

Manual MiniFlex



MiniFlex[®]
CamTronics

Contents	page
1. Introduction	3
1.1 Scope	3
1.2 The complete system	3
1.3 Working with the system	3
2. Safety	4
2.1 Position & Connecting the system	4
2.2 Electricity	4
3. Use of the system	5
3.1 Before an inspection	5
3.2 Connecting the system	5
3.3 Greasing flex Part	5
3.4 Storage sleeve	6
3.5 Control panel	7
3.6 Using the transmitter	7
3.7 Using the meter counter	8
3.8 User Menu	8
3.9 Control DVR display	9
3.10 Use of the adapter	10
3.11 Use of the Video out	11
3.12 Indication of the LED's	12
4. Maintenance	13
4.1 Replacing of the cable	14
4.2 Replacement of the camera	15
5. Service & Warranty	16
5.1 Troubleshooting	16
6. Specifications	17

1. Introduction

1.1 Scope

Suitable for inspecting pipes \varnothing 32 mm till \varnothing 100 mm. Sharp bends can be taken starting from \varnothing 32 mm.

Note: variations can be caused by type of material, color, and contamination of the pipe.

1.2 The complete system

The system consists of the following components:

- Camera cable
- Reel
- DVR unit (optional without ordering)

1.3 Working with the system

All system components are manufactured from high quality materials and assembled with great precision. To use the system for a long time some maintenance is required. This guide provides instructions and tips on:

- Safety
- Use
- Maintenance
- Service

2. Safety

2.1 Positioning & connecting the system

Consider the following points before switching on the system:

- Place the system on a firm, dry surface, indoors.
- Place the system so that it cannot fall in a hole or turn over.

2.2 Electricity

The system operates at a voltage of 230V / 50Hz and / or the built-in battery. Make sure the system is always placed in a dry environment and indoors. The camera is of course waterproof.

If you want to use a generator, you must be sure that the unit provides a continuous voltage of 230V / 50Hz. If you have any doubts do not use aggregate.

We recommend that you do not use an aggregate.

Using an incorrect and/or unstable voltage brings great damage to the system, this also voids the warranty.

You can also use an inverter (12V DC to 230V AC). The output voltage (230V AC) must be a pure sine wave. Your dealer can help you select an appropriate inverter that fits your system.

Great damage may be inflicted to your system by using a converter with low power or with a non-pure sine wave output. This will void the warranty.

3. Use of the system

3.1 Before an inspection

Before beginning an inspection, the pipe should be properly cleaned.

Pay attention! Never use the camera to unclog a pipe! Once you notice that the camera offers resistance and stops, gently pull the camera back and clean the tube before continuing. Then you can proceed with the inspection.

3.2 Connecting the system

- Open the display
- Connect the 230V plug to a wall outlet unless you want to do an inspection with the build-in battery .
- Switch the system on by pushing the red on/off button on the front panel. The LED will light, see section 3.9 for explanation.
- The LCD display is automatically enabled. The LED turns green.
- Adjust the brightness of the camera lights with the yellow keys on the front panel.

3.3 Greasing flex part

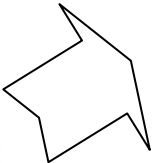
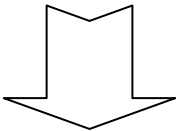
the camera can be easily pushed through curves due to its sophisticated shape of the rubber part behind the camera head. In order to easily take the curves, it is necessary to grease this part. Use acid-free Vaseline.



