

acA640-90gm

The acA640-90gm [Basler ace GigE camera](#) with a Sony ICX424 mono CCD sensor delivers 90 frames per second at VGA resolution.



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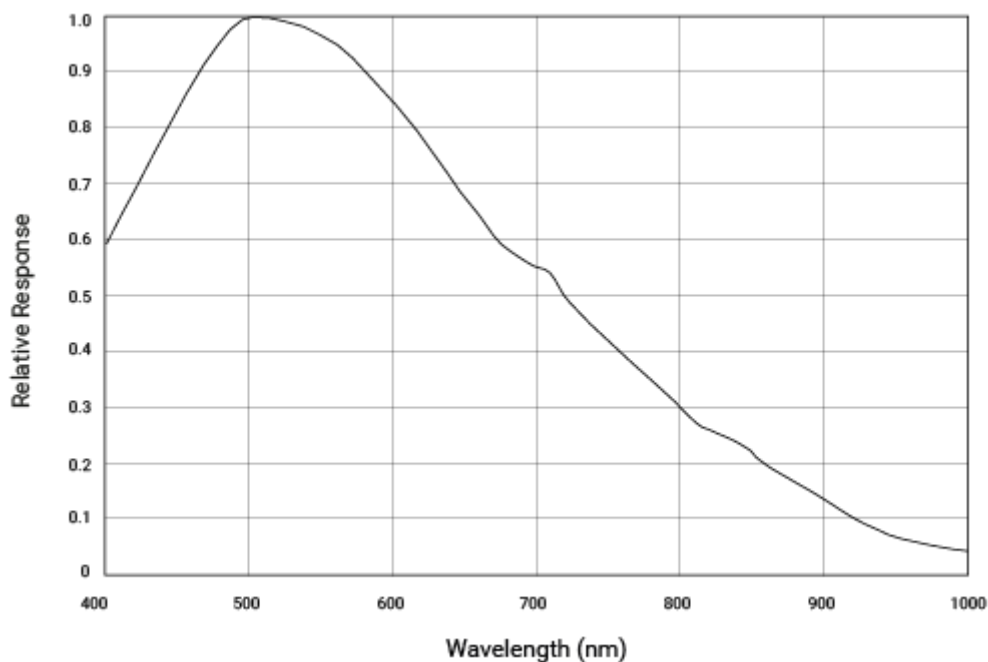
Specifications

General Specifications

| Specification | acA640-90gm |
|--|---|
| Resolution (H x V Pixels) | 659 x 494 |
| Sensor Type | Sony ICX424AL Progressive scan CCD Global shutter |
| Optical Size | 1/3" |
| Effective Sensor Diagonal | 6.1 mm |
| Pixel Size (H x V) | 7.4 μm x 7.4 μm |
| Frame Rate (at Default Settings) | 90 fps |
| Product Line | ace classic |
| Mono / Color | Mono |
| Image Data Interface | Fast Ethernet (100 Mbit/s) Gigabit Ethernet (1000 Mbit/s) |
| Pixel Formats | See Pixel Format . |
| Synchronization | Via hardware trigger Via software trigger Via free run |
| Exposure Time Control | Via hardware trigger Programmable via the camera API |
| Camera Power Requirements | Power over Ethernet (PoE) 802.3af compliant supplied via Ethernet connector 12 VDC supplied via I/O connector |
| | ≈ 3.4 W when using Power over Ethernet ≈ 2.7 W @ 12 VDC when supplied via I/O connector |

| Specification | acA640-90gm |
|------------------|--|
| I/O Lines | 1 opto-coupled input line 1 opto-coupled output line |
| Lens Mount | C-mount, CS-mount |
| Size (L x W x H) | 42.0 mm x 29 mm x 29 mm (without lens mount or connectors) 60.3 mm x 29 mm x 29 mm (with lens mount and connectors) |
| Weight | <90 g |
| Conformity | CE (includes RoHS), UL Listed, FCC, GenICam, GigE Vision, IP30, IEEE 802.3af (PoE), REACH The EU Declaration of Conformity is available on the Basler website . |
| Software | Basler pylon Camera Software Suite (version 4.0 or higher) Available for Windows, Linux x86, Linux ARM, and OS X |
| Accessories | Cables for your camera model Lenses for your camera model Additional accessories for your camera model |

