User manual

LEADER Cam RD90

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.LEADER

Product references

D11.04.345	**LEADER Cam RD90 avec Touret 90m et camera étanche**

Contents

1 INTRODUCTION

1.1 LEADER Cam RD90 presentation

Is for use in the rescue of buried victims, the LEADER Cam RD90 is equipped with a search camera. This equipment has been designed to accurately and visually locate victims in confined spaces, to dialogue and assess their need for assistance and rescue.

The LEADER Cam RD90 meets the operational requirements of reference search and rescue teams throughout the world (INSARAG, Task Force 1, SUSAR Teams, NGO, etc.).

1.2 LEADER Com RD90 composition

- 1 watertight and shock proof transport case
- 1 control box with screen and keyboard with its straps (shoulder strap and hand strap).
- 1 90m (300ft) long cable on a reel with a waterproof camera with lighting
- 1 rechargeable control box battery pack
- 1 100/240V 50/60Hz charger block delivered with a set of international adapters
- 1 backup battery pack for 10 AAA batteries (not included)
- 1 sun shield
- 1 micro SD card to record and view photos/videos

Available options:

- Extra battery pack (Ref: D11.04.341)

- Read the instructions carefully before using the product.
- The device should not be dropped or suffer shocks.
- Do not disassemble the product as this will invalid the warranty.
  Do not attempt to repair the product or replace parts (except when this manual provides specific instructions to do so). Refer all servicing to your distributor, or at Leader maintenance service.

1.3 General functions

FUNCTIONS	IN SEARCH CMERA MODE
Digital x 2 zoom	Yes
Screen brightness control	Yes
Left and right handed user	Yes
Battery charge level indication	Yes
Picture taking	Yes
Video recording (with no sound)	Yes
Photo and video gallery to view recordings	Yes

1.4 Detailed technical specifications

Refer to product data sheet available on our website at www.leader-group.eu.

2 LEADER CAM RD90 DESCRIPTION

2.1 Control box description

The polypropylene control box is composed of:

- a 7 inch TFT colour 16/9 high brightness screen

- a keyboard for settings and scrolling through the different menus

- a rechargeable battery pack

- connectors for the watertight connection of the camera and audio headset. Colour coding to assist in the rapid connection of each element to its corresponding connectors.

- a watertight cap to fit to the aerial connector when not used

- a rubber band around the edge for better shock protection

- 4 attachments to fix the carrying strap and the handle

The control box:

- has an ergonomic graphic interface including an intuitive menu with subtitles in English only

- is reversible for use by a right handed or left handed operator (function selectable from the menu)

- is IP54, i.e. water and dust resistant

- has been tested to be resistant to 2 metre falls

- is supplied with a sun shield

- To clean, use a dry and soft cloth
- Never use solvents, or alcohols of any kind, to avoid of discoloration and / or distortion of the unit.
- Avoid blows or excessive pressure on the screen.

2.2 Connection description

For easier connection of the accessories:

- Each female connector on the control box is identified using a colour code and a symbol.
- Similarly, the cable for each accessory has a coloured ring around the male connector corresponding to the colour code on the control box connectors.

Boom
connector

Aerial connector
(function not available)

USB Connector
(audio function not available)