3.4 Storage sleeve

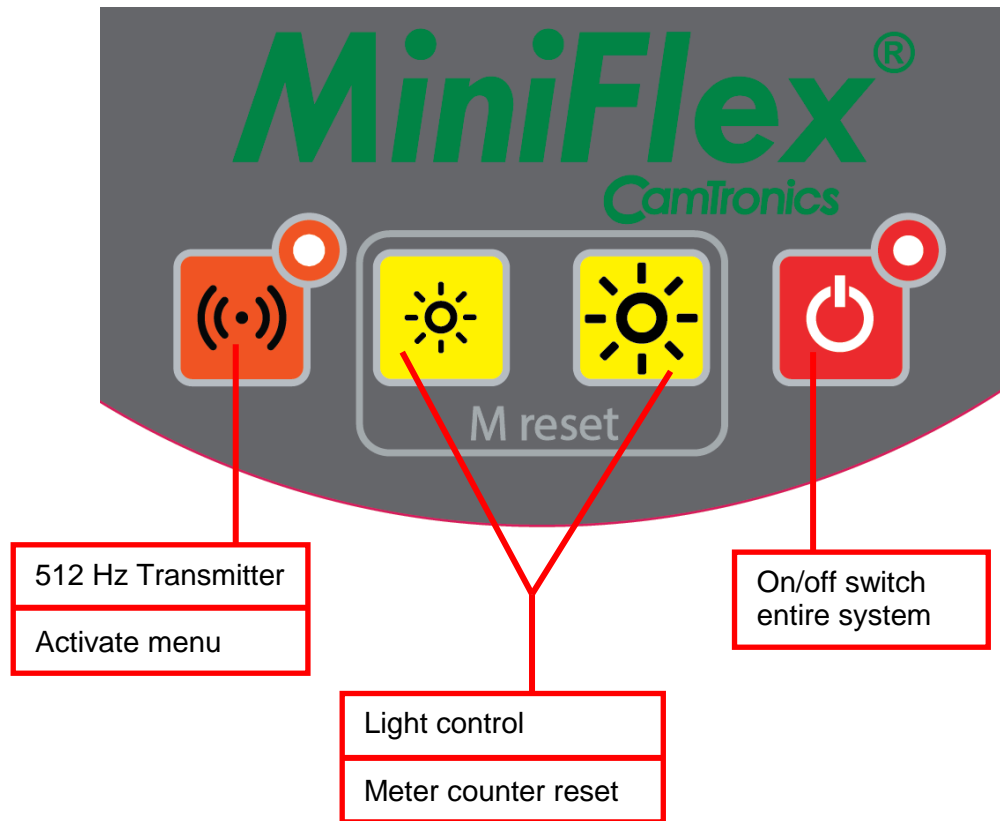
If the camera is not in use it should be kept in the storage sleeve. This ensures that the flexible rubber part remains straight, particularly if it is not used and stays in the drum. To start an inspection take the sleeve containing the camera out of the drum.

Take the camera out the sleeve and insert the sleeve into the holder on the right side of the reel. The inspection can begin. Afterwards put the camera back in the sleeve and put it as a whole back into the drum.



3.5 Control panel

The control panel of the MiniFlex includes the following features:



3.6 Using the transmitter

The camera head of the MiniFlex is equipped with a 512 Hz transmitter. With the aid of a receiver, the camera can be located without digging. During the use of the transmitter the image will contain stripes. They will disappear immediately after turning off the transmitter. Also on the recording this stripes will be visible.

Switching on the transmitter is easy. Press the transmitter button on the controller. During use of the transmitter the lighting is put at half strength. The lights cannot be adjusted when the transmitter is switched on.

By pressing the transmitter button again the transmitter is switched off. When the transmitter is turned off the lights will return to the previously set brightness.

3.7 Using the meter counter

To reset the meter counter, push both lighting buttons simultaneously. The meter counter will be reset to zero. See also 3.8

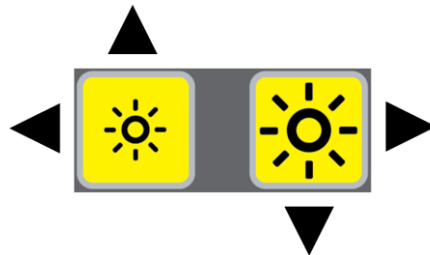
3.8 User Menu

To activate the main menu, hold the transmitter button down until the menu appears. It will appear after about 2 seconds.



1. Text writer
2. Text writer on/off
3. Time/date settings
4. Time/date on/off
5. Meter counter units
6. Meter counter on/off
7. Language
8. Cable length
9. Back

Use the two light buttons to navigate through the menu. Depending on the main or submenu, you can use them to go to the left, right, up or down.



