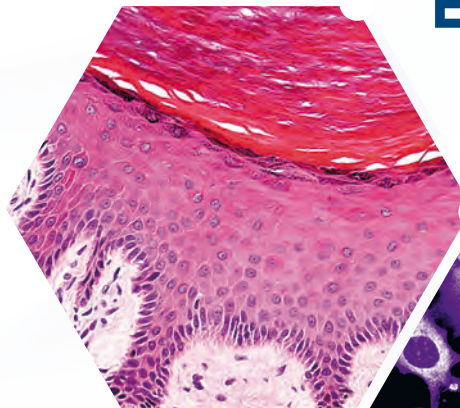
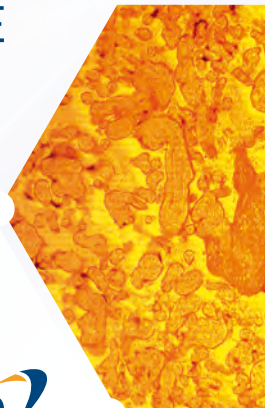




QUICK INSTALL GUIDE BASLER POWERPACK FOR MICROSCOPY

BASLER
the power of sight





DISCOVER YOUR
BASLER POWERPACK
FOR MICROSCOPY



Welcome to the Quick Install Guide for Basler's PowerPack for Microscopy. Find details about each component and step-by-step instructions on how to set up your microscope camera.

Microscopy enables visualization of structure and function of the most diverse and smallest objects. With this PowerPack by Basler, you can rely on highest image quality, whether you use this digital microscope camera in your leisure activities, in routine or research applications.



- Crisp colors, clear contrast, high resolution and dynamic range.
- Exact image reproduction and color fidelity.
- Outstanding performance stability and accuracy.

You have decided for equipment from a worldwide leading company in vision technology – Basler AG.



- More than 25 years of experience in machine vision.
- Quality made in Germany.
- 3-year warranty.

We trust that this PowerPack for Microscopy enables you to experience most reliable and reproducible observation, differentiation and analysis results.



Basler AG
An der Strusbek 60-62
22926 Ahrensburg
Germany

**All material in this publication is subject to change without notice and is
copyright Basler AG.**

TABLE OF CONTENTS

INTRODUCTION	7
Quick Install Guide	7
Correct Use	8
Authorized Users	8
SAFETY INSTRUCTIONS	9
Cleaning Instructions	11
Other Items to Be Observed	12
DELIVERED PARTS	13
Parts by Variant of the Basler PowerPack for Microscopy	13
SOFTWARE INSTALLATION	15
Requirements before Installing the Software	15
Recommendations	16
Installing the Basler Microscopy Software	17
Additional Software	19

HARDWARE INSTALLATION	20
Requirements before Installing the Hardware	20
Installing a Basler Microscopy Camera	21
SPECIFICATIONS	25
Basler Microscopy pulse Cameras and Adapters	25
Basler Microscopy ace Cameras and Adapters	26
Environmental Requirements	28
SUPPORT, REPAIR, AND DISPOSAL	29
Technical Support and Camera Repair	29
Disposal	29

INTRODUCTION

Quick Install Guide

This Quick Install Guide for the Basler PowerPack for Microscopy applies to all variants of the Basler PowerPack for Microscopy. The document provides information about installing the Basler Microscopy Software and the Basler Microscopy camera included in a Basler PowerPack for Microscopy. Software use and camera operation are described in an online help that is included with the Basler Microscopy Software.

Note: Read the Quick Install Guide carefully before installing software and camera. All components involved in the installation are indicated in [Figure 1](#) and [Figure 2](#).

Correct Use

Basler Microscopy cameras are digital cameras used to acquire images of what is "seen" by a microscope. Each camera must be firmly mounted on a microscope and must be connected to a computer via the delivered USB 3.0 cable. On the same computer, the Basler Microscopy Software must be installed. The software may only be used with a Basler Microscopy camera (one camera per software installation).

The images are sent to the computer via the USB 3.0 cable for display, storage, and possible further processing.

Basler Microscopy cameras may only be used with light microscopes.

The cameras are designed for indoor use in e.g. laboratories and educational institutions. The cameras can be used for a variety of fields such as diagnostics, biomedical research, materials science, and education.

Authorized Users

Persons installing and using the parts included in a Basler PowerPack for Microscopy and related components must be adults, must be familiar with the requirements for safely using current supplied via a USB 3.0 interface, and must follow the safety instructions given in this document. Minors may only operate a camera when supervised by qualified adults.