Spectral Response

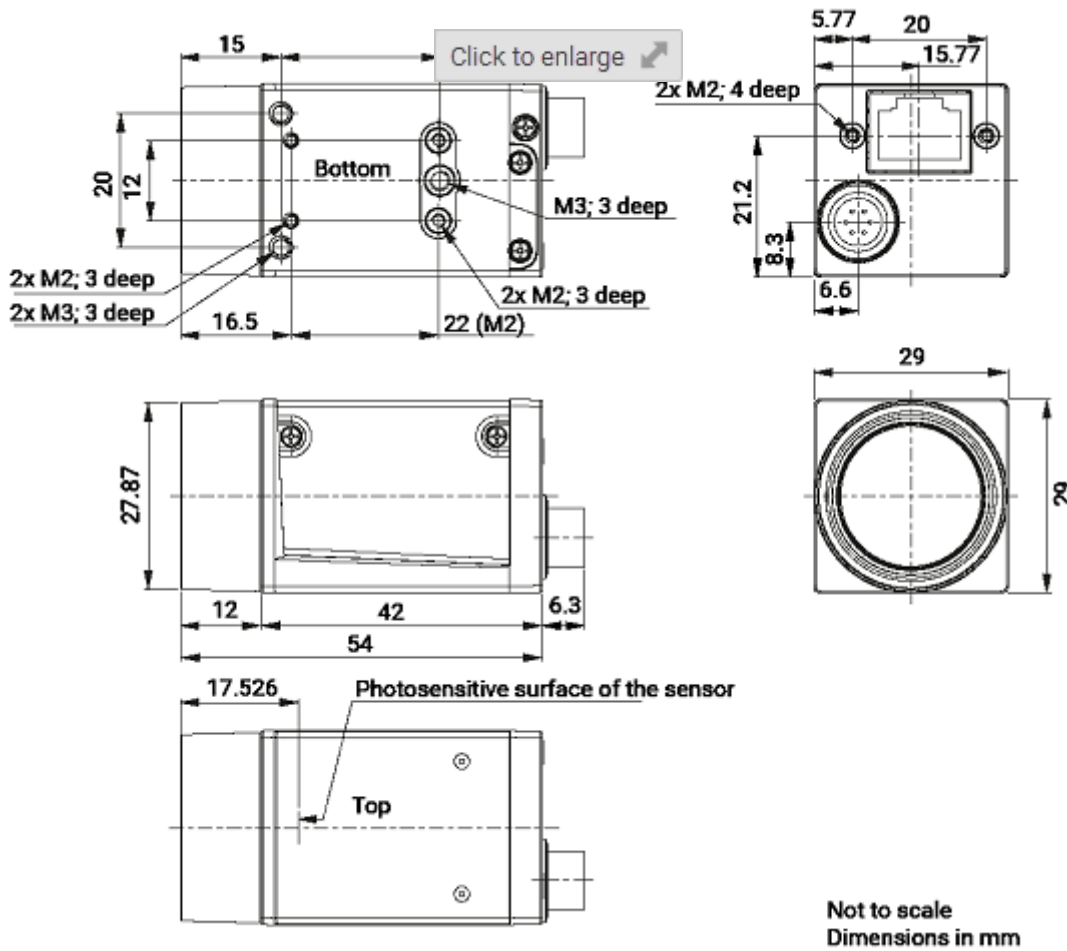


The spectral response curve excludes lens characteristics and light source characteristics.