Use the transmitter button to confirm your selection.

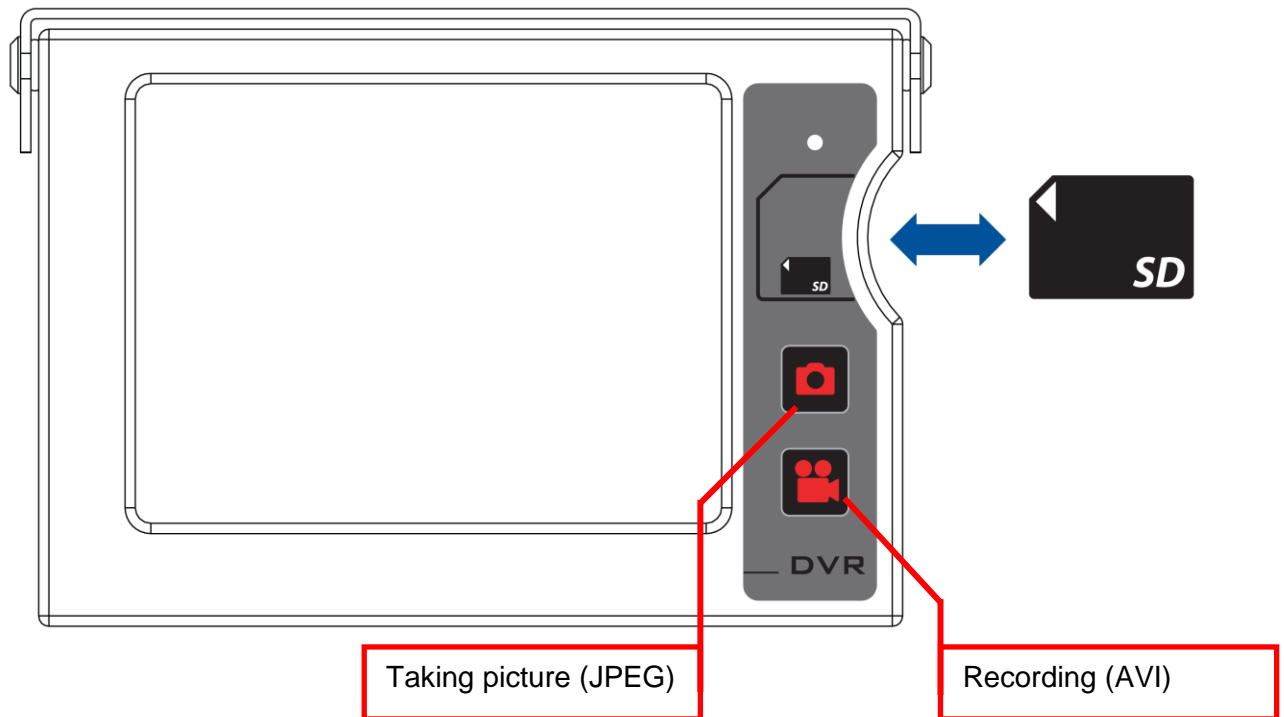


To leave the menu, select "**9. Back**"

You can enter text using the menu, and choose whether or not to display it. The date and time can also be set and displayed on the screen should you so wish. For the meter counter unit, you can choose between metres or feet, and you can also choose whether or not to display this information.

3.9 Control DVR display

The operator panel on the reel includes the following features:



When recording starts “REC” appears in the upper left corner.

Pay attention:

- No dirt / moisture into the slot of the SD card.
- Maximum recording is 30 minutes per file.

3.10 Use of the adapter

With a fully charged battery of the MiniFlex it is possible to work many hours without recharging. However, one can also work with the supplied adapter and simultaneously charge the battery. The third possibility is charging while the system is off.

The adapter and connector are located behind the cover on the left.

Use only the original 18V, 24W adapter.
Using another adapter will damage the system. The warranty will void.



Plug the connector of the adapter into the connector located behind the cover. This is a cable with a length of several centimeters. Then connect the adapter to a 230V socket. After finishing you can store the adapter and cable behind the cover.