The audio / USB connector is used to connect either the audio headset or a specific USB stick supplied by LEADER to update the software when necessary. No other USB peripherals should be connected
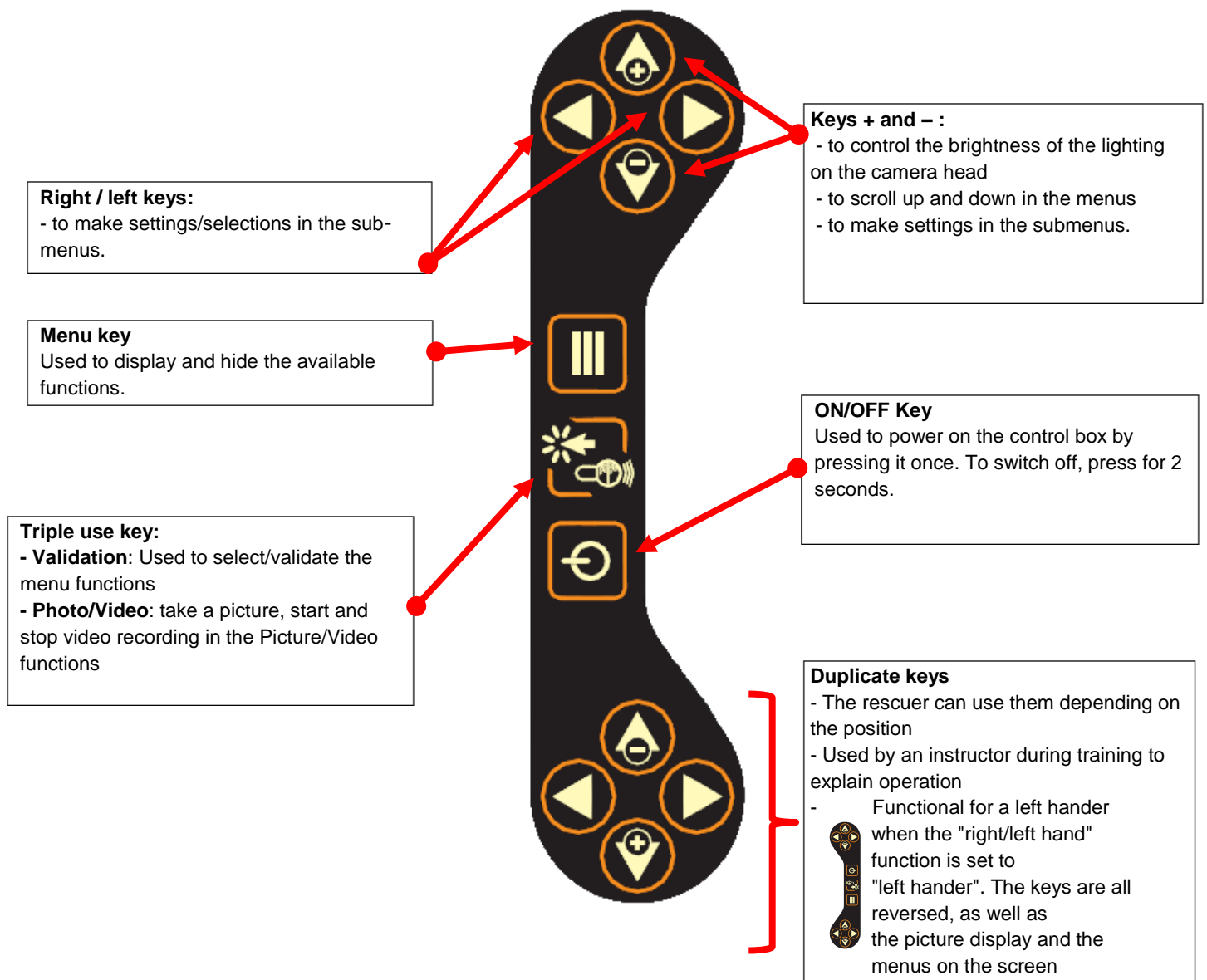
2.3 Keyboard description

The keyboard has photo luminescent keys for better visibility in the dark.

The keyboard is reversible for use by a right handed or left handed operator. To switch from one to the other, the corresponding function must be selected.

"Right hander mode" view:

Right / left keys:
- to make settings/selections in the sub-menus.

Keys + and – :
 - to control the brightness of the lighting on the camera head
 - to scroll up and down in the menus
 - to make settings in the submenus.

Menu key
Used to display and hide the available functions.

ON/OFF Key
Used to power on the control box by pressing it once. To switch off, press for 2 seconds.

