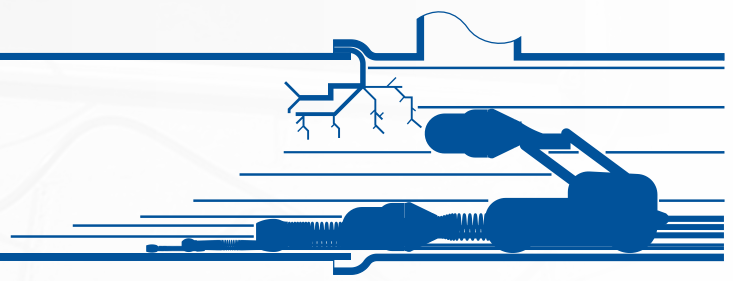




**INSPECTOR<sup>®</sup>**

Manual  
Easybox

98323408



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## 2 Introduction

This manual is for:

- Easybox (98320953)
- Easybox DVR (98325930)
- Easybox prepared for laptop (98324524)

### 2.1. Application area

Depending of your choice of camera head and the kind of cable every camera has it's own working area.

36 mm camera:

Suitable to inspect pipes of  $\varnothing$  50 to 200 mm.

90 degrees corners from pipes of 50 mm.

45 mm camera with combi cable 7.5 mm:

Suitable to inspect pipes of  $\varnothing$  75 to 200 mm. 90 degrees corners from pipes of 75 mm.

45 mm camera with combi cable 9 mm:

Suitable to inspect pipes of  $\varnothing$  75 to 300 mm. 90 degrees corners from pipes of 125 mm.

48 mm camera with combi cable 7.5 mm:

Suitable to inspect pipes of  $\varnothing$  75 to minimal 400 mm. 90 degrees corners from pipes of 75 mm.

ZRK70 camera with combi cable 9 mm

Suitable to inspect pipes of  $\varnothing$  110 to 500 mm. 90 degrees corners from pipes of 125 mm.

Note: These specifications are depending on the kind of material, color and dirt of the pipe.

### 2.2. The complete system

The camera system consist the following items:

- Camera head
- Reel with adjustable brake
- Monitor box or Easybox

## **2.3 Working with the system**

All parts of the system are made of high quality material and assembled with great precision. For optimal usage of the system regular maintenance is necessary. You will find instructions and tips in this manual about:

- Safety
- Usage
- Maintenance
- Service

## 3. Safety

### 3.1 Setting up & connecting the system

Mind the following aspects before setting up or starting up the system:

- Place the Easybox on a dry and solid ground.
- Place the reel in such way that it cannot fall into the well.

Be aware the system is switched off and not connected to the power grid before you connect any connector. For further instructions how to connect read chapter 4

### 3.2 Electricity

The system operates on a 230V/50Hz current and on 12V DC. Be sure that the system is set up in a dry environment. Prevent water or moisture getting in or on the industrial box.

By using a wrong or instable electric voltage the system will be badly damaged and warranty will void.

When using an aggregate, it must be connected to earth by means of a ground rod. Consult the operating manual of the aggregate how to do this.

Using an inverter (12V DC to 230V AC); The minimum power output must be 150W continuous. The peak output must be 300W. The output must also be a pure sinus. Your dealer could help you select a suitable inverter.

**By using an underpowered inverter or an inverter with no pure sinus as output you could harm your system. Warranty will void.**

Use always a power point which is connected to ground.

### 3.3 Temperature and moisture

In case the system is not in use it has to be stored in a dry and ventilated room. The temperature during use and storage has to stay between 0°C and 45°C.

*Be aware of this during winter periods in case you keep your inspection system in your company car or van.*

## 4. Using the system

### 4.1 *Before starting an inspection*

Before starting an inspection be sure that the pipe has been totally cleaned.

**Caution!** Never use the camera for unblocking a pipe! If you feel resistance and can't push the camera any further, do not continue the inspection. Gently pull back the camera and clean/ unblock the pipe first and then continue the inspection.