SAFETY INSTRUCTIONS



DANGER

Electric Shock Hazard: Risk of Burn or Death.

The power supply in the PC, used for supplying camera power, must 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.

Never use a damaged USB 3.0 cable. If the cable is damaged, immediately discard the cable. Obtain a replacement cable from your camera sales representative.



WARNING

Fire Hazard: Risk of Fire and Burn.

The power supply in the computer, used for supplying camera power, must meet the Limited Power Source (LPS) requirements.

If you use a powered hub or powered switch, they must meet the LPS requirements.

Be careful not to allow liquid, flammable, or metallic material inside of the camera housing. If operated with any foreign matter inside, the camera may fail or cause a fire.

NOTICE

Damage Hazard: Risk of Damaging the Camera.

You must supply camera power that complies with the Universal Serial Bus 2.0 or 3.0 specifications (Basler Microscopy pulse) or with the Universal Serial Bus 3.0 specification (Basler Microscopy ace).

Make sure the camera microscope adapter ([Figure 2](#)) does not reach too far into the camera body. Otherwise, the camera's IR cut filter (color cameras) or the sensor (mono cameras) can be damaged.

Never try to directly connect a Basler Microscopy pulse camera (with CS-mount) to the C-mount of a camera microscope adapter. The camera and the adapter can be damaged. In addition, the adapter will not have the correct length, resulting in inferior image quality. Always use the CS-mount to C-mount adapter ring between a Basler Microscopy pulse camera and a camera microscope adapter with C-mount.

Do not operate the camera in the vicinity of strong electromagnetic fields. Avoid electrostatic charging.

Do not open the housing. Touching internal components may damage them. If the camera is not installed, store it in its original packaging.

NOTICE

Contamination Hazard: Risk of Contaminating the Camera.

- Never apply compressed air to the camera. This can easily contaminate optical components, particularly the sensor.
- Avoid collecting dust on the camera's IR cut filter or sensor:
Make sure the camera is pointing down every time you remove the plastic cap or the camera microscope adapter. Always put the plastic cap in place when the camera is not installed.
- Do not touch the IR cut filter or sensor except when cleaning. They can be contaminated and the filter can break when pressure is applied.

Cleaning Instructions

Try to avoid cleaning at all. Clean only when absolutely necessary.

Before cleaning, cut off power to the camera by disconnecting the USB 3.0 cable.

Cleaning the camera housing:

- Use a soft, dry cloth. To remove severe stains, use a soft cloth dampened with a small quantity of neutral detergent, then wipe dry. You must use a cloth that will not generate static charge during cleaning (cotton is a good choice).
- Do not use aggressive solvents to clean the housing. Otherwise, the surface finish can be damaged.



SAFETY INSTRUCTIONS

- Disinfection: Sparsely apply an ethanol-free mild disinfectant to a soft cloth, wipe the camera exterior, and then wipe dry.

Cleaning the IR cut filter:

- To remove only minor stains, use a high-quality lens cleaning cloth. Clean with extreme caution to avoid breaking the filter or damaging the sensor.
- To remove more substantial stains contact your camera sales representative for further advice.

Cleaning the sensor:

- Use a soft, lint-free cloth dampened with a small amount of window cleaner.
- Because electrostatic discharge can damage the sensor, you must use a cloth that won't generate static during cleaning (cotton is a good choice).

After cleaning, make sure the cleaning liquid has evaporated before reconnecting the USB 3.0 cable.

Other Items to Be Observed

- Follow the safety instructions.
- Do not remove the camera's serial number label.
- Do not use the round connector on a Basler Microscopy ace camera ([Figure 2](#)).
- Before using the camera, read the related documentation.

DELIVERED PARTS

The selection of parts (Figure 1) delivered with a Basler PowerPack for Microscopy depends on the included camera model.

The available camera models of the Basler Microscopy pulse and Basler Microscopy ace cameras and related specifications are given in the Specifications section of this document.

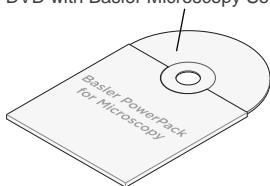
Parts by Variant of the Basler PowerPack for Microscopy

- Selection **A, B** is common to all PowerPack variants.
- Selection **A** includes a Basler Microscopy pulse camera and related parts.
- Selection **B** includes a Basler Microscopy ace camera and related parts.