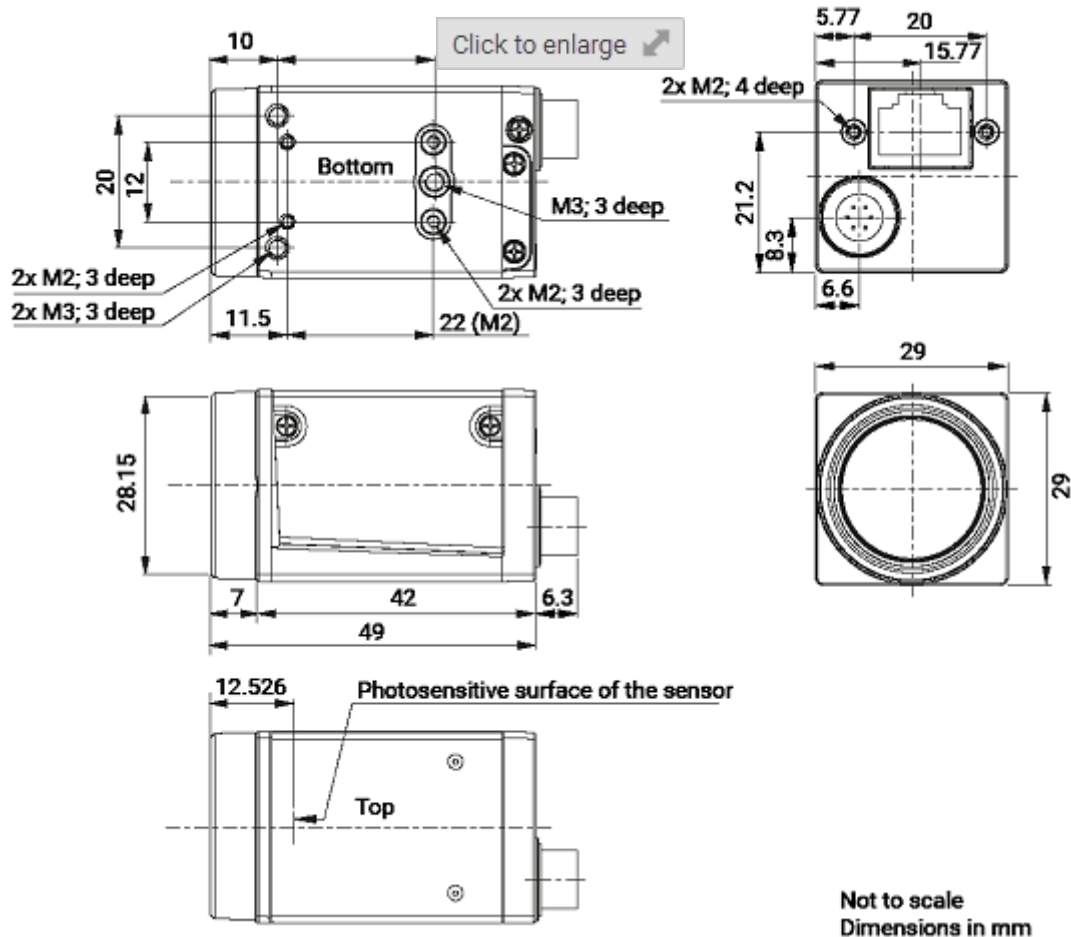
Mechanical Specifications

Camera Dimensions and Mounting Points

C-Mount Camera Models



CS-Mount Camera Models



Maximum Allowed Lens Intrusion

→ See [Maximum Allowed Lens Intrusion](#).

Stress Test Results

→ See [Stress Test Results](#).

Requirements

Environmental Requirements

Temperature and Humidity

| | |
|---|-----------------------------------|
| Housing temperature during operation | 0–50 °C (32–122 °F) |
| Humidity during operation | 20–80 %, relative, non-condensing |
| Storage temperature | -20–80 °C (-4–176 °F) |
| Storage humidity | 20–80 %, relative, non-condensing |
| Housing temperature according to UL 60950-1 | max. 70 °C (158 °F) |
| Ambient temperature according to UL 60950-1 | max. 30 °C (86 °F) |

UL 60950-1 test conditions: no lens attached to camera; no heat dissipation measures; ambient temperature kept at 30 °C (86 °F).

