

Pulse5 Ace12

Технические характеристики

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BASLER MICROSCOPY CAMERA

Choose a Microscopy Camera Tailored to Your Requirements

| | | Basler Microscopy pulse | Basler Microscopy ace | |
|--------------|--------------------------------------|--|------------------------------------|--------------------------|
| | | Best Value for Money | Enjoy Highest Performance | |
| Technology | Sensor technology | ON Semiconductor 1/3.7" - 1/2.5" CMOS | Sony PREGIUS 1/1.8" - 2/3" CMOS | ON Semiconductor 1/2" |
| | Resolution [MP] | 1.2 - 5.0 MP | 1.3 - 12.2 MP | 1.3 MP |
| | Speed [fps] | 14 - 54 fps | 35 - 55 fps | 160 - 200 |
| Applications | Standard light microscopy | ✓ | ✓ | ✓ |
| | Fluorescence | - | ✓ | - |
| | Education | ✓ | - | - |
| | Monitoring, documentation, archiving | ✓ | ✓ | ✓ |
| | Medical & life sciences | - | ✓ | - |
| | Industrial | ✓ | ✓ | ✓ |
| | Sperm analysis | - | - | ✓ |

Many routine microscopic applications in industrial, biological or medical laboratory settings, such as those in materials science, histology, cell biology, hematology or microbiology, are based on light microscopy using various illumination and contrast methods. Today, cameras are a central part of these applications and are used wherever it is important to monitor images "live", and to discuss, capture, analyze and archive them. Cameras in conventional light microscopy must reliably deliver high-resolution, pin-sharp images with appealing color fidelity.

Your benefits include:

- Outstanding image quality and reproducible results
- New image enhancement and color adjustment algorithms
- Both video recording and image sequences for time-lapse microscopy
- Best price/performance ratio, and German precision manufacturing

Trust in State-of-the-Art Vision Technology Made in Germany

30 years of experience makes Basler's equipment the most reliable and trusted industrial vision technology in the market. As a key driver of technology trends and vision standards, we measure our cameras and their components against the highest standards and offer outstanding quality for reproducible pictures and reliable analysis.

We are constantly developing and improving our products. Already today, we install many cameras into medical and life science applications. These digital cameras must provide highest image quality and exceptional color reproduction. New advanced image enhancement and color adjustment algorithms enable consistent and repeatable color fidelity, and perfectly reproduce pictures of challenging samples. Thanks to exhaustive quality assurance measures, long-lasting camera life is a given. We also stand for long-term market availability of our cameras, to make your decision worthwhile and satisfying.

BASLER MICROSCOPY CAMERA

Sensor Technology Shift: CMOS Now Better Than CCD

CCD sensors are very typical for microscope cameras. They offer good results for example in low-light conditions such as in fluorescence applications. Even with long exposure times, they generate an acceptable noise level caused by physics and the electronics inside an image sensor. And for a long time, the CCD sensor technology was leading the market with the best available performance. As the world-leading manufacturer of CCD sensors decided in 2015 to stop producing and investing in this technology, no major new inventions or developments have been made to expand the CCD technology. CMOS technology on the other hand has experienced heavy investment. It can keep up with the high quality of CCD sensors and can now deliver even better image quality. For example, the noise ratio has been brought down to a very low level and the dynamic range improved, which is helpful for recording high differences in brightness between subject and background.

In addition to the high performance of CMOS sensors, the limited availability of CCD sensors is pushing this technology shift forward, as cameras with CCD sensors will shortly be discontinued. The following table contains typical CCD sensors which have been integrated into many scientific-application cameras. The specifications show the advantages of the next-generation CMOS sensors offered when choosing one of Basler's microscopy cameras:

| Advantages of new CMOS sensor technology | CCD → CMOS | | CCD → CMOS | |
|--|--------------|-----------------------------|--------------|-----------------------------|
| Camera Model | Basler scout | Basler Microscopy ace 2.3MP | Basler pilot | Basler Microscopy ace 5.1MP |
| Sensor | Sony ICX274 | Sony PREGIUS | Sony ICX625 | Sony PREGIUS |
| Resolution | 1.4 MP | 2.3 MP | 5.0 MP | 5.1 MP |
| Pixel Size | 6.45 μm | 5.86 μm | 3.45 μm | 3.45 μm |
| Frame Rate | 17 fps | 40 fps | 17 fps | 35 fps |
| Quantum Efficiency | 58 % | 70 % | 47 % | 67 % |
| Temporal Dark Noise | 7.8 e- | 6.8 e- | 12.7 e- | 2.25 e- |
| Dynamic Range | 67.7 dB | 73.6 dB | 54.8 dB | 73.0 dB |



BASLER MICROSCOPY PULSE

Highlights: Basler Microscopy pulse

Reliable lightweight

The Basler Microscopy pulse cameras with resolutions between 1.2 MP and 5 MP come in with USB 3.0 as standard interface. USB 2.0 backward compatibility offers maximum system flexibility. The cameras are specifically designed to be cost-effective and easy to use. High frame rates allow for smooth live viewing, fast focusing and sample screening. The rock-solid image quality provided by the established ON Semi-

conductor CMOS sensor technology offers accurate and reproducible results for a broad range of standard light microscopy applications in educational settings, as well as life science, fluorescence, diagnostics, materials or industrial inspection. Our newly-implemented image enhancement and color adjustment algorithms enable outstanding color reproduction and brilliant contrasts.



