



Operating Instructions



Industrial Cameras

Operating Instructions

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Translation of original operating instructions

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1. Introduction

1.1 About this document

These operating instructions are valid for all industrial cameras (with housing) manufactured by The Imaging Source Europe GmbH.

The following series are covered:

- USB 3.1: 38U/37U series; Aptiris series
- USB 3.0: 33U/27U/23U series; AFU series; 33U-Polarsens; 42-MP
- USB 2.0: 32U series; 2U series; AFU series
- GigE: Visus series; 38G/33G/23G series; Z series; 33G-Polarsens

1.2 Technical Reference Manuals



Detailed information on dimensions, interfaces and other technical parameters of your industrial camera can be found in the respective Technical Reference Manual on our website <https://www.theimagingsource.com>.



How to access the Technical Reference Manual

1. Open the product overview:
<https://www.theimagingsource.com/en-de/product/industrial/>.
2. Select the desired camera series and type.
3. Select the "Documentation" tab.
4. Click on the Technical Reference Manual.

1.3 Target group

This manual is intended for experienced users who use industrial cameras for image capture.








1.4 Warning notes in the document

Warning notes indicate safety-relevant information.

If there is a risk to a person or an object, you will find in chapter 2 "Safety" warnings and action sequences before an action step.

Depending upon the degree of danger, the warning notes are displayed in different danger levels:

	Danger! Indicates an exceptionally dangerous situation. If you ignore this warning, serious irreversible injuries or death will result.
	Warning! Indicates an exceptionally dangerous situation. Failure to observe this warning may result in serious irreversible injuries or death.
	Caution! Indicates a hazardous situation. Failure to observe this warning may result in minor or moderate injuries.
	Notice! Indicates a material hazard. Failure to observe this warning may result in damage to property.
	Indicates useful information.

1.5 Support

Solutions to frequently asked questions can be found in our knowledge database:
<https://www.theimagingsource.com/en-de/support/knowledge-base/>

In case you need help with our products (e.g., technical problems, etc.), please contact our support team:

Mail: support@theimagingsource.com

Phone: +49 421 335910

Software and drivers for supported operating systems, e.g., Windows, Linux, etc.:
<https://www.theimagingsource.com/en-us/support/download/>



2. Safety

Please read the safety instructions in this chapter carefully before installing and using the camera. The Imaging Source Europe GmbH accepts no liability for damage to property or personal injury caused by non-observance or improper handling.

2.1 Intended use

Industrial cameras from The Imaging Source Europe GmbH are intended exclusively for the following use:

The camera may only be used to record an image or video stream with transmission to a suitable receiver. For extended camera control functions, the camera has one or multiple digital input(s) and one or multiple digital output(s) (depending on the camera model).

The device is intended for commercial or industrial use only.

The camera is designed for operation in a permanently mounted state and must not be opened.

Any other use is not an intended use. Any modification, revision or external repair will void the guarantee and / or warranty. The manufacturer's assurance of product conformity will also be void.

2.2 Electromagnetic compatibility

In terms of EMC, the product is suitable for use in the following application areas:

- Industrial
- Residential, business/commercial, small businesses



2.3 Safety instructions

NOTICE**Material damage due to improper use!**

The camera is not designed for unprotected outdoor use and can be damaged by excessive moisture or wetness.

- The camera may only be used indoors.

NOTICE**Material damage due to improper installation or incorrect handling of the camera!**

Improper installation or incorrect handling of the camera can result in damage to the camera.

- The camera may only be used when it is securely mounted.
- Avoid knocking and dropping the camera.
- Do not open the camera. The camera does not contain any components that require maintenance.

⚠ CAUTION**Risk of burns from hot surfaces!**

Skin contact with hot surfaces can cause severe burns to the skin.

The surface temperature must not exceed 50°C during operation.

- Ensure free air circulation and avoid heat build-up, which can be caused by enclosures or installation in other housing. Appropriate measures for this purpose are using a heat-dissipating metal construction or the targeted supply of cooling air flow.
- If you cannot ensure this, you must make the potential hazard visible, e.g. with a warning sticker indicating the potential hazard.



3. Product description

The high-quality and robust industrial cameras manufactured by The Imaging Source Europe GmbH are used for image capture in many areas such as automation, monitoring, quality control, logistics, barcode recognition and evaluation and other applications.