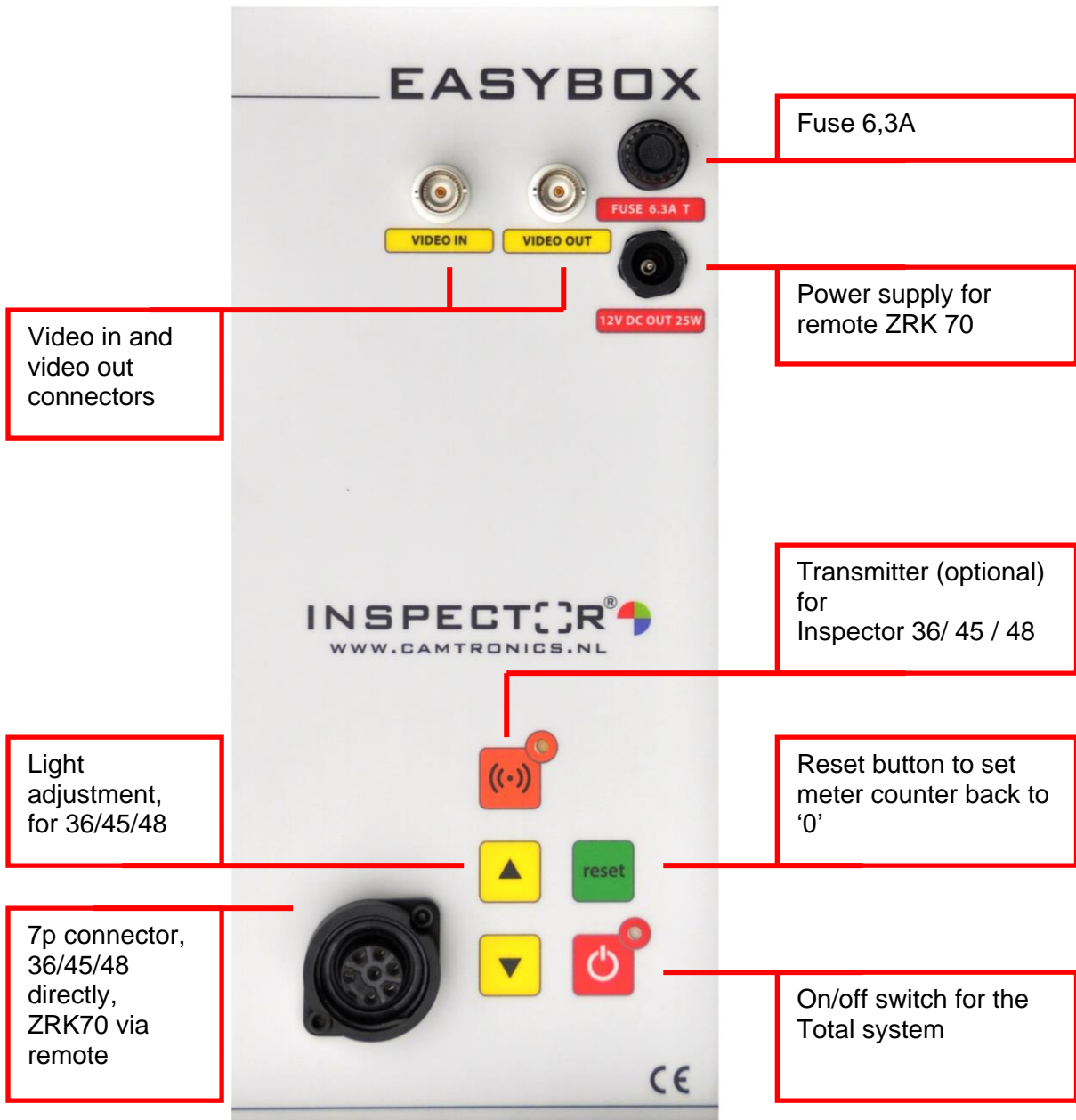
### 4.2 **Connecting the system**

- Open the Easybox.
- In case you are using a ZRK70 camera head, connect the 19p connector of the reel to the remote control ZRK70
- Connect the 7p connector of the reel or remote control ZRK70 to the Easybox and eventually the 12V power cable
- Connect the 230V connector to a power point which is connected to ground.
- Switch on the system with the red on/off button on the control panel. The LED will become green.
- Switch the DVR On when needed. Use the on/off button on the DVR front.
- Switch on the LCD display, if necessary. Or start the laptop
- Adjust the lightning with the yellow buttons on the front.

In case you're working with the ZRK70 some actions will differ. See paragraph 4.6 for further information.

### 4.3 Controlpanel Easybox

The controlpanel of the Easybox has the following functions:



#### 4.4 Remote control ZRK

In case you are using a ZRK70 camera head, it has to be operated with the remote control.