Heat Dissipation

→ See [Providing Heat Dissipation](#).

Electrical Requirements

DANGER

Electric Shock Hazard



Unapproved power supplies may cause electric shock. Serious injury or death may occur.

- You must use power supplies that meet the Safety Extra Low Voltage (SELV) and Limited Power Source (LPS) requirements.
- If you use a powered hub or powered switch, they must meet the SELV and LPS requirements.

WARNING

Fire Hazard



Unapproved power supplies may cause fire and burns.

- You must use power supplies that meet the Limited Power Source (LPS) requirements.
- If you use a powered hub or powered switch, they must meet the LPS requirements.

NOTICE

Incorrect voltage can damage the camera.

- You must supply camera and I/O power within the safe operating voltage ranges specified below.
- Do not use negative voltage for an I/O line.

Camera Power

NOTICE

Dual camera power supply can damage the camera.

You must supply camera power **either** via Power over Ethernet (PoE) **or** via the camera's I/O connector. Do not use both ways of supplying camera power at the same time.

- **Power supply via Power over Ethernet (PoE):** Power must comply with the IEEE 802.3af specification.
- **Power supply via I/O connector:** The nominal operating voltage is 12 VDC (10.8 VDC minimum, 13.2 VDC maximum), includes <1 % ripple.

Opto-Coupled I/O Input Line

| Voltage | Description |
|--|---|
| 30 VDC | Absolute maximum. This voltage must never be exceeded. Doing so may damage the camera and voids the warranty. |
| 0–24 VDC | Safe operating range. |
| 0–1.4 VDC | Indicates a logical 0 (with inverter disabled). |
| >1.4–2.2 VDC | Region where the logic level transition occurs; the logical state is not defined in this region. |
| >2.2 VDC | Indicates a logical 1 (with inverter disabled). |
| <ul style="list-style-type: none"> • Minimum current: 5 mA • Current draw: 5–15 mA • If the camera is connected to a PLC device, Basler recommends using a cable that adjusts the voltage level of the PLC to that of the camera. | |

Opto-Coupled I/O Output Line

| Voltage | Description |
|---|---|
| 30 VDC | Absolute maximum. This voltage must never be exceeded. Doing so may damage the camera and voids the warranty. |
| 3.3–24 VDC | Safe operating range. |
| <3.3 VDC | Unreliable I/O output. |
| <ul style="list-style-type: none"> • Leakage current: <60 μA. Actual leakage depends on operating temperature and production spread of electronic components. • Maximum load current: 50 mA • Minimum load current: Not specified. However, consider the following: <ul style="list-style-type: none"> • Leakage current will have a stronger effect when load currents are low. • Propagation delay of the output increases as load currents decrease. • Higher-impedance circuits tend to be more susceptible to EMI. • Higher currents cause higher voltage drops in long cables. | |

Circuit Diagrams

→ See [Circuit Diagrams \(Basler ace\)](#).

Cable Requirements

Ethernet Cable

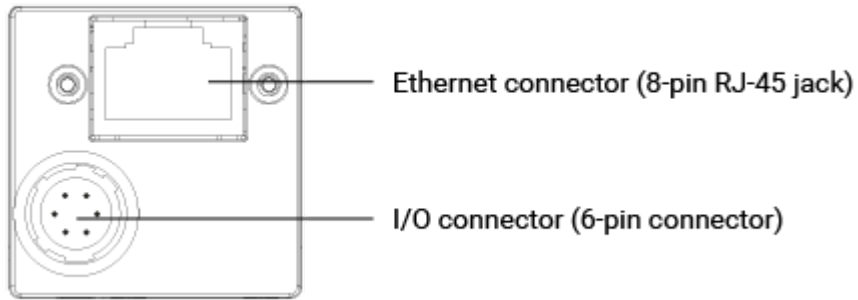
- Use a high-quality Ethernet cable. Use of shielded CAT 5E or better cables with S/STP shielding is recommended.
- Use either a straight-through (patch) or a cross-over Ethernet cable.
- As a general rule, applications with longer cables or applications in harsh EMI conditions require higher category cables.
- Close proximity to strong magnetic fields should be avoided.
- Basler recommends using Ethernet cables from the [Basler Vision Components](#) range.