Modern CMOS area image sensors with different resolutions and sometimes special functions provide images that are transmitted to the processing computers via standard interfaces such as USB 2, USB 3 and Gigabit Ethernet.

A distinction is made between the following CMOS sensors

- Rolling shutter sensors
the image is exposed and output line by line.
- Global shutter sensors
the entire image is exposed at the same time and then output line by line, which prevents motion artifacts in fast-moving scenes.

The lenses required for imaging are usually attached externally (see chapter 5 "Installation and commissioning ") or are already integrated in the camera (Z series).

The power supply for USB devices is provided via the standard interface and for Gigabit Ethernet either via Power over Ethernet (PoE) or an external power supply.

The cameras have no operating elements and are set and operated exclusively via the settings in the application programs (e.g., IC Capture, IC Imaging Control SDK, etc.) or the vision standards (USB3 Vision, GigE Vision and GenICam).

The USB 2 cameras also support the UVC (USB Video Class) standard.



4. Transportation, packaging and storage

4.1 Transportation and storage

NOTICE

Material damage due to improper transportation or storage!

Improper transportation or storage can lead to damage to the camera, especially to the housing and connections.

- Observe the environmental conditions specified below.
- Transport the cameras carefully. Avoid impacts.
- Protect the cameras from direct sunlight, moisture and shocks during storage.

Observe the following ambient conditions when **transporting** and **storing** the camera:

- Temperature range: -20°C to 80°C
- Relative humidity: 20% to 95% (non-condensing)

4.2 Checking the delivery

► **How to check the delivery**

1. Check whether the packaging is damaged.
2. Allow sufficient time for the camera to acclimatize.

NOTICE

Material damage due to condensation!

If there is a large temperature difference between the indoor and outdoor areas, condensation may occur on the device. To prevent this, wait until the camera has reached ambient temperature.

3. Remove the camera from the packaging.
4. Check the camera for damage.
5. Connect the camera as described in the chapter 5 "Installation and commissioning".

If there is any damage ...

1. Contact the support of The Imaging Source Europe GmbH (see chapter 1.5 "Support").
2. Do not connect the camera in this case!



5. Installation and commissioning

NOTICE

Material damage due to improper installation or incorrect handling of the camera!

Improper installation or incorrect handling of the camera can result in damage to the camera.

- The camera may only be used when it is securely mounted.
- Avoid knocking and dropping the camera.
- Do not open the camera. The camera does not contain any components that require maintenance.

5.1 Requirements

- Camera is free from damage
- Find out about the specifications that must be observed during installation. These can be found in the Technical Reference Manual of the respective camera (see chapter 1.2 "Technical Reference Manuals").

The industrial cameras manufactured by The Imaging Source Europe GmbH may only be operated with a power supply that meets the system-specific requirements (see USB specification or PoE specification according to IEEE 802.3af or IEEE 802.3at).

For PoE cameras, an external supply voltage can also be used instead of PoE. In this case, make sure that the power supply unit used complies with the ES1/PS2 power classes.

When operating on a USB hub, make sure that the hub has its own power supply (self-powered) and complies with the USB specification.

Only operate the cameras under the approved ambient conditions:

- Housing temperature (during operation): -5°C to 50°C
- Relative humidity: 20% to 80% (non-condensing)



5.2 Installation

▶ How to mount the camera

1. If necessary, mount the lens depending on the connection type and ensure that it is positioned correctly. Observe the following instructions:

- **C/CS mount**

Ensure that the required length of the lens mount is used for the existing lens.

The 5mm extension ring on the lens mount of the cameras is only required for C-mount lenses. For CS-mount lenses, the extension ring must be removed before mounting the lens.

For camera models with a fixed C-mount connection, CS-mount lenses cannot be used due to their design.

- **M12 S-mount lenses**

- Screw the adapter, which is available for the use of M12 S-mount lenses, into the CS-mount lens thread (this adapter cannot be used for C-mount connections).
- Screw the M12 S-Mount lens into the adapter and adjust the lens to the required focus.
- To position the lens permanently, use the lock nut on the adapter.



With AFU or Aptiris models, a teflon tape is wrapped around the M12 thread for positioning before the permanent positioning is set. The resulting difficult mounting of the M12 S-Mount lens allows the position to be changed, but also prevents the desired permanent position from being changed by vibrations or shocks. If this is not sufficient in certain cases, the M12 S-mount lens can also be permanently glued.

