



Instruction Manual  
**Top-Line Video Endoscope 8.0**

Video endoscope for machines, plants and cavities

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## 1. Safety

Knowledge of the operating instructions is a prerequisite for equipment operation.

### 1.1 Symbols Used

The following symbols are used in this instruction manual:



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.



Indicates a situation which, if not avoided, may lead to property damage.



Indicates a user action.



Indicates a user tip.

### 1.2 Warnings



Do not use this product in an explosive atmosphere.

- > Death by explosion
- > Danger of injury



Do not look directly into the end of the semi-flexible video probe.

- > Danger of injury, eye injury from bright light



Do not forcibly twist or elongate the semi-flexible video probe or bend it beyond its normal bend radius.

- > Damage or destruction of the video endoscope

Avoid a heavy shock on the semi-flexible video probe.

- > Damage or destruction of the video endoscope, break of the glass window or the video sensor at the probe tip

Keep the device away from acid or alkaline solutions, oil or gasoline, and do not use it in an atmosphere containing volatile / flammable vapors.

> Damage or destruction of the video endoscope

Do not use the video endoscope in direct sunlight.

> Display on monitor can only bad or not recognized.

### **1.3 Notes on CE Identification**

The following applies to Top-Line Video Endoscope 8.0:

- EU directive 2014/30/EU
- EU directive 2011/65/EU, "ROHS", category 9

Products which carry the CE mark satisfy the requirements of the EMC regulation 2004/108/EC 'Electromagnetic Compatibility' and the European standards (EN) listed therein. The EC declaration of conformity is kept available according to EC regulation, article 10 by the authorities responsible at

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The systems satisfy the requirements if they comply with the regulations described in the instruction manual for installation and operation.

## 1.4 Proper Use

The Top-Line Video Endoscope 8.0 is used for observation and examination of the inner life of machines, plants and cavities.

- The video endoscope is not suitable for medical use.
- The system may only be operated within the technical data, see Chap. 2.2.
- Use the video endoscope in such a way that in case of malfunctions or failure personnel or machinery are not endangered.
- Take additional precautions for safety and damage prevention for safety-related applications.

## 1.5 Proper Environment

- Protection class: IP 53
- Operating temperature:
  - Video monitor: -20 ° up to 60 °C (-4 ° up to +140 °F)
  - Semi-flexible video probe: -20 ° up to 70 °C (-4 ° up to +158 °F)
- Storage temperature:
  - Video monitor: -20 ° up to 60 °C (-4 ° up to +140 °F)
  - Semi-flexible video probe: -20 ° up to 70 °C (-4 ° up to +158 °F)
- Humidity: At 40 °C to 95 % (non-condensing)

## 2. Functional Principle, Technical Data

### 2.1 Short Description

This portable semi-flexible video endoscope provides good image reproduction. The robust semi-flexible video probe consisting of a plastic coated stainless steel sheath can be used with an angle of view of 0° or with a 90° prism head.

The Video Endoscope consists of two main parts:

- the Portable Video Monitor (PVM) and
- the semi-flexible video probe.

A controllable LED light source and the camera are integrated into the probe tip. Individual images or movie sequences can be stored and played back on the SD card.

### 2.2 Technical Data

Model	Top-Line Video Endoscope 8.0
<b>Video monitor</b>	
Power	DC, 5 V
Display	3.5 " TFT LCD monitor, 320 x 240 pixels
Interface	Mini USB 1.1 / AV Out
Battery	Rechargeable Li-Polymer battery (3.7 V)
Video output format	NTSC & PAL
Recording Medium	SD card (capacity up to 2 G)
Still Image Storage Format	JPEG (640 x 480)
Video Recording Storage Format	ASF (320 x 240)
Language	English and option (one language)
Operating temperature	-20 ° up to 60 °C (-4 up to +140 °F)
Storage temperature	-20 ° up to 60 °C (-4 up to +140 °F)
While Charging Battery Temperature	0 ° up to 40 °C (+32 up to +104 °F)



<b>Model</b>	<b>Top-Line Video Endoscope 8.0</b>
<b>Semi-flexible video probe</b>	
Image sensor	CMOS image sensor
Resolution (dynamic/static)	320 (H) x 240 (V) / 640 (H) x 480 (V)
Probe tip diameter	5.5 mm
Frame rate	~30 fps
Exposure	Automatic
White balance	Fixed
Field-of-view (FOV)	50 °
Depth-of-field (DOF)	15 - 100 mm
System magnification	6 x at 15 mm
Light source	4 white LED
Operating temperature	-20 ° up to 70 °C (-4 ° up to +158 °F)
Storage temperature	-20 ° up to 70 °C (-4 ° up to +158 °F)

### 2.3 Endoscope Types

<b>Outer diameter</b>	<b>Effective length (mm)</b>	<b>Order number</b>
8	1500	20751788
	3000	20751795
	6000	20752088
	12000	20752088

The semi-flexible video probes can be ordered separately and connected to the monitor.