##### *Basic functions*

- Swerving and rotation; blue buttons
- Focus; orange buttons
- Lighting; yellow buttons
- Truck; turning knob, see also paragraph 4.14

##### *Smart functions*

- Level (horizontal); press the middle blue button
- Auto level; press either shift button and the level button simultaneously. The camera will continuously correct the image through rotation. To disable the auto level function press the level button again.
- Socket test; swerve camera (manually) to socket edge, adjust focus if needed. Press shift button simultaneously with right orange button (“socket test”). The camera will rotate 360 degrees.
- Transmitter; press shift button simultaneously with right yellow button (“transmitter”) to activate. To disable the function, press shift and the right yellow button again.
- Steering unit; hold down the shift button and press blue buttons, see also paragraph 4.11



#### 4.5 Text generator

The text generator can be used to add extra information on the screen. This can be recorded on DVR or USB interface. In brief:

1. Press ESC on keyboard to go to the menu.
2. Choose from F1 to F7
3. Follow the steps
4. Press ESC to exit the menu

Note: standard texts can be programmed with F3. These can be activated and deactivated during an inspection with F1 to F7.

#### 4.6 Meter counter

By using the meter counter you can measure distances in the pipe. The measurement will be done inside the reel. This means you have to keep the distance of the cable between reel and the beginning of the pipe steady to avoid mistakes.

You can reset the meter counter by pressing the green button on the front panel.



## 4.7 Usage of the USB interface

It is possible to record video and pictures on a computer by using the USB port. This function can be found on the *Easybox with USB interface*, the *laptop prepared Easybox* and the *Easybox with digital video recorder*.

Before you can start recording pictures and video, you have to take a number of steps. Therefore you will need the provided cd-rom “USB Software” and follow the guidelines which can be found in appendix I.

After you have executed all the steps you can start recording with the installed software. A brief manual can be found in appendix II.

### Remarks:

- We recommend to take your time making all installations
- By preference be seated at a table

## 4.8 Laptop prepared Easybox (optional)

When you're using a *laptop prepared Easybox* you need to go through the steps as mentioned in paragraph 4.7.

Besides, you also need to go through the following steps:

- Secure the laptop adapter on the therefore meant location, using the Velcro.
- Measure the height of the closed laptop
- Adjust the laptop support to the correct height using the winged nuts. This should be done as such that the laptop will not be damaged while closing the Easybox, but will stay in position during transportation.

## 4.9 Easybox with digital video recorder (DVR) (optional)

When you've opted for an *Easybox with digital video recorder*, in brief DVR, you can record the camera's image with help of the DVR on a SD-Card. Afterwards the video can be transferred to a computer and easily show your analysis to your customer.

The DVR is built into the *Easybox* and connected to its controlling system. How to install and startup the *Easybox* is earlier mentioned in paragraph 4.2. A specific manual for recording with the DVR can be found in appendix IV.

After recording one or more videos the USB-memorystick can be unplugged from the DVR and connected to a computer. Be aware that you have executed the usage steps exactly as they have been described in appendix IV, before removing the SD-Card from the DVR.

#### 4.10 Tool (accessories)

The tool to 'steer' the ZRK70 camerahead has to be mounted as follows. First, remove the black plastic guide plate on the side where the "endstop" sticker is positioned. Replace this plate with the newly supplied aluminium plate. Secondly, unscrew the two central screws which are positioned left and right from the camera glass. Then place and fixate the mounting plate of the tool on the camerafront by using the two new screws from the tool set.

ATTENTION: make sure the aluminium "endstop" plate is on top side and pointer of the tool is on the opposite.



#### 4.11 Steering unit (accessories)

Using the steering unit makes it possible to 'steer' the camera head into a side branch. The functionality and controls of the camera head (ao. the ZRK70) remains unchanged. The steering unit is operated with the same remote control as the ZRK70.

##### **Attention, before mounting:**

- Remove moist and dirt from the springpiece, camera head and fiber connection
- Make sure you work with dry hands
- Prevent dirt and/or contaminated water from reaching the connectors

##### *Mounting the Steering Unit*



1. switch off the inspection system in case this is activated
2. unscrew the camera head from the spring piece, in case of the ZRK70, only turn at the black part of the camera head!
3. unscrew the spring piece from the push fiber
4. put the rear of the steering unit onto the push fiber end, beware, this can only be achieved in one way, check for the pin. Accordingly, screw the push fiber to the steering unit
5. screw the camera head onto the steering unit
6. activate the system

### *Operating the Steering Unit*



1. push SHIFT + navigation arrows to bend or rotate the steering unit
2. push SHIFT + top left button ('light') to put the steering unit back into its default position

### *Mounting the extra piece*



1. same steps as with mounting the steering unit

### *Maintenance of O-rings (sealing ring)*

In case you sense friction during screwing the different parts, you can apply lubrication (Vaseline etc). This will also lengthen the life of the O-rings.