3.11 Use of the Video out

The MiniFlex, has besides the optional DVR recorder with display, also an possibility to view the video or record it in a different way. Behind the cover on the right side of the system a cable with a length of several centimeters is attached to a BNC female connector. This transmits a video out signal. Extension cables can be ordered from your supplier.



3.12 Indication of the LED's

Adapter not connected

System on, Battery charge 50% -100%	
System on, Battery charge 20% - 49%	
System on, Battery charge 10% - 19%	
System on, Battery charge 0% - 9%	+ Beep

Adapter connected

System on	
System off, Battery charge <100%	
System off, Battery charge 100%	

Accu error

Return the system to your supplier



Pay attention:

- Do not store the MiniFlex with low battery charge.
- Check the battery charge of the MiniFlex every three months and charge the battery when empty.

4. Maintenance

Maintenance is a very important aspect. If the system is properly maintained, the probability of failure and / or malfunction is smaller and the system will last longer.

A simple but very useful tip is to clean the system always good and keep it this way. By doing so you will reduce the chance of malfunctions. Make sure there cannot be dirt or other debris on the camera and moving parts. We recommend cleaning with a damp cloth or brush. Never clean the display to prevent scratches.

The reel should **never** be sprayed with water or a pressure washer.



The system should be stored in a ventilated, non-humid chamber at room temperature.

If you are not using the system, make sure it is stored in a dry and ventilated area. Do not store the system for a long period of time with an (almost) empty battery. This can shorten the life expectancy of your battery.

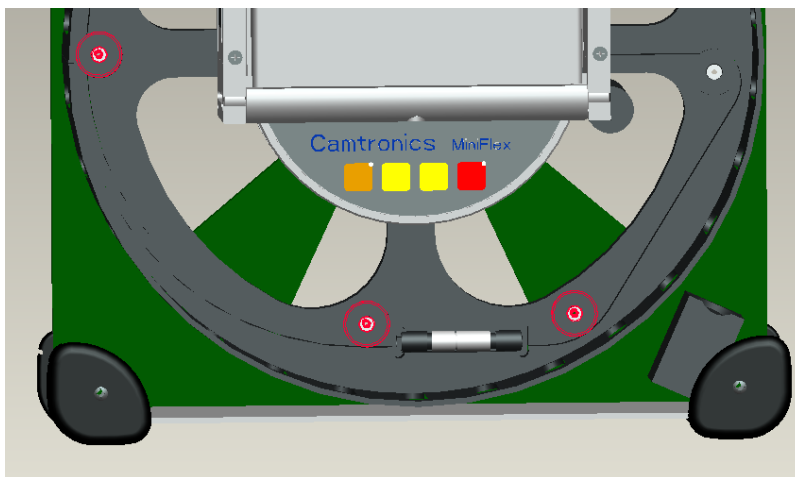
We recommend to have your system checked by your supplier every year. During this check, the system will be examined for functioning, any wear and safety.

4.1 Replacing of the cable

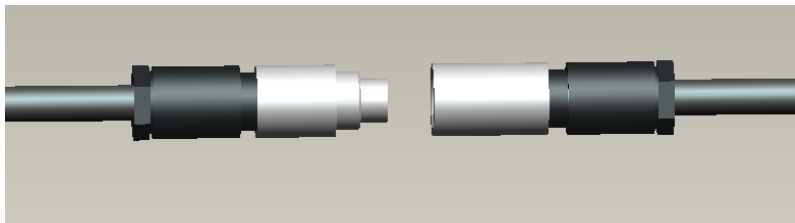
Attention !: By default the MiniFlex is tuned for cable lengths between 10 m and 20 m. There are also variants with a shorter or longer cable. Make sure that the new cable length is equal to the old cable length. If uncertain contact your supplier.



1. Ensure that the system is off.
2. Unscrew the camera head from the cable.
See instruction "Replacing the camera head"
3. Pull the entire cable from the drum till the first disc.