### 3. Delivery

#### 3.1 Unpacking

1 Video endoscope, consists of video monitor and semi-flexible video probe

1 90 ° Prism head

1 SD memory card

1 AV cable

1 USB cable

1 Power supply charger

1 robust aluminum case

1 Instruction Manual

The probes can be ordered and combined separately, see Chap. [A 1.1](#).

➡ Check the delivery for completeness and shipping damages immediately after unpacking.

➡ In case of damage or missing parts, please contact the manufacturer or supplier.

#### 3.2 Storage

- Storage temperature:

▪ Video monitor: -20 ° up to 60 °C (-4 up to +140 °F)

▪ Semi-flexible video probe: -20 ° up to 70 °C (-4 ° up to +158 °F)

- Humidity: At 40 °C to 95 % (non-condensing)

• **I** Store the video endoscope in a dry, adequately ventilated area.

#### 4. Description

The Top-Line Video Endoscope 8.0 consists of two main parts:

- the Portable Video Monitor (PVM) and
- the semi-flexible video probe.

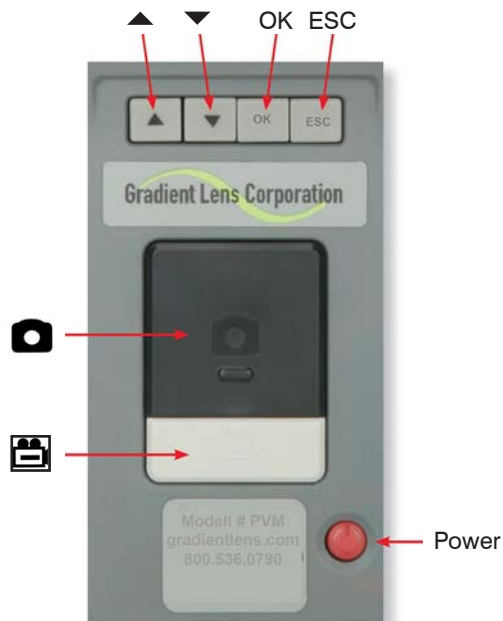
A controllable LED light source and the camera are integrated into the probe tip. Individual images or movie sequences can be stored and played back on the SD card.



*Fig. 1 Portable video monitor*



The video monitor displays live video and captured still or video images on its built-in LCD display. It can output live video to an external monitor via a Composite connector and the included cable. Stored images can be downloaded to a computer via the USB port and included cable, or through the removable SD memory card, see Chap. 6.6.

#### 4.1 Control Elements



- ➡ Turn the power of video monitor on by pressing and holding the power button for 2 - 5 seconds. The Gradient Lens Logo will appear. The word **CAMERA** and the battery and memory status indicators will then appear for a few seconds. When these indicators disappear the unit is in Normal Mode, displaying a live image from the camera at the tip of the semi-flexible video probe.
- ➡ To turn the unit off, push and hold the power button for 1 - 2 seconds until it turns off. The control elements are described below, see Chap. 4.2.

## 4.2 Operating Menu

Button	Normal mode	Image Review mode	Menu mode
▲	Switches to Image Review mode and scrolls reverse through still images and videos.	Scrolls to previous still image or video.	Scrolls up through selections.
▼	Switches to Image Review mode and scrolls forward through still images and videos.	Scrolls to next still image or video.	Scrolls down through selections.
OK/	Enters main menu.	Deletes current image or video.	Confirms selection.
ESC	Displays battery charge level.	Returns to Normal mode and displays CAMERA and battery charge level.	Returns to Normal mode and displays CAMERA and battery charge level.
	Captures a still image (jpeg). While recording a video clip, pressing this button will stop the recording process (PHOTO button is duplicate of this).	The current video clip is played/ paused/ continued.	Returns to Normal mode.
	With this button, the video recording is started/ stopped (REC button has the same function)	Returns to Normal mode and displays CAMERA and battery charge level.	Returns to Normal mode.