## **4.12 Guides (accessories)**

There are several guides available to position the camera head in to the pipe.

**Be aware:** Do not turn the front ring of the camera (45mm camera). In case you unscrew the guide a leakage can be caused and the warranty will void.

## **4.13 Transmitter with the 36, 45 and 48 mm camera (optional)**

The camerahead of the 36 mm, 45 mm and the 48 mm systems can be equipped with a 512 Hz transmitter (can also be done on a future date). The camerahead can be localized above ground by using a receiver/detector.

*Activation* of the transmitter, is very straight forward by using the controlpanel switch. During the activation the camera lighting is switched to its maximum. When the transmitter is activated the lighting cannot be adjusted.

*De-activation* happens by pushing the switch again. When the transmitter is de-activated the lighting will show a small decline in intensity, but will regain its strenght immediately.

## 4.14 Truck, how to use

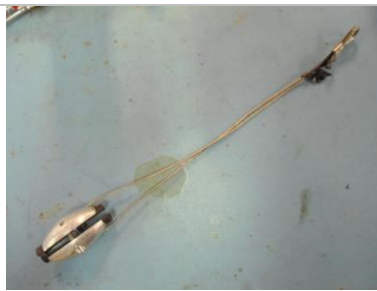
Follow the steps below and strictly follow the sequence.

### Preparing the system

1 Place each item of the system on a relative levelled surface and connect the cable of the motorized reel to the truck.



2 Mount the pull protection. Be aware, to give an extra length to the flexible cable, approximately 5 cm. And make sure the cable is not twisted around its own length axis or steel cable.



3 Connect the complete system without turning on any box

4 Plug in the two power cords (always use a power socket with ground!)

5 FIRST: Turn on the power for the control box



6 SECOND: Turn on the power for the easybox



## Operating the system

When operating the system two aspects have to be taken into account.



1. The system has a delay function. This means that after you've turned the knob it will take a few moments before the truck actually starts driving.
2. Synchronization. When shifting direction (from forward to backward (and vice versa) the truck and reel need to communicate before starting with the next command.

Use the turning knob to drive the truck forward and backward. Be aware of the system's delay function so, gently turn the knob. Please, take special care when shifting from driving forward to backward, and vice versa. Turn the knob in the neutral position and wait a second before shifting to the other direction.

## 5. Maintenance

It's of great importance to regularly clean and grease the system. If you do this at a regular base it will increase the lifetime of the system.

After each inspection the system should be cleaned thoroughly, especially the camera head and the connectors. Any sand or dirt on the camera head, connectors or other moving parts should be removed after an inspection, do this with a clean cloth or brush.

The reel or the box may **never** be cleaned with high pressure water cleaners.

We advise to deliver the system to your dealer for service every once a year. During the service the system will be checked for operation, safety and any possible wear.

## 6. Service & Warranty

A certified engineer must do all service to the system. If any service is required you should contact your dealer first. Your dealer will care for any service, modification or repair on the system.

If any services, modifications or repairs are done by the end-user (without permission of the dealer) or another third-party, warranty will void.

Warranty and warranty time is depending on the terms of your dealer.

Warranty also voids on:

- Cable fracture.
- Short circuit (e.a. power input > 230V – 50Hz).
- Water damage.
- Inaccurate use or abuse of the system.
- In case you do not follow the instructions of this manual.

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All the specifications, construction specifications, way of act and illustrations in this manual are not strictly. We have the right to make an alternation to the manual without any announcement.

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## Appendix I: USB

Please see for more detailed information the supplied manual on CD.

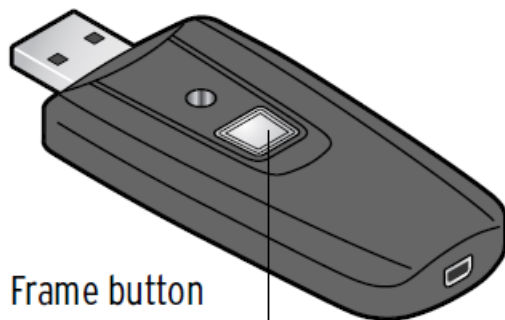
- Video Digitiser installation instructions
- Video digitiser software manual

### Install the drivers

Insert installation CD and run Autorun.exe  
Click **Driver Installation**



Connect the video digitiser



Follow the steps. This will take a few minutes.