I/O Cable

- The I/O cable must be shielded.
- The I/O cable must have a cross-section of at least 0.14 mm² (close to AWG26).
- Use a twisted pair wire cable.
- Maximum recommended cable length: 10 m
- Camera-side connector: Hirose micro plug (part number HR10A-7P-6S) or equivalent
- Close proximity to strong magnetic fields should be avoided.
- If you are supplying power to the camera via Power over Ethernet, the I/O cable will not be used to supply power. However, you can still use the cable to connect to the I/O lines.
- Basler recommends using I/O cables from the [Basler Vision Components](#) range:
 - [Opto-I/O cable, 10 m](#) (blue cable): For use with the [opto-coupled I/O lines](#) of your camera. Does not provide camera power. Therefore, when using this cable, you must provide power via Power over Ethernet (PoE).
 - [Power-I/O cable, 10 m](#) (gray cable): For use with the [opto-coupled I/O lines](#) of your camera. Unlike the opto-I/O cable (blue cable, see above), this cable provides camera power.
 - [Opto-GPIO Y-cable, 2 x 10 m](#) (yellow-blue cable): Offers two separate wires. One can be used to connect the [opto-coupled I/O lines](#) of your camera. The other one can be used to provide camera power.
 - [Power-I/O PLC+ cable, 10 m](#) (gray cable): For use with the [opto-coupled I/O lines](#) of Basler cameras connected to a programmable logic controller ([PLC](#)). It adapts the signal level for zero voltage from PLC level (<8.4 VDC) to TTL level (<1.4 VDC).

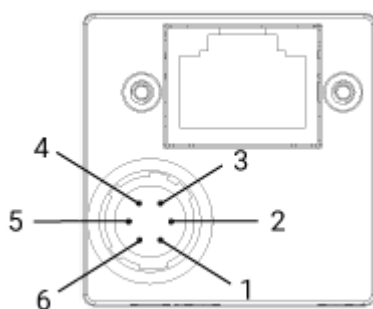
Physical Interface

Camera Connectors



| Connector | Description |
|--------------------|--|
| Ethernet connector | <ul style="list-style-type: none"> • 100/1000 Mbit/s Ethernet connection to the camera • If power is not supplied via I/O connector: Power over Ethernet (PoE) • 8-pin RJ-45 jack Recommended mating connector: 8-pin RJ-45 plug (snap-in or with locking screws). • When using locking screws, note the horizontal orientation of the screws. |
| I/O Connector | <ul style="list-style-type: none"> • If power is not supplied via Power over Ethernet (PoE): Power supply • Hirose micro receptacle (part number HR10A-7R-6PB) Recommended mating connector: Hirose micro plug (part number HR10A-7P-6S) |

Connector Pin Numbering and Assignments



| Pin | Line | Function |
|-----|--------|------------------------------|
| 1 | - | 12 VDC camera power |
| 2 | Line 1 | Opto-coupled I/O input line |
| 3 | - | Not connected |
| 4 | Out 1 | Opto-coupled I/O output line |

| Pin | Line | Function |
|-----|------|-----------------------------------|
| 5 | - | Ground for opto-coupled I/O lines |
| 6 | - | Ground for camera power |

Precautions

→ See [Safety Instructions for Basler ace Cameras](#).

Installation

→ See [Camera Installation](#).

Features

→ See the [camera features section](#).

Suggestions for improving the documentation? Send us your [feedback on this topic](#).

For technical questions, please contact your [local distributor](#) or use the [support form](#) on the Basler website.