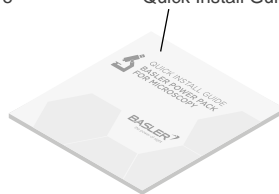
Note: A camera microscope adapter (Figure 2) is necessary for connecting microscope and camera. The adapters, however, vary with microscope design. Therefore, no such adapter is delivered with a Basler PowerPack for Microscopy. To obtain a suitable adapter, contact your microscope sales person. See the Hardware Installation section for requirements that apply to camera microscope adapters.

For measuring distances in a sample you must have calibrated the microscope. For this purpose, you need a microscope calibration slide. However, none is included in a PowerPack. To obtain a calibration slide, contact your microscope sales person.

A, B DVD with Basler Microscopy Software



Quick Install Guide

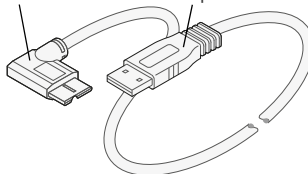


A

Basler Microscopy pulse camera with plastic cap

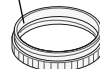


USB 3.0 Micro-B plug, angled left, connects to the pulse camera



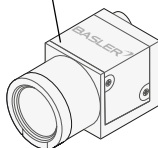
USB 3.0 A plug, connects to the computer

CS-mount to C-mount adapter ring

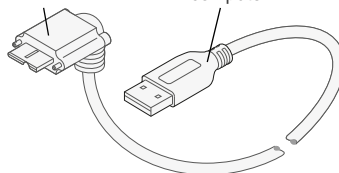


B

Basler Microscopy ace camera with plastic cap



USB 3.0 Micro-B plug, angled down, connects to the ace camera



USB 3.0 A plug, connects to the computer

Fig. 1: Delivered Parts According to Variants A and B of the Basler PowerPack for Microscopy

SOFTWARE INSTALLATION

This section includes the instructions for installing the Basler Microscopy Software. The software is used for controlling a Basler Microscopy camera and for image acquisition and analysis. The software also includes an online help for using the camera and the software.

Note: Each Basler Microscopy Software installation can only be used for one Basler Microscopy camera. Multiple cameras can't be used with one software installation.

The software must be installed on a computer before connecting the camera.

Requirements before Installing the Software

- One of the following operating systems (32-bit or 64-bit) is installed on the computer: Windows 7, 8.1, or 10.
- The **latest** USB host controller driver is installed. Check the host controller chipset that is used on your computer. If necessary, obtain the latest applicable driver and install it on your computer. USB host controller drivers for common chipsets are included on the supplied DVD.
- You have administrator rights for the computer.

Recommendations

- Use of a USB 3.0 interface on the computer is strongly recommended.

Note: You can distinguish USB A ports (present on the computer) by the color of the insert: The insert is white for a USB 2.0 port and blue for a USB 3.0 port. USB 3.0 connectors bear this label:



- For a Basler Microscopy pulse camera, you can use a USB 2.0 interface on the computer but the camera's performance can then be distinctly decreased. Basler **strongly** recommends to use the USB 3.0 interface.
- For a Basler Microscopy ace camera, you can **only** use the USB 3.0 interface on the computer.
- Of the USB 3.0 host controller chipsets tested, the following were found to work well:
 - Renesas Gen1
 - Renesas Gen2
 - Fresco Logic FL1100
 - Intel 7 Series/C216
 - Intel 8/9/100 Series
 - Intel C220/C610 chipset family

Installing the Basler Microscopy Software

Note: You can exit the installation procedure at any stage by clicking the **Exit** button.

1. Make sure all requirements listed above are met, the computer is running, and all programs are closed.
2. Make sure there is no previous version of Basler Microscopy Software installed. If there is, uninstall the software.
3. Insert the DVD from the Basler PowerPack for Microscopy in the computer.
4. Display the list of folders and files included on the DVD.
5. Click the **Setup** folder.
The window of the InstallShield Wizard opens.
6. Click the **Run** button to start the **Setup.exe** file.
A window with the software license text is displayed.
7. Read the software license text.

Note: You must accept the terms and conditions of the software license text. Otherwise, you will not be able to use the software and the Basler Microscopy camera.

- To accept, activate the **Yes, I accept...** radio button.

Click the **Next** button.

A window opens allowing you to select a language for the appearance of the software on the screen.

- If you don't accept, activate the **No, I don't accept...** radio button.
Click the **Next** button.