### Install the program

Click **ShowBiz DVD 3.5**

Accept the license agreement.

Enter a name and enter the license key that is on the cover of the installation CD

Follow the next steps and finally click **finish**.

Close the CD by clicking **EXIT**



You will see a program icon on the windows desktop, which you can use to start the software



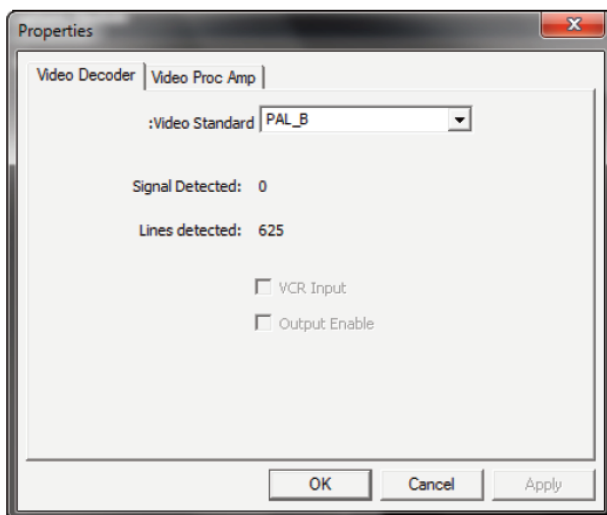
## Set the video standard

Start the ArcSoft Showbiz software

Click the **Capture** tab.

Set the **video source** at Video Grabber

Click **Device Settings** and set the Video Standard option to PAL\_B and confirm with okay.



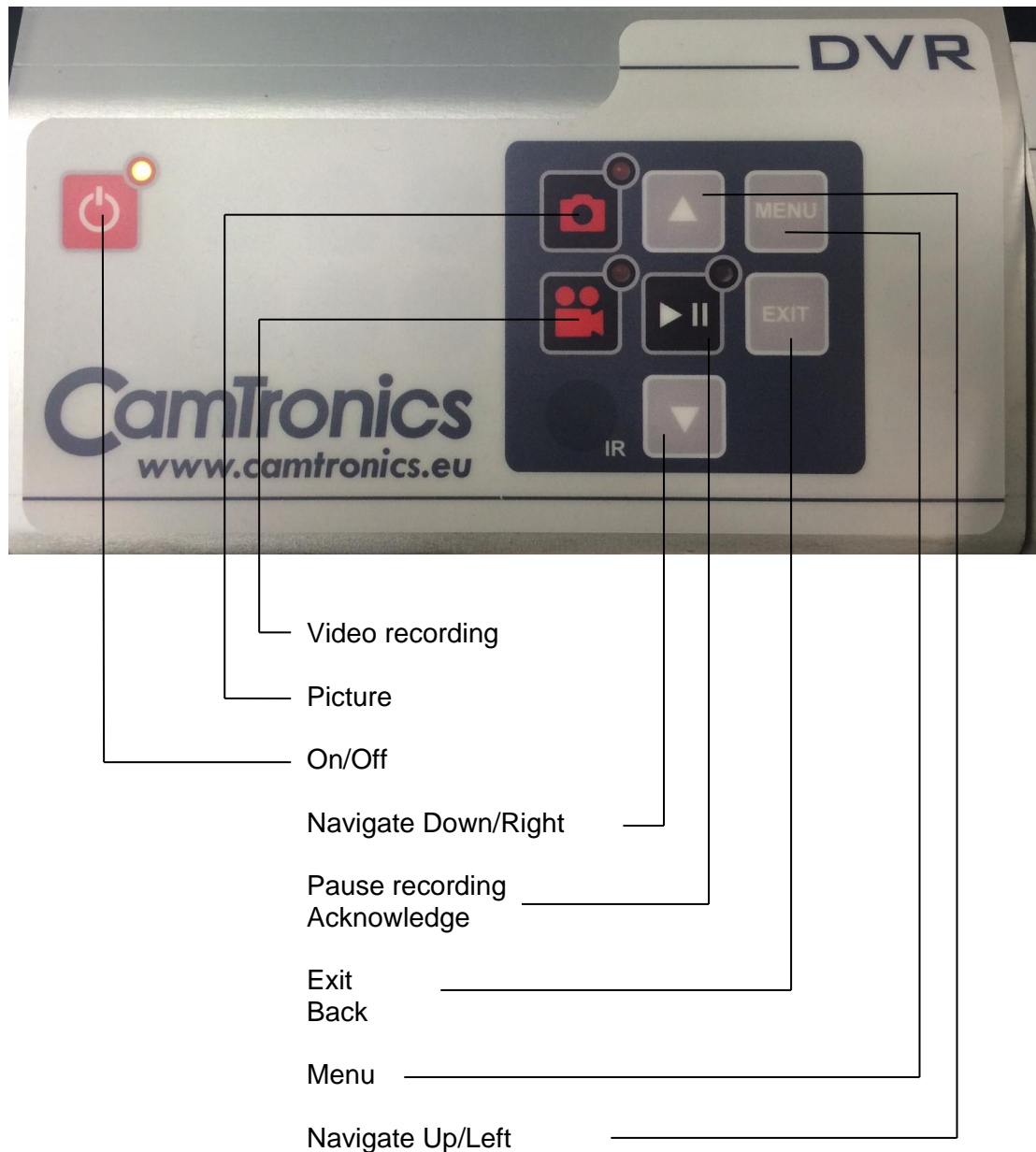
## Appendix II: User manual digital video recorder (DVR)