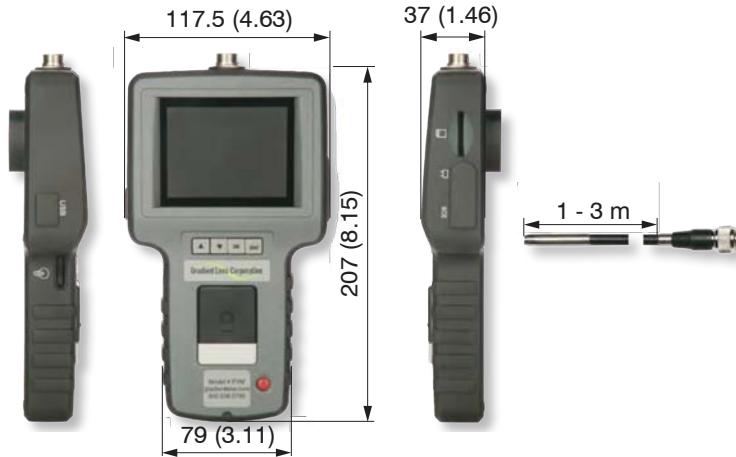
## 5. Mounting

- ➡ Connect the video probe to the video monitor, see [Fig. 2](#).



*Fig. 2 Mounting semi-flexible video probe to video monitor*

- ➡ Hold the 12-pin connector on the end of the semi-flexible video probe against the female connector on the video monitor.
- ➡ Rotate the connector until it lines up properly so the pins will enter the socket.
- ➡ Then tighten down the knurled ring to secure.



*Fig. 3 Dimensional drawing video endoscope, dimensions in mm (inches), not to scale*

## 6. Operation

### 6.1 Installing the SD Memory Card

- Take care to insert the SD card with the correct orientation.



*Fig. 4 Installing the SD Memory Card*

Contacts should be visible when inserting the card with the video display screen facing you.

**NOTICE**

Do not remove the SD memory card during capture operations.

> Data will be lost and the memory card may be damaged.



## 6.2 Adjust Light Intensity

The Top-Line Video Endoscope 8.0 has a fully integrated LED light source.

Control the intensity of the LED output using the thumb wheel light switch on the main unit.



*Fig. 5 Adjust light intensity*

### 6.3 Charging the Video Monitor

- ➡ Connect the charger cable to the female cable connector labeled **DCIN** on the video monitor.
- ➡ Then plug the charger into a 100 - 240 V, 50/60 Hz outlet.

Full charge takes about 2 hours. The video monitor will not operate with the charger plugged in when the battery is nearly fully charged.

**i** There is no charging indicator light. The battery status indicator will appear in the display when booting up.



*Fig. 6 Charger cable and DCIN female cable connector*

## 6.4 Operating Modes

There are three operating modes:

### Normal Mode

Displays current camera input and date/time. From this mode, still pictures and videos are captured.

### Image Review Mode

Displays captured still pictures and video.

### Menu Mode

File maintenance, system settings, etc.

#### 6.4.1 Normal Mode

The unit powers up in Normal Mode.

From Normal Mode:

- ➡ Enter Image Review Mode by pressing ▲ or ▼.
- ➡ Enter Menu Mode by pressing OK.
- ➡ Return to Normal Mode from any other mode by pressing ESC.

##### 6.4.1.1 Capture a Still Photo

- ➡ In Normal Mode, press the large black ▲ button.

If you hold the button down, the captured image will remain displayed until the button is released.

Still photo files are saved a jpg.

##### 6.4.1.2 Capture a Video Clip

- ➡ In Normal Mode, press the gray  button to start recording.

The elapsed time display will be visible the lower left of the image to indicate that you are recording.

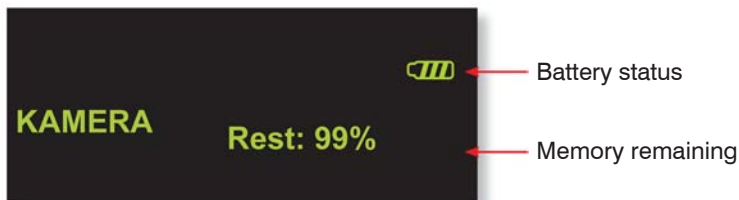
- ➡ Press the  button again to stop recording and save the clip.

Pressing the  button will also stop the recording process and save the clip. Video files are saved as .ASF.

### 6.4.1.3 Memory and Battery Charge Indicators

➡ In `Normal Mode`, press `ESC` to display the memory and battery indicators.

Memory capacity remaining is displayed as a percentage. Low battery power is indicated by the battery status indicator depicting a less than full charge and turning yellow.



## 6.4.2 Image Review Mode

### 6.4.2.1 Viewed Captured Photos or Video Clips

➡ Push the `▲` or `▼` button to enter `Image Review Mode`.