The installation procedure is ended. The software is not installed.

8. Select the desired language from the drop down list (English is the default language).
9. Click the **Next** button.

A window opens asking for information about you as the user.

10. Enter your name and the name of your company.
11. Click the **Next** button.

A window opens asking you to choose the path to the destination location, i.e. to the location where you want to install the software.

12. As a default, **C:\Program Files\Basler Microscopy Software** is shown. This path will in many cases apply. If you want to store the software at a different location, enter the new desired path (you can click the **Browse** button to browse for the new location).

13. Click the **Next** button.

A window opens allowing you to check the previous installation settings.

14. Decide if you want to check the previous installation settings.

- If you want to check the previous installation settings, click the **Back** button to return to windows of previous steps. If desired, you can change the settings and return to this step by clicking the **Next** button as many times as necessary.
- If you do not want to check the previous installation settings and if you want to start the copying and therefore installing the files, click the **Next** button.

A **Setup-Status** window opens. The software is copied from the DVD to your computer.

When the copying is complete a **Complete** window opens, informing that the software was successfully installed.

15. To finish the installation, click the **Finish** button.

The Basler Microscopy Software is installed.

16. For smooth operation, close the software, boot your computer, and start the software again.

The installation process is complete.

Additional Software

A Basler Video Recording Software is included on the supplied DVD.

Further useful software applications can be found on:
www.imaginghub.com/projects



HARDWARE INSTALLATION

The available camera models of the Basler Microscopy pulse and ace cameras are listed in the Specifications section of this document.

The hardware installation involves attaching a Basler Microscopy camera to a microscope via a camera microscope adapter, adjusting the orientation of the adapter with the mounted camera, and connecting the camera to a computer via a USB 3.0 cable.

Requirements before Installing the Hardware

Make sure to meet the following requirements before installing the hardware:

- The microscope provides some fixture (a trinocular tube or an eyepiece) for attaching a camera microscope adapter.
- A suitable camera microscope adapter is present that meets these requirements:
 - The adapter is suitable for your microscope.
 - The adapter has a C-mount on the camera end.
 - For best results, length and magnification factor of the adapter are in accord with the effective sensor diagonal of the camera (see the Specifications section in this document).

To obtain a suitable adapter, contact your microscope sales person.

- There will be sufficient free space around the camera for efficient heat dissipation.

- The Basler Microscopy Software is installed on the computer (see the Software Installation section) but not running.
- To be able to see an image, Basler recommends placing a slide with a sample on the microscope stage. Bring the sample in focus and set the microscope's illumination to the usual brightness.

Installing a Basler Microscopy Camera

Unless otherwise noted, the following instructions apply to Basler Microscopy pulse cameras and Basler Microscopy ace cameras.

1. Make sure to meet all requirements listed above.
2. Remove the plastic cap from the camera.
3. Attach the camera microscope adapter to the microscope as described by the microscope manufacturer.
4. If you install a Basler Microscopy pulse camera (portion **A** in [Figure 2](#)):
 - a. Mount the CS-mount to C-mount adapter ring on the camera (the CS-mount of the adapter ring must be on the camera side).
 - b. Mount the camera with the adapter ring attached on the C-mount of the camera microscope adapter.

If you install a Basler Microscopy ace camera (portion **B** in [Figure 2](#)):

- a. Mount the camera on the C-mount of the camera microscope adapter.