4. Unscrew the 3 discs (see picture above).
5. Pull the connection outside the drum.



6. Screw the connector of the camera from the connector of the drum.
7. Screw the new cable to the connector of the drum.
8. Insert the connection back in the space provided.
9. Place de cable in the chute.
10. Screw the discs back to its original position.
11. Wind up the cable into the drum.
12. Attach the camera to the cable.
13. Turn on the system.

4.1 Replacing the camera head

The camera head can be easily disassembled and assembled to the flexible cable.

Attention !: make sure the system is turned off during disassembling and assembling of the camera head. Perform these actions only in a clean and dry environment .

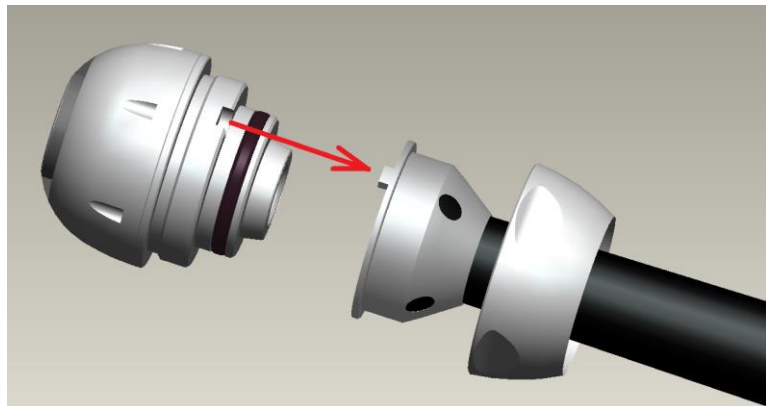
Disassembling

Keep the front of the camera head fixed and unscrew the rear ring.

Assembling

Make sure the parts are clean and dry. Caution is advised when cleaning the spring contact pins in the rubber part.

Line up the protruding tab on the rubber part with the recess in the camera head. Push the camera head and rubber part together in that position and keep it in position while tightening the ring completely. If well done there will be hardly a gap between camera and ring. This can be maximal up to 0.2 mm. Make sure that you are convinced that no moisture and / or dirt is embedded. The system can be switched on.



5. Service & Warranty

For service to the system, you should always contact your dealer.

Service on the system may only be performed by a designated dealer, authorized service technician or by the manufacturer. If repairs are performed and / or adjustments are made by an unauthorized technician the warranty on the system will void.

Warranty provisions / term funds under the terms of your dealer.

System warranty does not cover:

- Short circuit / lightning strike
- Cable Break
- Water damage
- Improper use and / or destruction
- Failure to follow these instructions, in particular the maintenance of the system (Chapter 4)

5.1 Troubleshooting

Stripes in view

Check if the transmitter is turned on and turn it off if necessary.

System does not switch on

The battery pack is empty. Plug the adapter to a power outlet.

Camera is not taking curves

Apply a little acid-free Vaseline on the flex part behind the camera.

System does not respond

Press the hidden reset button.



6. Specifications

Camera head

Material housing: stainless steel
Diameter: 19,5 mm (bullet shape)
Length: 23 mm (fitted)
Viewing angle: 105° diagonal
Lens: f=2,1 mm / F10.0
Focus: fixed
Glass: sapphire glass 1 mm
Camera: Color CMOS 400 TV-lines
Sensitivity: 1 Lux
Lighting: 12 white high power LEDs
Transmitter: 512 Hz
Water resistance: 3 bar

System

Dimensions: 395 mm x 470 mm x 107 mm
Weight (including DVR unit): 8.6 kg
Operating on battery: up to 7 hours
Power in: 230V AC
Operating temperature: -10 ° C to 45 ° C
Storage temperature: -10 ° C to 60 ° C
Menu languages: Dutch / English / German / French

Cable: Combi cable Ø 5,5 mm 15 m (optional other lengths available)

DVR with display (optional without available)
Display size: 5.6 inch color
Display resolution: 640x480 pixels
Recording resolution: 720x576 pixels
Storage: SD card (USB Adapter)

The specifications, design, way of acting and illustrations in this manual are not binding. We reserve the right to make changes without prior notice.

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