Triple use key:
- **Validation**: Used to select/validate the menu functions
- **Photo/Video**: take a picture, start and stop video recording in the Picture/Video functions

Duplicate keys
- The rescuer can use them depending on the position
- Used by an instructor during training to explain operation
-             Functional for a left hander when the "right/left hand" function is set to "left hander". The keys are all reversed, as well as the picture display and the menus on the screen

2.4 Description of the reel

The reel is equipped with 90 m (300ft) long cable not disconnectable

Setting-up:

✓ Connect the reel to the consol.

✓ Turn the control panel on by pressing the 'on/off' button.

✓ To turn the consol off, press the 'on/off' button during 2 seconds.

2.5 Description of waterproof head

- In a sturdy black anodized aluminium.
- It is provided with a camera, a LED lighting .
- The 57mm diameter of the head will penetrate into the core drilling holes with a standard diameter of 60mm.
- The camera has a viewing angle of 90 °.

- **Protection of the camera head**

The head-mounted camera is protected by a glass front

- **Waterproof camera head**

This system allows for investigation under water at a maximum depth of 90m.

3 USING THE CONTROL BOX

3.1 Control box power supply

The LEADER Cam RD90 is delivered with a lithium polymer battery pack which is inserted into the back of the control box.

⚠️ The battery pack is recharged SEPARATELY from the control box.

Charging can be carried out at between 0°C and 45°C (maximum temperature) using the supplied charger.

During charging, a LED located on the charger provides the following indications:

- 🟢 Green: battery charged or battery not connected to the charger.
- 🔴 Red: battery charging.

During operations, if the battery pack is run down, the user can either use another battery pack (supplied as an option D11.04.351), or the backup battery pack as a replacement for the initial battery pack. The backup battery pack requires 10 AAA batteries (not provided).

⚠️ The battery pack can ONLY be charged using the supplied charger block. It can be used with 100/240VAC - 50/60Hz

The international adapters can be used to recharge the battery pack on all US, Australian, European, and UK power outlets.

Battery pack

Charger block

Mains adapters

Once the appliance is powered on, if the camera or at least one seismic sensor is turned on, an icon showing the battery pack charge level remains displayed on the top right of the screen.

5 icons to show the control box battery pack charge level

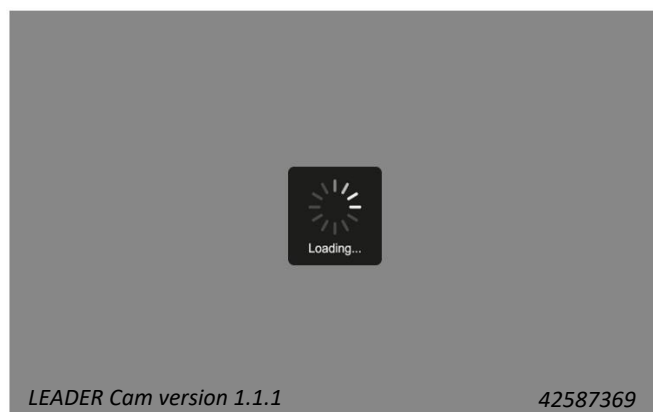*Icon displayed when the backup battery pack is being used*

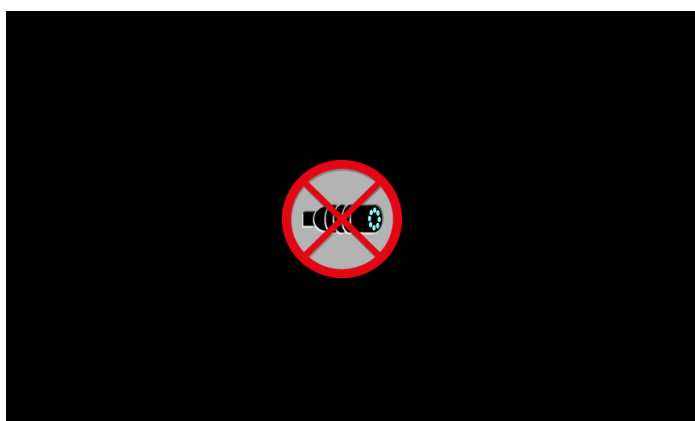## 3.2 Powering on the control box

- **Powering on**

The device is powered on by pressing the ON/OFF key once.