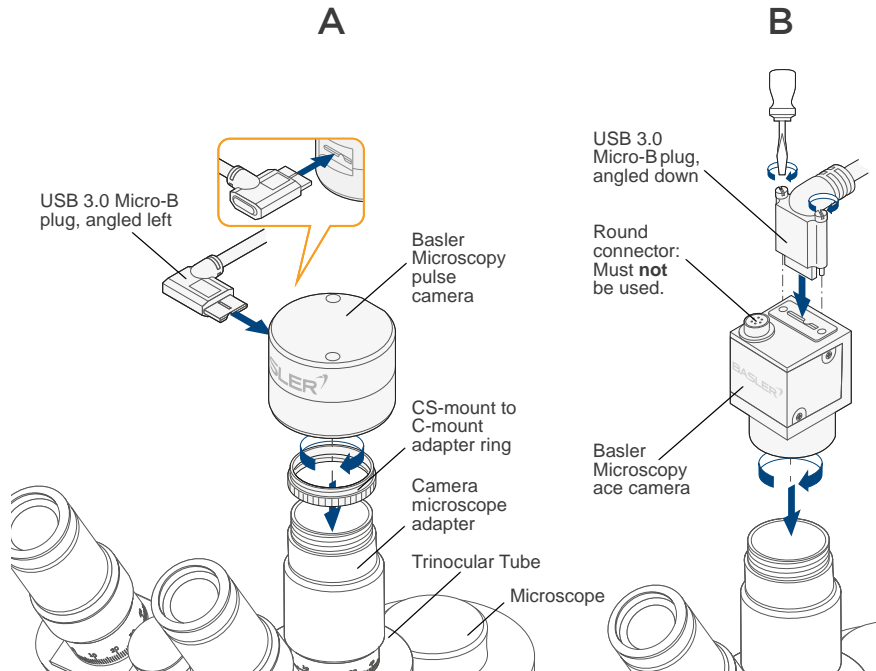


Fig. 2: Mounting Basler Microscopy Cameras on Microscopes

5. Rotate the camera microscope adapter with the camera attached, until the camera's USB 3.0 Micro-B port points to the left as seen by the microscopist (Basler Microscopy pulse) or to the rear of the microscope (Basler Microscopy ace) (Figure 2).
6. Lock the camera microscope adapter in this position.


NOTICE

Damage Hazard: Risk of Damaging the Cable.

When carrying out the next step, make sure not to kink the cable. Run the cable clear of hot surfaces, e.g. the cooling ribs of the microscope illumination.

7. If you install a Basler Microscopy pulse camera:
 - a. Connect the angled left USB 3.0 Micro-B plug of the cable to the USB 3.0 Micro-B port of the camera.If you install a Basler Microscopy ace camera:
 - a. Connect the angled down USB 3.0 Micro-B plug of the cable to the USB 3.0 Micro-B port of the camera.
 - b. Tighten the screws of the USB 3.0 Micro-B plug.
8. Connect the USB 3.0 A plug of the cable to a USB 3.0 port of the computer.

Note: If the computer has a USB 3.0 port on the rear, use it for improved signal integrity, as opposed to a port on the front.

- Click the Basler Microscopy Software icon  on the desktop to start the Basler Microscopy Software.

The Basler Microscopy Software window opens.

- Click the **Live** button to display live images.

The Basler Microscopy camera is installed and live images are displayed. You may be able to improve image quality by adjusting the camera settings, such as the white balance.

For more information about using the camera and the software, see the online help included with the software.

Note: You must not use the round connector on a Basler Microscopy ace camera.

Note: If artefacts or incomplete images occur, you may be able to correct this by assigning less USB bandwidth to the camera. In the software, follow this path: click the **Acquisition Settings** button (tool bar, **Camera Control** pane, top right) > expand the **Camera** node (tree in the **Acquisition Settings** window, left) > click **Adjustment** (subtree) > decrease the bandwidth by shifting the **Data rate** slider to the left until artefacts disappear and all images are present and complete.

SPECIFICATIONS

Basler Microscopy pulse Cameras and Adapters

	pulse 1.2 MP	pulse 2 MP	pulse 3.3 MP	pulse 5 MP
Resolution (HxV pixels)	1280 × 960	1920 × 1080	2048 × 1584	2592 × 1944
Sensor Type	Global Shutter	ON Semiconductor, CMOS, Rolling Shutter	Rolling Shutter	Rolling Shutter
Mono/Color	Color	Color	Color	Color
Optical Size	1/3"	1/3.7"	1/3"	1/2.5"
Effective Sensor Diagonal [mm] ^a	6.00	4.85	5.70	7.13
Pixel Size [um]	3.75 × 3.75	2.2 × 2.2	2.2 × 2.2	2.2 × 2.2
Max. Frame Rate [fps]	54	30	20	14
Temporal Dark Noise [e ⁻]	5.12	6.40	6.40	6.40
Dynamic Range [dB]	64	70.1	70.1	70.1
Power Cons. [W]	ca. 1.3			
Conformity	CE (includes RoHS), FCC, UL Listed, USB3 Vision, GenICam			

Microscope camera adapter recommendations

Magnification	0.3x, 0.33x, 0.35x	0.3x	0.3x, 0.33x, 0.35x	0.45x, 0.5x, 0.55x
---------------	--------------------	------	--------------------	--------------------

^aRefers to the maximum number of pixels that can compose an image.