You can scroll forward or back through the photos and videos using the `▲` or `▼` buttons.

Video files may be played, paused, and resumed by pressing the `⏸` button. While a still or video file is displayed (video not playing), pressing the `OK` button will bring up the `DELETE` menu.

➡ Select `YES` and press `OK` to delete the file.

➡ To exit `Image Review Mode`, press `ESC`.

### 6.4.2.2 Delete a Single File

- Press ▲ or ▼ to enter Image Review Mode.
  - Scroll to the required file using the ▲ or ▼ buttons.
  - When the required photo or video file is displayed, press OK.
- A frame will be displayed to confirm the delete function.
- Select YES with ▲ or ▼ YES and press OK to confirm.



### 6.4.3 Menu Mode

#### 6.4.3.1 Display Main Menu

- Press the OK button to display the Main Menu in the Normal Mode as follows:

DELETE ALL  
 VIDEO OUTPUT  
 DATE/TIME SETUP  
 LANGUAGE  
 VIDEO FORMAT  
 AUTO POWER OFF



You can scroll through the functions on this menu using the ▲ and ▼ buttons, and select the required function using the OK button.

#### 6.4.3.2 Delete All

Deletes all saved files, video and still photos. When this function is selected, the unit displays a frame which includes two options.

- Use ▲ and ▼ to select YES or NO and press OK to confirm.





### 6.4.3.3 Video Output

This function transfers the video signal to and from an auxiliary display using the supplied cable. The unit will automatically switch to the auxiliary display when the cable is connected, and will revert to the built in display when the cable is disconnected. This function will allow you to toggle between displays if both are connected.

➡ Simply press **OK** while this function is selected to toggle between displays.

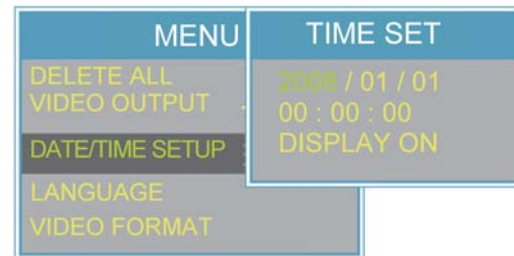


### 6.4.3.4 Date/Time Setup

➡ Select this function and use ▲ and ▼ buttons to select year/month/day or hour/minute/second fields, then press the  and/or  buttons to scroll through the numbers to set the date and time.

If **DISPLAY** indicates **ON** status, the date and time will be displayed on the screen. Captured images will always include a time/date stamp.

➡ Confirm changes by pressing **OK**.




### 6.4.3.5 Language

If your unit is supplied with a language option this function will allow you to select English or the optional language.

### 6.4.3.6 Video Format

This function allows you to choose the format of the output video signal for an auxiliary display. The options are NTSC and PAL.

➡ Use the ▲ and ▼ to select and press OK to confirm.

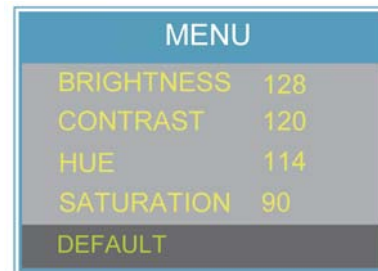
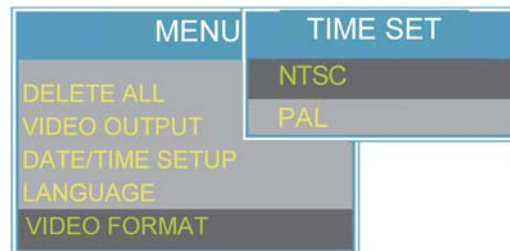
While the TV OUTPUT options are displayed, pressing the  button will display the FACTORY SETUP menu. Here the factory settings for the video display may be changed or reset.

➡ Use ▲ and ▼ and confirm with OK to select the property to be changed.

➡ Then use ▲ and ▼ to change the setting and confirm with OK.

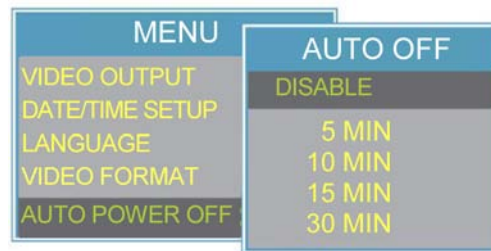
Holding the ▲ or ▼ buttons down for a couple of seconds will cause settings to change more rapidly.

Default restores the original factory settings.