On powering on, a first screen is displayed.

A loading screen quickly follows. On the bottom left of the screen it shows the version of the device software and on the bottom right the serial number.

LEADER Cam version 1.1.1   *42587369*

If the reel is not connected, the screen shows the following icons "camera not connected". The device will remain on this screen for 5 minutes before powering off automatically if no action is detected.

If, on the other hand, either the camera is connected, then the screen is only displayed briefly until the control box detects the connection(s).

Turning off the control box

To turn off the control box, press the ON/OFF key for 2 seconds.

A message is displayed indicating that the battery should not be removed until the message disappears: "*Please, DO NOT REMOVE the battery pack while this message is displayed*"

Please follow these instructions so that the software closes correctly and to guarantee it operates correctly the next time it is launched.
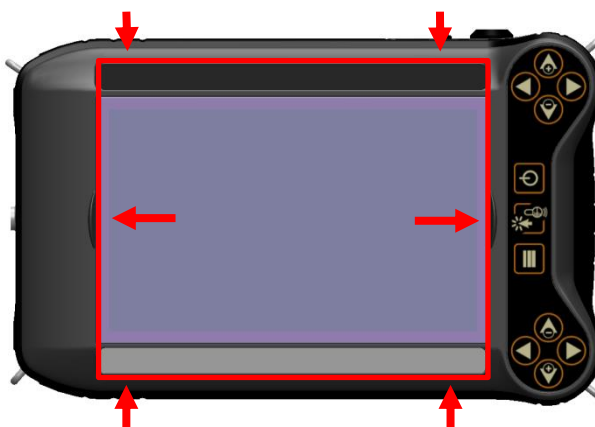
3.3 Using the sun shield

In bright light, the sun shield is used to place the screen in a dark area to be able to see it better.

To hold the sun shield on the control box it must be correctly positioned on the face on the forms designed to this effect. The red line shows the position.

The wide elastics are used to ft it quickly and easily.

It is stored flat for easier transport. An elastic on its side is used to keep it flat and fix it to the control box. By placing it on the screen face, it protects the screen when moving around when the search device is not in use.
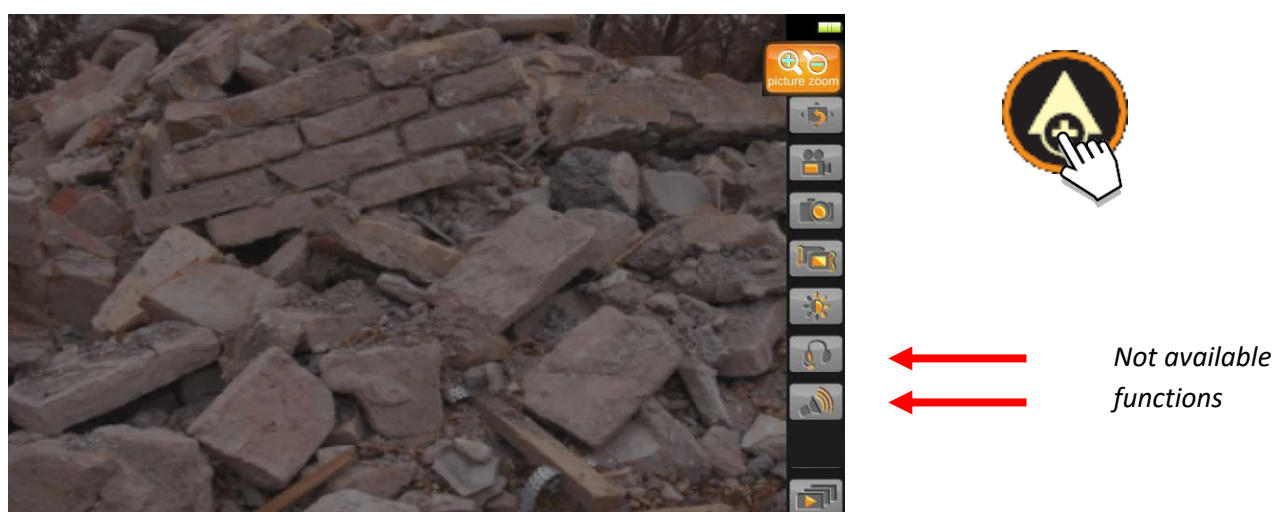
It has small inner pockets to store an SD photo card for example.

