Multiplexer	Digital. All video sources can be switched to 2 independent monitors. Multidisplay at 2 monitors. Detection of "video signal missing"
Video Streaming	RTSP-protocol, up to 4 video channels at the same time. Selection of the channels via TCP/IP
Protection class	IP 20

8.2.3. ETHERNET - INTERFACES

Front Panel Ethernet Interface	
Use	Configuration via the web interface
	Data transmission / system update
Specification	IEEE802.3 BaseT with automatically transfer rate detection 10/100 MBit without auto crossing; RJ45 plug
IP address	Standard 192.168.72.200
Netmask	Standard 255.255.255.0

Rear Panel Ethernet Interface	
Use	Integration into a network
	Streaming / Broadcast / Download / Reviewing
	Connection via a converter to WLAN / GPRS / EDGE / UMTS
	Configuration via the web interface
Specification	IEEE802.3 BaseT with automatically transfer rate detection 10/100/1000 MBit; with auto crossing; RJ45 plug
IP-Address	Standard 10.30.xx.yy
	xxyy = last 4 numbers of the series number
Netmask	Standard 255.0.0.0

8.2.4. RECORDING TIME

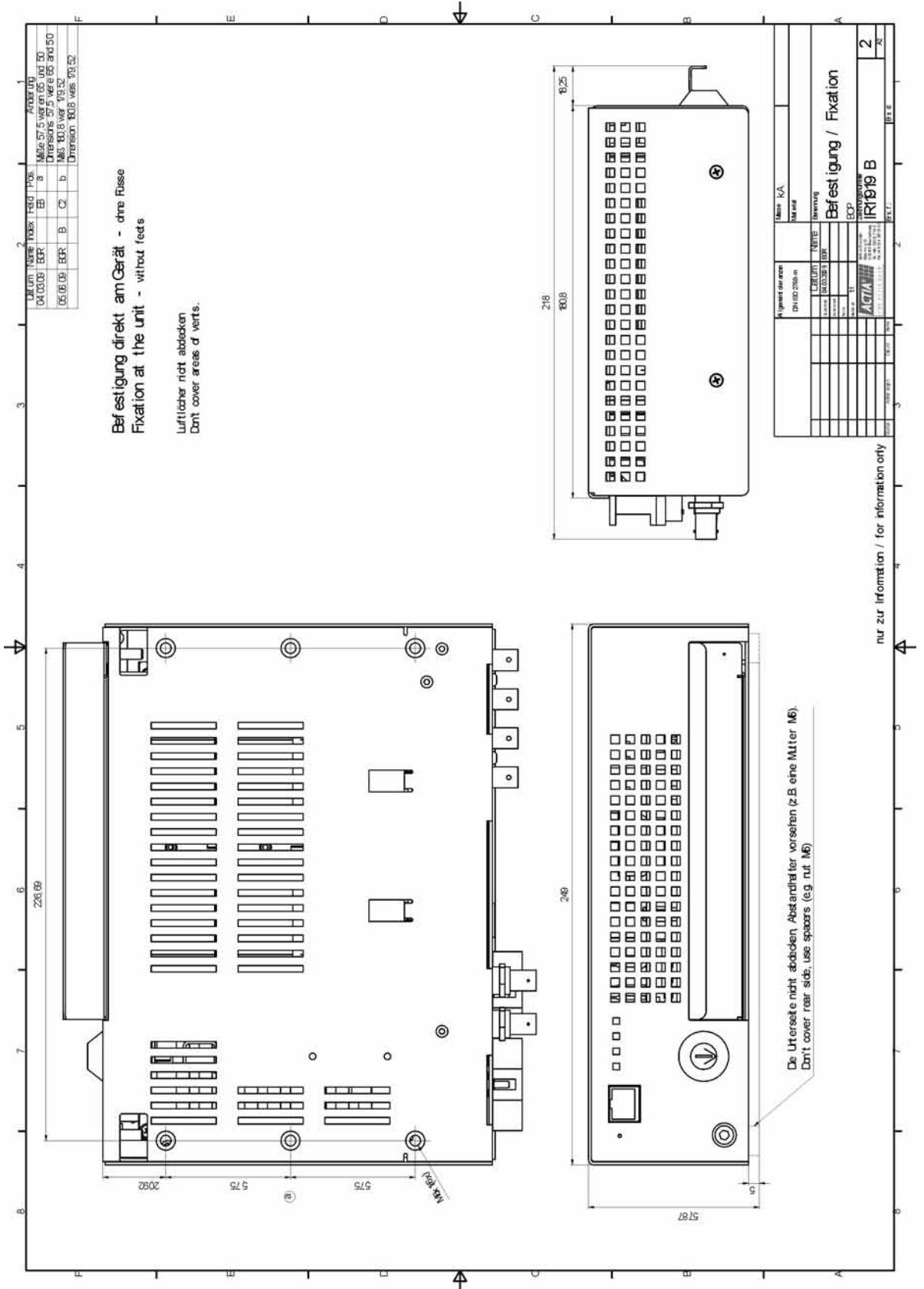The recording time can be estimated by following formula.

$$\text{Recording time} = \frac{\text{Capacity of the data storage (in GByte)}}{\text{Data rate (in MBit)} * \text{number of video channels}} \times 1.9$$

Example: 500 GByte data storage / 8 cameras / 1 MByte data rate

$$\frac{500}{1 * 8} \times 1.9 = 118.75 \text{ hours total recording time}$$

8.3 DIMENSIONAL DRAWINGS

8.4 ERROR MESSAGES / THE FILE ERR.TXT

In this Chapter the most important error messages of the err.txt file are described.
The possible reason and solutions are named.