TECHNICAL DETAILS

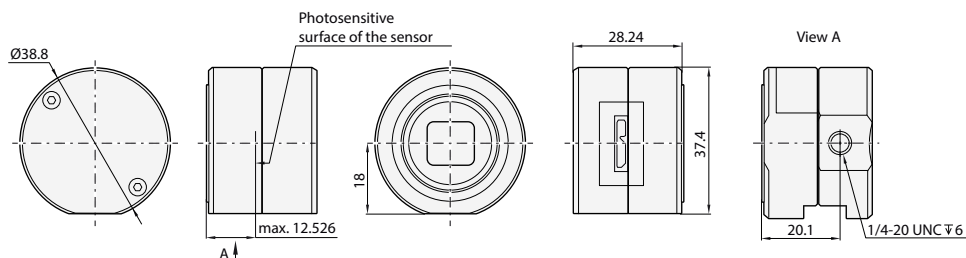
Specifications

| Basler Microscopy Camera | Microscopy pulse 1.2 MP | Microscopy pulse 2.0 MP | Microscopy pulse 3.3 MP | Microscopy pulse 5.0 MP |
|---------------------------------|--|-------------------------|-------------------------|-------------------------|
| Resolution (H×V) [pixels] | 1280×960 | 1920×1080 | 2048×1584 | 2592×1944 |
| Sensor | ON Semiconductor | | | |
| Sensor Size (optical) | 1/3" | 1/3.7" | 1/3" | 1/2.5" |
| Sensor Technology | CMOS Global Shutter | CMOS Rolling Shutter | CMOS Rolling Shutter | CMOS Rolling Shutter |
| Pixel Size [μm^2] | 3.75×3.75 | 2.2×2.2 | 2.2×2.2 | 2.2×2.2 |
| Active Area [mm] | 6.00 | 4.85 | 5.70 | 7.13 |
| Max. Frame Rate [fps] | 54 | 30 | 20 | 14 |
| Temporal Dark Noise [e-] | 5.12 | 6.4 | 6.4 | 6.4 |
| Dynamic Range [dB] | 64 | 70.1 | 70.1 | 70.1 |
| Exposure Control | Manual and Automatic | | | |
| Gain | Manual | | | |
| Mono / Color | Color | | | |
| Interface | USB 3.0 | | | |
| Mechanical/Electrical | | | | |
| Dimensions (d×L) [mm] | 38.8×28.2 | | | |
| Temperature Range | 0°C - 50°C | | | |
| Lens Mount | CS-mount | | | |
| Microscope Camera Adapter | 0.3×, 0.33×, 0.35× | 0.3× | 0.3×, 0.33×, 0.35× | 0.45×, 0.5×, 0.55× |
| Power Consumption (typical) [W] | ≈1.3 | | | |
| Weight (typical) [g] | <60 | | | |
| Conformity | CE, RoHS, GenICam, UL, FCC, USB3 Vision | | | |
| Software Environment | | | | |
| Operating System | Windows 7, Windows 8.1, Windows 10 - 32 bit and 64 bit | | | |

Specifications are subject to change without prior notice.

Latest specifications and availability can be found on our [website www.baslerweb.com](http://www.baslerweb.com). Please visit www.baslerweb.com/manuals for the detailed camera User's Manual and www.baslerweb.com/thirdparty for information on third party software.

Dimensions (in mm)



BASLER MICROSCOPY ACE

Highlights: Basler Microscopy ace

Exceptional performance of Sony PREGIUS sensors

The Basler Microscopy ace cameras feature Sony's latest-generation IMX CMOS sensors. Thanks to these global shutter sensors, the cameras offer low noise levels down to 2.2 e-, a large dynamic range of roughly 73 dB, and quantum efficiencies over 70 %. In this way, the Basler Microscopy ace models with resolutions up to 12.2 MP achieve a new level of image quality, which makes them the ideal choice for moderate-to-challenging microscopy applications in life science, fluo-

rescence, diagnostics, materials science, engineering technology, forensics and many others.

Newly implemented image enhancement and color adjustment algorithms enable exceptional color reproduction and sharpness for precise and reliable true-to-life results. The ultra-high frame rates of up to 200 fps allow for smooth live video preview, fast focusing and sample screening even at full resolution.