4 MENU: DESCRIPTION OF THE CAMERA MODE FUNCTIONS

4.1 Using the main functions

The search camera mode and its menu appear when the boom is connected. Pressing the menu button accesses the different functions ▯ .

Up to ten icons can then be selected. The "▲" and "▼" navigation keys are used to select the required function. Pressing the validation key ▯ gives access to the required function. Pressing the menu key ▯ again exits the menu window and returns to the main screen.

Not available functions

4.1.1 Boom end lighting intensity function

The intensity of the lighting at the tip of the boom is controlled directly using the ▼ and ▲ keys without using the menu. When modulating the lighting, an icon is displayed on the screen showing the intensity level:

- 8 lighting intensity levels can be selected.
- Pressing the ▼ or ▲ keys displays the icon and checks the lighting intensity.
- The lighting only changes when the ► or ◄ keys are pressed a second time.
- Continuously pressing a key makes it possible to increase or decrease the lighting intensity continuously.

- The icon disappears after 2 seconds if there is no action on the ► or ◄ keys.

Example of icone « illumination »

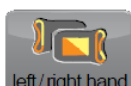## 4.2 Menu: Description of the Search camera mode icons

- The "**picture zoom**" function is used for digital enlargement. The displayed image can be enlarged twice (Digital zoom x2).

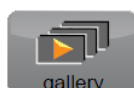- The **"video"** function is used to record videos on the micro SD card.

- The **"picture"** function is used to take shots and record them on the micro SD card.

- The "**left/right hand**" function is used to allow the control box to be used by a left handed or right handed operator by reversing the image, function display on the screen, and the keyboard operation.

- The "**brightness**" function is used to set the screen brightness.

- The "**gallery**" function gives access to the video recordings and pictures taken using the "**video**" and "**picture**" functions to view them on the screen.

The "picture zoom", "picture rotate", "picture", "video" and "left/right hand" functions can be used at the same time.
Once the functions have been selected, miniature icons appear at the top right of the screen. They remain on the screen permanently until they are deactivated.

4.2.1 Zoom function

picture zoom

The "**picture zoom**" function is used for digital enlargement. The displayed image can be enlarged twice (Digital zoom x2).

- To zoom: select the "picture zoom" function from the menu then press the validation key. Once on the sub-menu, select "zoom in" then press the validation key to activate the function and enlarge the picture by 2.

A magnifying glass icon ⊕ appears at the top right of the screen to indicate that the image has been enlarged

- To zoom out: select the "picture zoom" function from the menu then press the validation key. Once on the sub-menu, select "zoom out" then press the validation key to activate the function and display the picture at its normal x1 size.