2. Mount the camera in the desired position. There are different mounting methods depending on the camera model:

- Mounting via tripod adapter with M6 or ¼ 20 UNC tripod thread
- Mounting via the circumferential threaded holes in the front and / or rear

Please refer to the drawings in the Technical Reference Manual of the respective camera (see chapter 1.2 "Technical Reference Manuals").



3. Finally, establish the connection to the computer using the plug connector or connection cable (USB, GigE).

NOTICE**Material damage / functionality!**

Only use approved plug connectors / connection cables to avoid material damage and to ensure the functionality of the camera connection.

5.3 Commissioning

Commissioning consists of setting up the software and configuration.

▶ How to take the camera into operation

1. Ensure that the electrical wiring complies with the specifications in the Technical Reference Manual (see chapter 1.2 "Technical Reference Manuals"). Incorrect wiring can lead to a defect in the electronics.
2. Download the appropriate drivers from The Imaging Source Europe GmbH website and install them.
3. Install the required software, e.g., IC Imaging Control SDK, IC Imaging Control GenTL drivers, IC Capture, etc.
4. Open the software and make sure that the camera is recognized.



To establish a connection to GigE cameras, it is necessary that the camera IP and the network adapter are in the same subnet. If no connection is possible when the camera is first connected, you must configure a suitable IP address using e.g., the IC4 Device Manager (part of the IC Imaging Control SDK).

5. Open the camera and set the required parameters for your specific application.



6. Operation

⚠ CAUTION**Risk of burns from hot surfaces!**

Skin contact with hot surfaces can cause severe burns to the skin.

The surface temperature must not exceed 50°C during operation.

- Ensure free air circulation and avoid heat build-up, which can be caused by enclosures or installation in other housing. Appropriate measures for this purpose are using a heat-dissipating metal construction or the targeted supply of cooling air flow.
- If you cannot ensure this, you must make the potential hazard visible, e.g. with a warning sticker indicating the potential hazard.

NOTICE**Material damage due to improper operation!**

Improper operation can cause damage to the camera, especially to the housing and connections.

- Observe the environmental conditions specified below.
- Protect the cameras from direct sunlight, moisture and shocks during operation.

6.1 Operation

The industrial cameras from The Imaging Source Europe GmbH are designed for continuous operation.

6.2 Operating elements

The industrial cameras have no operating elements. They are set and operated exclusively via the settings in application programs (e.g., IC Imaging Control SDK, IC Capture) or the vision standards (USB3 Vision, GigE Vision and GenICam).



7. Troubleshooting

In case you need help with our products (e.g., technical problems, etc.), please contact our support team:

Mail: support@theimagingsource.com

Phone: +49 421 335910

8. Maintenance

The industrial cameras are maintenance-free.

9. Disposal

WEEE Directive

Directive 2002/96/EC (WEEE Directive) of the European Union regulates the disposal of waste electrical and electronic equipment. This directive is only valid in the member states of the European Union (WEEE Reg. No. DE 79500188).

Separate collection of waste equipment

Electrical and electronic equipment that have become waste are referred to as waste equipment. Owners of waste equipment must dispose of it separately from unsorted municipal waste. In particular, waste appliances do not belong in household waste, but in special collection and return systems.

Batteries, rechargeable batteries and lamps

As a rule, owners of waste electrical and electronic equipment (WEEE) must separate used batteries and accumulators that are not enclosed in the WEEE, as well as lamps that can be removed from the waste equipment without causing damage, from the WEEE before handing them over to a collection point. This does not apply if waste equipment is prepared for reuse with the participation of a public waste management authority.

Options for returning waste equipment

We cooperate with several qualified recycling companies to create opportunities for the return of old devices. If a device manufactured by the Imaging Source Europe GmbH has reached the end of its useful life and you would like to return it, please contact:

Germany	Other EU countries
https://www.take-e-way.de/leistungen/elektrogesetz-weee-elektrog/b2b-altgeraete-ruecknahme-entsorgung/ Fill out the questionnaire.	info@theimagingsource.com



Data protection notice

Waste equipment often contains sensitive personal data. This applies in particular to information and telecommunications technology devices such as computers and smartphones. In your own interest, please note that each end user is responsible for deleting data on the old devices to be disposed of.

Meaning of the "crossed-out garbage" symbol

The symbol of a crossed-out garbage regularly shown on electrical and electronic equipment indicates that the respective device must be collected separately from unsorted municipal waste at the end of its service life.