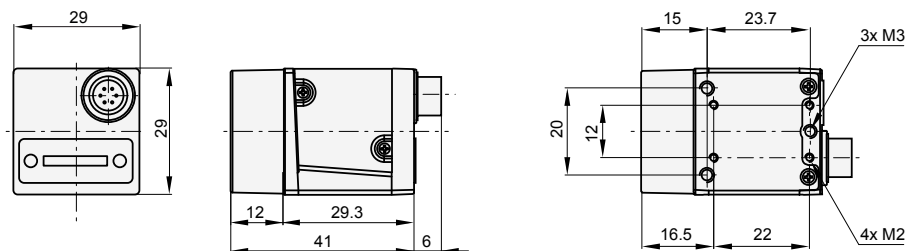
TECHNICAL DETAILS

Specifications

| Basler Microscopy Camera | Microscopy ace 1.3 MP 48 | Microscopy ace 1.3 MP 160 | Microscopy ace 1.3 MP 200 | Microscopy ace 2.3 MP Mono NEW | Microscopy ace 2.3 MP Color |
|---------------------------------|--|---------------------------|---------------------------|---------------------------------------|-----------------------------|
| Resolution (H×V) [pixels] | 1280×1024 | 1280×1024 | 1280×1024 | 1920×1200 | 1920×1200 |
| Sensor | Sony PREGIUS | ON Semiconductor | ON Semiconductor | Sony PREGIUS | Sony PREGIUS |
| Sensor Size (optical) | 1/1.8" | 1/2" | 1/2" | 1/1.2" | 1/1.2" |
| Sensor Technology | CMOS Global Shutter | | | | |
| Pixel Size [μm^2] | 5.86×5.86 | 4.80×4.80 | 4.80×4.80 | 5.86×5.86 | 5.86×5.86 |
| Active Area [mm] | 9.60 | 7.90 | 7.90 | 13.30 | 13.30 |
| Max. Frame Rate [fps] | 48 | 160 | 200 | 40 | 40 |
| Temporal Dark Noise [e-] | 6.83 | 8.9 | 10.6 | 6.83 | 6.83 |
| Dynamic Range [dB] | 73.0 | 56.2 | 56.3 | 73.0 | 73.0 |
| Exposure Control | Manual and Automatic | | | | |
| Gain | Manual | | | | |
| Mono / Color | Color | Color | Mono | Mono | Color |
| Interface | USB 3.0 | | | | |
| Mechanical/Electrical | | | | | |
| Dimensions (L×W×H) [mm] | 29.3×29.0×29.0 | | | | |
| Temperature Range | 0°C - 50°C | | | | |
| Lens Mount | C-mount | | | | |
| Microscope Camera Adapter | 0.45×, 0.5×, 0.55× | 0.5× | 0.5× | 1× - 1.2× | 1× - 1.2× |
| Power Consumption (typical) [W] | ≈2.9 | 3.0 | 3.0 | 3.7 | 3.7 |
| Weight (typical) [g] | 80 | | | | |
| Conformity | CE, RoHS, GenICam, UL, FCC, USB3 Vision | | | | |
| Software Environment | | | | | |
| Operating System | Windows 7, Windows 8.1, Windows 10 - 32 bit and 64 bit | | | | |

Specifications are subject to change without prior notice. Latest specifications and availability can be found on our website www.baslerweb.com. Please visit www.baslerweb.com/manuals for the detailed camera User's Manual and www.baslerweb.com/thirdparty for information on third party software.

Dimensions (in mm)