The magnifying glass icon then disappears from the top right of the screen.
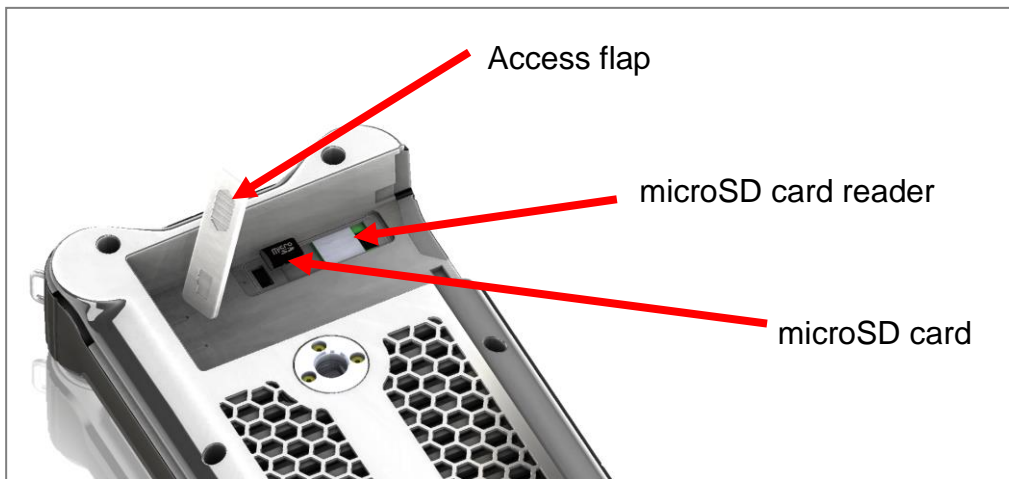
4.2.2 Photo / video recording functions

The LEADER Cam has a picture taking and a video recording function. These two functions are only available if a microSD backup card is in the control box reader.
A Class 10 4Go card is inserted in the reader of each delivered control box.

The number of pictures and recorded video times vary depending on the number of pictures and videos taken as the intervention progresses. However, as an indication :

- If only pictures are taken (with 1Go): 1000 pictures can be saved.
- If only videos are recorded (with 1Go): about 1 hours of video can be saved.

The microSD card reader is located under a flap behind the control box. To access it, remove the battery pack.

Access flap

microSD card reader

microSD card

The "picture" (photos), "video" and "gallery" (viewing pictures/videos) are only active when a microSD card is present in the control box.
Otherwise the icons for these functions are greyed out.

Picture taking function

The "picture" taking function is used to take shots and save them on the microSD card.

To take a shot select the "picture" function from the menu then press the validation key.

Each time a picture is taken the ⬤ icon appears at the top right of the screen to show that the picture is being saved to the microSD card. The menu also disappears when this is complete.

When the 📷 icon reappears, the device is ready to take another picture. It is not, therefore, required to press the validation key again for this 📷 icon to reappear.

Video recording function

The video function is used to record videos on the micro SD card.

To record a video, select the "video" function from the menu then press the validation key.

This action triggers the video recording and removes the menu from the screen.

When recording, the and icons appear alternatively on the top right of the screen to indicate that a video is currently being recorded.

To stop recording, select the "video" function from the menu then press the validation key.

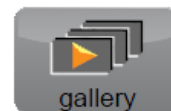The 💾 and 🔴 icons disappear, as does the menu. The camera image reappears on the screen by itself.

The "video" function can be used at the same time as the following functions:

- **Picture zoom**; If this function is active, the magnifying glass icon 🔍 is displayed at the top right of the screen. On the other hand, the recorded video ignores the x2 zoom. The images are recorded at normal x1 size.
- **Left/right hand**; If this function is activated for left handed people you will notice the fact because the control box will be operated using your left hand. The image, the menu on the screen, and the keyboard keys will all have been reversed. No icon is displayed to avoid cluttering the screen.
- **Brightness**; This function which controls screen brightness remains accessible using the menu.