### ***In general***

The digital video recorder in the *Easybox* is being used to record and store videos on a SD-Card.

### **Remark:**

- It may take a few seconds for the DVR to execute a command after you have pressed a button, so please be patient.
- Only connect or remove the SD-Card when you are in not in the menu of the DVR nor when you are recording a movie.
- The recorder supports 16 GB SD-Cards
- Video recordings at maximum resolution use 4 GB per hour.
- Please read this manual carefully before use. The device is easy to operate, as you will learn soon enough.



## **Start up**

1. Insert an SD Card into the SD card connector under the cover.
2. Press the **ON button**, the red light is getting green and flashing. After a few seconds, the light turns green continuously. The DVR is ready for use

## **Recording**

1. Press the **PICTURE button**, the LED will briefly light up. There is one picture stored on the SD Card.
2. Press **VIDEO RECORDING button**, the LED will light up continuously. A movie is stored on the SD Card.
3. Press **the PAUSE button** to pause recording, the LED will light up. Press **PAUSE button** again to continue recording.
4. Press **VIDEO RECORDING button** to finish the recording. The LED will not light up.
5. Recording is not possible when the LED **VIDEO RECORDING button** and **PAUSE button** flash simultaneously. There is something wrong with the SD Card. Reason may include that the SD card is not inserted, or the SD card is full.

## **Playback**

1. Press the **MENU button**.
2. Navigate to the event playback menu, press the **ACKNOWLEDGE button**.
3. Navigate to the video or photo you want to play / view, and press the **ACKNOWLEDGE button**.
4. A recording can be paused and watched again. Continue with the **PAUSE button**.
5. Recording automatically stops at the end. To stop earlier, press the **PAUSE button** first and then the **EXIT button**.
6. To exit the menu, press one or more times the **EXIT button** to return to the event playback menu, then press the **MENU button**

## **Settings**

Several settings are available via the **MENU button**.

It is important that "record settings", the setting "Overwrite OFF".

## Appendix III: Troubleshooting, solving problems

Problem	Cause	Solution
Unknown signs on screen	System connected and switched on in the wrong order	Switch off complete system and switch it back on
No image	Transmitter is activated	Switch off transmitter
Lighting does not respond to commands	Transmitter is activated	Switch off transmitter
Blue image with 'no signal' and/or 'AV-2'	Display receives wrong input	Change input with buttons 'on/off' (on the display's upper right) or arrow button of 'menu' (on the display's lower right)
Noise/interference/no image on laptop	Extension of USB-grabber cable	Cable between USB-grabber and laptop may not be extended more than 3m
Not able to record	Wrong setup of USB recording device	Check if USB #1 is set, see screenshot and <i>Selecting USB</i> (App. IV)
Deviation in image (noise, interference, image aspect ratio)	Incorrect video setup	Adjust settings via <b>SETUP</b> and <b>VIDEO</b> according to screenshot
Can not find video clips, which are just recorded, at today's date	Incorrect time setup	Check if time and date are correctly set, see screenshot and <b>DATE</b> , <b>TIME</b> etc.