### 6.4.3.7 Auto Power OFF

- ➡ Select this function by pressing the **OK** button and use the **▲** and **▼** buttons to select time for Auto Power Off or to disable the Auto Power Off function.
- ➡ Press **OK** to confirm.



### 6.5 Connecting to an Auxiliary Display

- ➡ Use the included AV cable to connect your auxiliary display to the jack on the side of the video monitor.
- ⓘ The display must accept a composite input.

The unit will automatically switch to the auxiliary display when the cable is connected. You may switch between the displays by using the **VIDEO OUTPUT** function on the main menu. The video monitor display and the external display cannot be viewed at the same time.



Fig. 7 AV cable



Fig. 8 Video output connection

The video output format to the auxiliary display may be switched between **NTSC** and **PAL** by using the **VIDEO FORMAT** function on the main menu.



## 6.6 Transferring Image Files to a PC

The video monitor can download saved images through its USB port.

- ➡ Plug in the Mini USB 1.1 connector of the included USB cable into the USB port on the video monitor.
- ➡ Then plug the other end into a USB port on your PC and open the drive associated with the chosen port.

The stored images are contained in the location X:\DCIM\100MEDIA where X is the drive letter. JPGs can be viewed with Windows Picture Viewer, and .ASF video files play in Windows Media Player.



*Fig. 9 USB cable*



*Fig. 10 Connection USB cable to video endoscope*

Alternatively, the SD memory card may be removed from the video monitor and inserted into your computer's card reader.

### **NOTICE**

Do not remove the SD memory card during capture operations.

- > Data loss, damage of the memory card



We recommend 80X SD cards or faster for best quality video clips.

## 7. Troubleshooting

### Nothing on LCD screen

Battery power too low.

➡ Recharge the battery.

### No image - but words and status symbols on LCD display

Semi-flexible video probe is not connected securely.

➡ Reattach the semi-flexible video probe.

Cannot capture photos or videos

No SD card inserted.

➡ Insert the SD card.

### Shut down

Battery has discharged below operating threshold.

➡ Recharge battery.

### Device does not respond

➡ Turn the power off by pressing and holding the power button for about 2 to 5 seconds.

➡ If this does not work, press the reset button located on the device side, see [Fig. 11](#), with a non-conductive probe, e.g. a tooth stick.



*Fig. 11 Back side of the video monitor with reset button*

## **8. Cleaning**

Use cotton swabs and lens cleaning solution or isopropyl alcohol (rubbing alcohol) to clean the semi-flexible video probe.

**NOTICE**

Do not use chemical cleaners or solvents to clean the plastic surfaces of the video monitor or semi-flexible video probe.

> Damage or destruction of the video monitor and/or of the semi-flexible video probe

## 9. Warranty

All components of the device have been checked and tested for perfect function in the factory. In the unlikely event that errors should occur despite our thorough quality control, this should be reported immediately to MICRO-EPSILON Eltrotec.

The warranty period lasts 12 months following the day of shipment. Defective parts, except wear parts, will be repaired or replaced free of charge within this period if you return the device free of cost to MICRO-EPSILON Eltrotec. This warranty does not apply to damage resulting from abuse of the equipment and devices, from forceful handling or installation of the devices or from repair or modifications performed by third parties.

No other claims, except as warranted, are accepted. The terms of the purchasing contract apply in full. MICRO-EPSILON Eltrotec will specifically not be responsible for eventual consequential damages. MICRO-EPSILON Eltrotec always strives to supply the customers with the finest and most advanced equipment. Development and refinement is therefore performed continuously and the right to design changes without prior notice is accordingly reserved. For translations in other languages, the data and statements in the German language operation manual are to be taken as authoritative.

## 10. Service, Repair

In the event of a defect on the video endoscope please send the effected parts for repair or exchange.

In the case of faults the cause of which is not clearly identified, the whole measuring system must be sent back to:

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eltrotec@micro-epsilon.de  
www.micro-epsilon.com

## 11. Decommissioning, Disposal

➡ Remove the semi-flexible video probe from the video monitor.

Incorrect disposal may cause harm to the environment.

➡ Dispose of the device, its components and accessories, as well as the packaging materials in compliance with the applicable country-specific waste treatment and disposal regulations of the region of use.

## Appendix

### A 1 Accessories

#### A 1.1 Probes

Designation		Effective length (mm)	Description	Order number
Eltrotec Top-Line Endoscope probe 8.0	-1500	1500	Outer diameter 8 mm	20752175
	-3000	3000		20752176
	-6000	6000		20752177
	-12000	12000		20752178







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