The camera head **lighting** function is operational during recording.
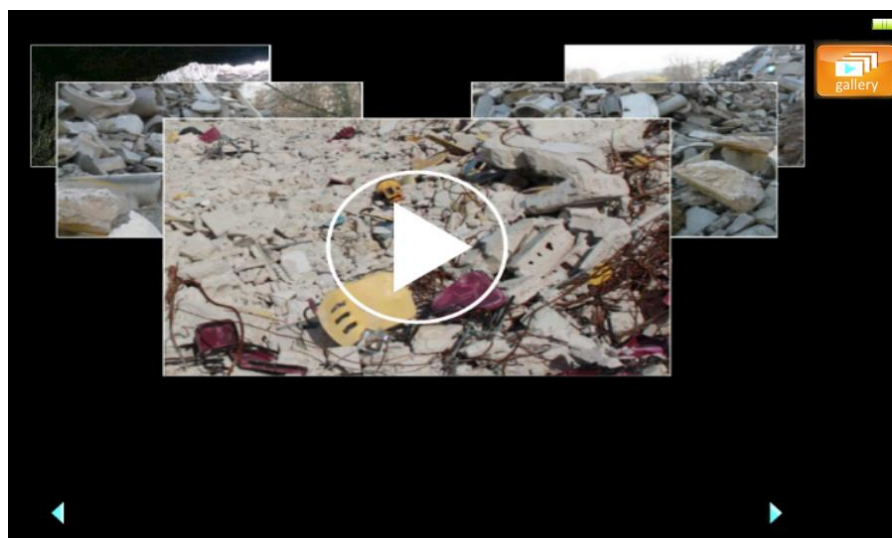
4.2.3 Photo / video viewing function

The function is only available if the microSD card is present in the control box.

Pictures and videos are viewed using the "gallery" function. To access the function, select the "gallery" icon from the menu then press the validation key.

⚠️ The photo or video that is centred on the screen is historically the first that was saved. You therefore need to scroll through all the previously saved photos and videos to be able to view the last photo or video.

Scrolling in the "gallery" function uses the ◄ and ► keys on the keyboard. Pressing the validation key is used either to read or stop reading the pictures and videos. When a selected file is being played, the image is enlarged to full screen size.

When the end of a video is reached, it stops and displays the "stop" icon to confirm the end of the video.
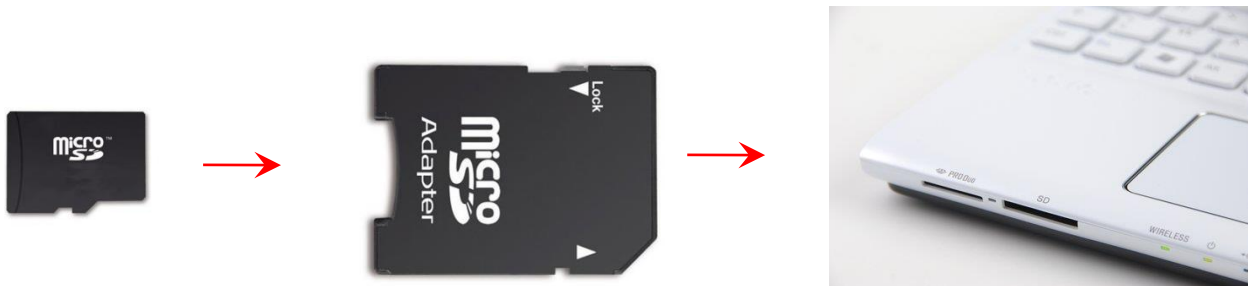
Videos are identifiable by the ⊙ icon which is embedded over the displayed image. Photos do not have an icon.

The menu key is used to exit the "gallery" function.

The pictures and videos can also be read on a computer. Software compatible with the file formats is required:

- Photo formats: Viewable using **"Xnview"** software, downloadable:
  https://drive.google.com/drive/folders/0B2x7i5oli1SsVTNIc3pyLTNINlk?usp=sharing

- Video formats: Viewable using the **"Zoom player"** software downloadable:
  https://drive.google.com/drive/folders/0B2x7i5oli1SsLUYtV3A5RXFtcEk?usp=sharing

To read the files insert the microSD card in the SD microSD adapter (supplied). Then insert the adapter into a computer which has a card reader. Then open the file using the correct software.