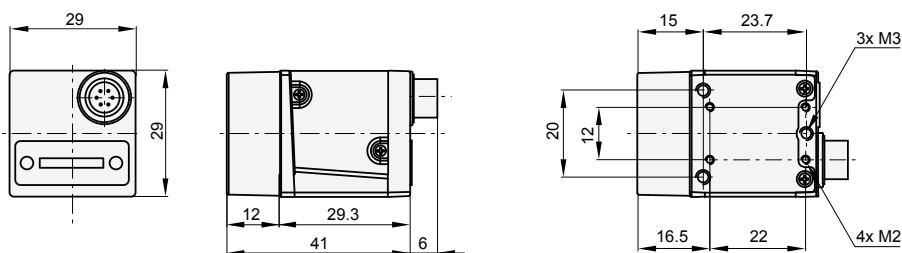
TECHNICAL DETAILS

Specifications

| Basler Microscopy Camera | Microscopy ace 3.2 MP | NEW Microscopy ace 5.1 MP Mono | Microscopy ace 5.1 MP Color | NEW Microscopy ace 12.2 MP |
|---------------------------------|--|--|-----------------------------|--------------------------------------|
| Resolution (H×V) [pixels] | 2048×1536 | 2448×2048 | 2448×2048 | 4024×3036 |
| Sensor | Sony PREGIUS | Sony PREGIUS | Sony PREGIUS | Sony STARVIS |
| Sensor Size (optical) | 1/1.8" | 2/3" | 2/3" | 1/1.7" |
| Sensor Technology | CMOS Global Shutter | | | |
| Pixel Size [μm^2] | 3.45×3.45 | 3.45×3.45 | 3.45×3.45 | 1.85×1.85 |
| Active Area [mm] | 9.00 | 11.20 | 11.20 | 9.30 |
| Max. Frame Rate [fps] | 55 | 35 | 35 | 15 |
| Temporal Dark Noise [e-] | 2.22 | 2.25 | 2.25 | 3.2 |
| Dynamic Range [dB] | 71.4 | 70.6 | 70.6 | 71.0 |
| Exposure Control | Manual and Automatic | | | |
| Gain | Manual | | | |
| Mono / Color | Color | Mono | Color | Color |
| Interface | USB 3.0 | | | |
| Mechanical/Electrical | | | | |
| Dimensions (L×W×H) [mm] | 29.3×29.0×29.0 | | | |
| Temperature Range | 0°C - 50°C | | | |
| Lens Mount | C-mount | | | |
| Microscope Camera Adapter | 0.5× | 0.67×, 1.0× | 0.67×, 1.0× | 0.45×, 0.5× 0.55× |
| Power Consumption (typical) [W] | 2.6 | 2.7 | 2.7 | 3 |
| Weight (typical) [g] | 80 | | | |
| Conformity | CE, RoHS, GenICam, UL, FCC, USB3 Vision | | | |
| Software Environment | | | | |
| Operating System | Windows 7, Windows 8.1, Windows 10 - 32 bit and 64 bit | | | |

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Dimensions (in mm)



APPLICATIONS

Imaging Requirements More Challenging Than Ever

The wide variety in modern microscope applications means demanding requirements placed on camera systems. Nowadays, a microscope camera needs to fulfil the following specifications:

| Requirement | Benefit |
|--|---|
| High resolution | Increased field of view |
| High frame rates even at high resolution | Detailed monitoring of intra-cell transportation or other change processes |
| High sensitivity and low noise | Good image quality even at long exposure times (e.g. in fluorescence applications) |
| High dynamic ranges | Display high differences in brightness and other aspects between subject and background |
| Good price performance | Decreased price per system while retaining high-quality imaging results |

Basler is a leading manufacturer of high-quality digital cameras and accessories for medicine and other markets. Our cameras are not only known for their outstanding performance and state-of-the-art technology. They also fulfil the toughest requirements and offer a high application fit at a very good price performance ratio.

Get the Best Results for Your Application

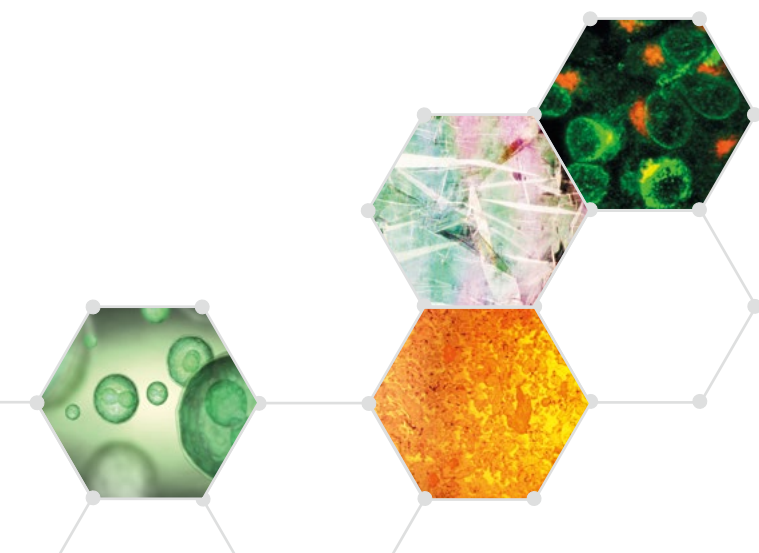
Basler's PowerPacks for Microscopy includes cameras with the latest and most cost-effective CMOS technology. In combination with the professional and easy-to-use software, the cameras are perfectly suited for a wide range of optical microscopy applications.

Technology

- Brightfield
- Contrasting methods
- Darkfield
- Standard fluorescence

Application area

- Education
- Industry (chemical and pharmaceutical industry, microelectronics, semiconductor industry)
- Materials science and engineering technology
- Forensics
- Life Sciences (cell biology, developmental biology, zoology and plant science, neuroscience)
- Spermatology
- Diagnostics (histology, pathology, hematology, cytology, microbiology)



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