Basler Microscopy ace Cameras and Adapters

	ace 1.3 MP 48	ace 1.3 MP 145	ace 1.3 MP 200	ace 2.3 MP
Resolution (H×V pixels)	1280 × 1024		1280 × 1024	1920 × 1200
Sensor Type	Sony, CMOS, Global Shutter	ON Semiconductor, CMOS, Global Shutter		Sony, CMOS, Global Shutter
Mono/Color	Color	Color	Mono	Mono/Color
Optical Size	1/1.8"		1/2"	1/1.2"
Effective Sensor Diagonal [mm] ^a	9.6		7.9	13.3
Pixel Size [µm]	5.86 × 5.86		4.8 × 4.8	5.86 × 5.86
Max. Frame Rate [fps]	48	145	200	40
Temporal Dark Noise [e ⁻]	6.83	8.9	10.6	6.83
Dynamic Range [dB]	73	56.2	56.3	73
Power Cons. [W]	ca. 2.9		ca. 3	ca. 2.7
Conformity	CE (includes RoHS), FCC, UL Listed, USB3 Vision, GenICam			
Microscope camera adapter recommendations				
Magnification	0.45×, 0.5×, 0.55×		0.5×	1× to 1.2×
^a Refers to the maximum number of pixels that can compose an image.				

Basler Microscopy ace Cameras and Adapters

	ace 3.2 MP	ace 5.1 MP	ace 12.2 MP
Resolution (HxV pixels)	2048 × 1536	2448 × 2048	4024 × 3036
Sensor Type	Sony, CMOS, Global Shutter	Sony, CMOS, Global Shutter	Sony, CMOS, Rolling Shutter
Mono/Color	Color	Mono/Color	Color
Optical Size	1/1.8"	2/3"	1/1.7"
Effective Sensor Diagonal [mm] ^a	9.0	11.2	9.3
Pixel Size [um]	3.45 × 3.45	3.45 × 3.45	1.85 × 1.85
Max. Frame Rate [fps]	55	35	15
Temporal Dark Noise [e ⁻]	2.22	2.25	3.2
Dynamic Range [dB]	71.38	70.6	71
Power Cons. [W]	ca. 2.6	ca. 2.7	ca. 3
Conformity	CE (includes RoHS), FCC, UL Listed, USB3 Vision, GenICam		

Microscope camera adapter recommendations

Magnification	0.5×	0.67×, 1.0×	0.45×, 0.5× 0.55×
---------------	------	-------------	----------------------

^aRefers to the maximum number of pixels that can compose an image.

Environmental Requirements

You must use the camera in accord with the environmental requirements.

Requirements	Basler Microscopy pulse and Basler Microscopy ace cameras
Housing temperature during operation	0-50 °C (32-122 °F)
Housing temperature during storage	-20-80 °C (-4-176 °F)
Ambient temperature according to UL 60950-1	max. 30 °C (86 °F)
Housing temperature according to UL 60950-1	max. 70 °C (158 °F)
Humidity during operation	20-80 %, relative, non-condensing
Humidity during storage	20-80 %, relative, non-condensing

UL 60950-1 test conditions: no lens attached to the camera and without efficient heat dissipation; ambient temperature kept at 30 °C (86 °F).

SUPPORT, REPAIR, AND DISPOSAL

Technical Support and Camera Repair

If you need assistance troubleshooting a problem or if your camera needs repair, contact your camera sales representative.

Disposal

According to the WEEE directive, this product must not be treated as household waste. Dispose of the camera and the cable in accord with your local regulations for disposal of electronic devices. Inappropriate waste handling of these components may cause potential hazards to the environment and human health.



QUALITY MADE BY BASLER

Our approach to quality assurance is rigorous:

We constantly audit all facets of our business to ensure powerful performance, to increase efficiency and to reduce costs for our customers. We comply with quality standards including ISO 9001, CE, UL, RoHS, and more.

We employ several quality inspection procedures during manufacturing. Every Basler camera is subjected to exhaustive optical, electrical and mechanical tests before leaving the factory. Regardless of what technology or camera model you choose, you can be assured of consistent performance.

Basler is leading the effort to standardize image quality and sensitivity measurement for cameras and sensors. Our cameras are designed and measured in 100% compliance with the EMVA 1288 standard.

Basler's reputation for quality speaks for itself and will meet your highest expectations.

AT BASLER, WE GIVE TECHNOLOGY
THE POWER OF SIGHT.



For further information and support documents on
Basler's PowerPack for Microscopy please visit

www.baslerweb.com/microscopy