Photo and video files can only be deleted from a computer.

4.2.4 Right hand / left hand function

The "**left/right hand**" function is used to set the control box for use by a left handed or right handed person. To access the function, select the "left/right hand" icon from the menu then press the validation key.

When selected the function reverses the image and the function displays (menu and sub-menu), as well as the keyboard operation.

By default the software is set for use by a right handed person.

4.2.5 Screen brightness function

The "brightness" function is used to vary the screen brightness to adapt to surrounding light conditions.

To access the function, select the "brightness" icon from the menu then press the validation key. Once the function has been selected, use the ▲ and ▼ keyboard keys to increase or lower the brightness of the screen.

Reducing the brightness also saves battery power during the intervention and increases the equipment's autonomy.

By default, brightness is set to 50% of its power.

The device memorises the brightness setting. The user can therefore switch from search camera mode to seismic sensor mode (and vice versa) without the setting being impacted.

5 TROUBLESHOOTING

Problem	What to do
The control box will not start	• Check that the battery is charged. • Check that the battery pack is connected. • Check that the battery is not charging when connected to the control box.
Reel not detected	• Check that the reel cable (orange) is'not damaged. • Check that the reel connector is correctly connected.
The Photo, Video and Gallery functions are greyed out	• Check that the microSD card is in the control box
No image or blurred image	• Check that the boom protector cap has been removed
The following icon appears	• There is a software error Note down the message on the screen and contact Customer service

6 WARRANTY

LEADER SAS guarantees the original purchaser of the **LEADER Cam RD90** that the equipment is free of equipment and labour defects for two (2) years from the purchase date for the control box, the boom and the sensors, and one (1) year for the rechargeable battery. This limited warranty is only applicable to the original buyer and not for third parties to whom the equipment may have been resold.

LEADER SAS's duties under this warranty are specifically limited to the replacement or repair of the equipment (or its parts) after it has been inspected by **LEADER** and considered by **LEADER** to be defective. To be able to benefit from this limited warranty, the claimant must send the equipment to **LEADER SAS** within a reasonable time of having discovered the said defect. **LEADER** will inspect the equipment. If **LEADER** determines that it is liable for the defect, the company will resolve the problem in a reasonable time. If the equipment is covered by this limited warranty, **LEADER** will pay the costs of the repairs.

In the situation where any defect for which **LEADER** is liable under this limited warranty could not be reasonably resolved by a repair or a replacement, **LEADER** may then choose to refund the purchase price of the equipment, from which a reasonable depreciation value will be deducted, in order to fulfil its duties under this limited warranty. If **LEADER** decides to do this, the claimant must send **LEADER** the equipment free of charge and free of any liabilities or constraints.

This warranty is limited. The original purchaser, any person to whom it may be transferred, and any person who is the intended beneficiary of the equipment or not, cannot claim the payment of any damages from **LEADER** in the event of injuries and/or material damage due to any defective equipment manufactured or assembled by **LEADER**. Some countries do not allow the exclusion or limitation of damages: the above section may or may not be applicable depending on the country.
LEADER cannot be held liable under this limited warranty if the equipment has been used inappropriately or negligently (including the absence of reasonable maintenance), or if it has suffered accidents or been repaired or modified by a third party.

THIS WARRANTLY IS ONLY AN EXPLICIT LIMITED WARRANTY. LEADER DOES NOT ACCEPT ANY IMPLICIT WARRANTY FOR COMMERCIAL QUALITY AND SUITABILITY FOR ANY OTHER SPECIFIC USE. NO OTHER WARRANTY (OF ANY TYPE WHATSOEVER) THAN THE WARRANTY GIVEN BY LEADER IN THIS DOCUMENT WILL BE ACCEPTED.

LEADER

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