Operating Instructions

IP67 Industrial Cameras

Operating Instructions

THE IMAGINGSOURCE
TECHNOLOGY BASED ON STANDARDS

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Translation of original operating instructions

Content

1. Introduction

1.1 About this document

These operating instructions are valid for all IP67 industrial cameras (with housing) manufactured by The Imaging Source Europe GmbH.

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/ (e.g., for IP67 Gigabit Ethernet cameras) or

   https://www.theimagingsource.com/en-us/embedded/ (for IP67 FPD-Link III and GMSL2 cameras)
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	**Danger!** Indicates an exceptionally dangerous situation. If you ignore this warning, serious irreversible injuries or death will result.
⚠ WARNING	**Warning!** Indicates an exceptionally dangerous situation. Failure to observe this warning may result in serious irreversible injuries or death.
⚠ CAUTION	**Caution!** Indicates a hazardous situation. Failure to observe this warning may result in minor or moderate injuries.
NOTICE	**Notice!** Indicates a material hazard. Failure to observe this warning may result in damage to property.

ℹ 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 and Linux:
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 a digital input and digital output (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.

NOTICE	**Notice!** The ISO 20653 certified IP rating is only guaranteed when using the correctly mounted original lens tube and the IP67 FAKRA or IP67 M12 X-coded Gigabit Ethernet cable delivered by The Imaging Source Europe GmbH. Only under these conditions, can the camera be operated for up to 30 minutes at a maximum depth of 1 m (IP6K7) or protected against strong water jets under increased pressure (IP6K6).

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

NOTICE	**Notice!** To following applies to GMSL2 IP67 cameras by The Imaging Source Europe GmbH: **EN 55032 Class A**

Operation of this equipment in a residential environment could cause radio interference.

FCC 15B Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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 IP67 industrial cameras manufactured by The Imaging Source Europe GmbH are used for image capture in many areas such as automation, agriculture, monitoring, quality control, logistics, barcode recognition and evaluation and other applications.

Modern CMOS area image sensors with different resolutions provide images that are transmitted via FPD-Link III, GMSL2, Gigabit Ethernet or similar interfaces using IP67 FAKRA Z-coded coaxial or IP67 M12 X-coded Ethernet cables to the processing systems (e.g., PC or IPC) with FPD-Link III, GMSL2, Gigabit Ethernet or similar interfaces.

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 M12 S-Mount lenses required for imaging may need to be installed by the user (see Chapter 5. "Installation and commissioning ") or are already factory-installed and set to a working distance.

Power supply for the IP67 cameras is realized by the FPD-Link III (Power over Coax), GMSL2 (Power over Coax), Gigabit Ethernet (with Power over Ethernet) or a similar interface, which must be provided by the image processing system (e.g., a PC or an IPC). An external power supply is possible for Gigabit Ethernet cameras only.

The cameras have no operating elements and are set and operated exclusively via the settings in application programs (e.g., IC Imaging Control IC4 SDK, IC Capture) or via supported open-source standards such as video4linux (v4l2), Gstreamer, or similar.

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

The scope of delivery includes:

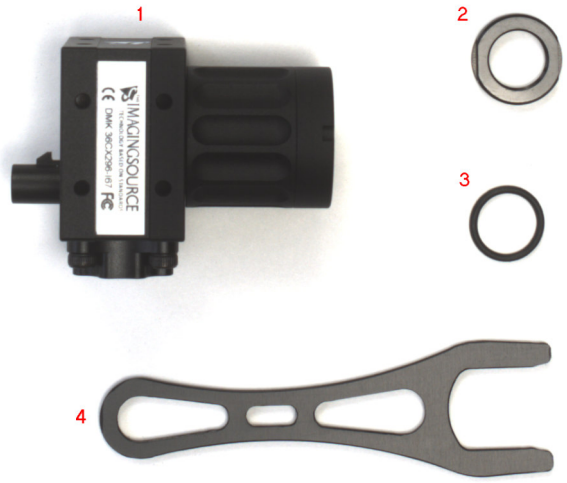

Figure 1: Scope of delivery. Example with an FPD-Link III/GMSL2 camera. The same holds true for Gigabit Ethernet cameras.

1 Camera with screwed-on lens tube
2 Lock nut
3 O-ring
4 Wrench for lock nut

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").

Only operate the cameras under the approved ambient conditions:

- Housing temperature (during operation): -5°C to 55°C
- Relative humidity: 20% to 80% (non-condensing)

5.2 Installation

How to mount the camera

1. Unscrew the lens tube.

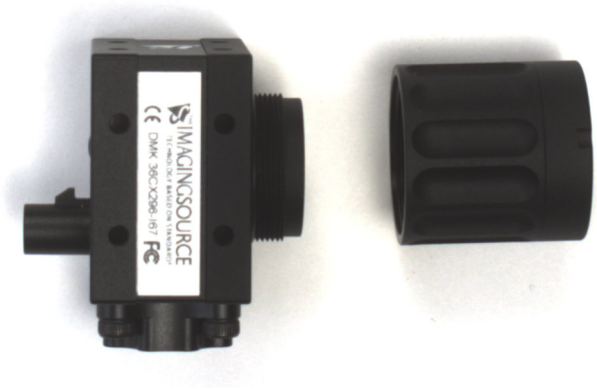

Figure 2: Unscrewed lens tube

2. Attach the lock nut (2) and the O-ring (3) onto the M12 thread of the S-Mount lens (5):

Figure 3: Lock nut / O-ring attached

3. Screw this combination into the M12 opening of the camera until the desired working distance is in focus.

Figure 4: Camera with M12 S-Mount lens

4. To keep the position permanently, screw the lock nut against the M12 base of the camera by using the wrench provided for this purpose.

5. Once the countered M12 S-Mount lens is in the correct position, screw the lens tube back onto the camera. To ensure IP67 sealing, the tube must be screwed tightly onto the camera housing until it stops.

NOTICE	**Material damage due to improper installation!** Improper installation can result in damage to the camera. • Make sure that the large O-ring at the end of the outer camera thread is correctly positioned and not damaged. • If the lens tube cannot be screwed in completely until it stops, if the O-ring is damaged or missing, or if the glass in the lens tube is damaged, the IP67 camera cannot be operated in the intended protection class!

6. Mount the camera in the desired position. There are two different mounting methods:

   - 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 "Technical Reference Manuals").

7. Finally, establish the connection to the computer using the IP67 connection cable.

   NOTICE **Material damage / functionality!**
   Only use approved IP67 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 GenTL drivers, IC Imaging Control SDK, IC Capture, etc.
4. Open the software and make sure that the camera is recognized.
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 via supported open-source standards such as video4linux, Gstreamer, etc.

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/elektroge-setz-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.