Camera Error

Message: MP CAM#4: video signal ERROR

Reason: - wrong configuration of connected cameras

Action: - check / correct configuration

Message: MP CAM#4: video signal back o.k.

Reason: - sporadic camera error

- connection problems of the camera

- connection problems on the BNC connectors

- broken camera cable

Action: - check camera, connections and cables

Storage Error

Message: Kernel panic: panic - ata1: DMA timeout, stat 0x1

Reason: - no access on data storage

Action: - eject and reinsert BOP Slide Disk

- format BOP Slide Disk

- exchange BOP Slide Disk

Info: All messages in err.txt, including the string "ata", can cause massive malfunction. In most cases, the system does self repairing. If the error returns frequently, maintenance is necessary.

Message: 2007-06-20.12:39:23 -- NO error, maintenance has FORMATTED this HDD

---- 10200661 FW=0.5.63 config=20041231_2359 ident=I+ME BS-AI803

Reason: - The data storage has been formatted

Action: - This is only Information. No Action necessary

Error on Power supply

Message: Jun 20 09:12:46 bop81 user.err syslog: (0265:03) uncontrolled POWER-OFF or RESTART or HDD access failure

Reason: - external power supply has been interrupted.

            - contact problems on power connector

            - Internal Problems of BOP System

Action: - check the external Power supply for loss connection

            - check and format BOP Slide Disk

            - exchange BOP Slide Disk to exclude a problem with the data storage

Message: "uncontrolled POWER-OFF or RESTART or HDD access failure"

Reason: - during the shut down of the system, the file system has not been closed correctly

Action: - insert data storage, start the system, shut down and restart the system

USB error

Message: Jun 20 11:10:38 bop81 daemon.err klogd: hub.c: connect-debounce failed, port 1 disabled

Reason: - USB interface detected communication problems

Action: - check USB connection and connected hardware

Error file err.txt

Message: 2007-06-20.11:40:09 -- NO error, maintenance has erased this file ---- serial#=10200661 FW=0.5.63 config=20041231_2359 ident=I+ME BS-AI803

Reason: - No failure has been detected

Action: - This is only Information. No Action necessary

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Alarm Message

Message:	Jun 11 06:58:31 -- ALARM activated at UTC 200706110658
Reason:	- an alarm has been generated and video files are saved in alarm folder
Action:	- Only Information about existing alarm data. No Action required urgently

CAN Error

Message:	Jun 12 05:05:40 bop81 daemon.err klogd: SJA1000.iocINIT: ### CLOCK measure error, set on 24MHz
Reason:	- CAN Chip not initialised correctly
Action:	- hardware error. Please contact I+ME ACTIA. This error can cause USB malfunction

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8.5 CERTIFICATES AND APPROVALS

Range	Norm / Certification
EMC	e1-mark C72/245/EWG
	CE EN 55022, EN 55024, EN 5507637-2
Vibration	IEC 61373 Chapter 9
Shock	IEC 61373 Chapter 10.5
Resistance against heat and fire	DIN 53438-2, DIN 5510-2

8.6 ACCESSORIES

A lot of Equipment is available for BOP HD:

- Assembling Accessories
- Cameras
- Microphones
- Monitors
- GPS-Modules
- BOP Reviewer Software
- …

i Further information about the BOP HD Accessories you can obtain by your specialist dealer or directly by I+ME ACTIA.

8.7   NETWORK AND BROWSER SETTINGS AT THE PC / NOTEBOOK

The following information describes the necessary settings on a PC or a Notebook with Windows XP, to get a connection between computer and the Ethernet Interface on the front panel. This description based on a BOP HD in default configuration. Settings on PCs or Notebooks with other operation systems or browsers are similar.

8.7.1. NETWORK CONNECTION VIA CABEL

- Open [start] [settings] [network settings]
- select [LAN settings]
- open the [properties] and select the [settings] inside of the >Internet protocol (TCP/IP)<
- select [common] and set in the option >use following IP-Address the following value:
  - IP-address: 192.168.72.210   or 192.168.72.x (x unequal 200)
  - Subnetmask: 255.255.255.0
- Confirm settings with [OK] and [Close] the dialog

8.7.2. MICROSOFT INTERNET EXPLORER

- Start the Internet Explorer
- Open [Extras] [Internet Options] [Connection] and select [LAN settings]
- Select [Extended] and wire in the address at >exceptions< >192.168.72.200< or >192.168.72.*<

8.7.3. MOZILLA FIREFOX

- Start the Firefox
- Open [Extras] [Settings] [Extended] [Network] and select [Settings]
- Select [Manually proxy configuration] and write in the address at >No proxy for: >192.168.72.200< or >192.168.72.0/24<

8.7.4. HOW TO OPEN THE CONNECTION

- Connect the BOP HD and the Laptop by a network cable. Consider if a cross ink cable is needed.
- Put the BOP HD into service
- Wait some minutes until the BOP HD is in service
- Start your Browser and call up the address >**http://192.168.72.200**<
- Type in your username and password