

QUICK INSTALL GUIDE

BASLER ADD-ON CAMERA KIT

dart BCON for MIPI



BASLER[®]
the power of sight

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INTRODUCTION

About this Document

This document provides information about how to perform the hardware installation of the Add-on Camera Kit components for a Basler dart BCON for MIPI camera.

The document provides stepwise instructions for setting up a complete embedded vision system and indicates where to find further information.

Note: This document describes the installation of **Basler products** only, i.e., a Basler dart BCON for MIPI camera, a BCON for MIPI to Mini-SAS adapter (referred to here as "adapter board"), and additional accessories (see the Installing the Add-on Camera Kit Components section).

However, to install and run a complete embedded vision system, you also need extra components besides Basler products. These components include a processing board and additional accessories. Observe the relevant documentation of these components to ensure proper installation.

Target Audience

The Basler Add-on Camera Kit is aimed at experienced hardware and software engineers proficient in electronics, software development, and embedded system design.

This document is written for a target audience that has intermediate to advanced technical skills in the areas mentioned above.

The document assumes that users have experience in the following areas:

- System on Chip (SoC) or System on Module (SoM) architectures
- Embedded Linux operating systems

SAFETY INSTRUCTIONS

General Safety Notices



DANGER

Electric Shock Hazard: Unapproved power supplies may cause electric shock. Serious injury or death may occur.

Only use a power supply that meets the requirements indicated in the Basler dart Getting Started Guide included in the Add-on Camera Kit.



WARNING

Fire Hazard: Unapproved power supplies may cause fire and burns.

Only use a power supply that meets the requirements indicated in the Basler dart Getting Started Guide included in the Add-on Camera Kit.

NOTICE

Damage Hazard: Electrostatic discharge (ESD) can damage the components of the Add-on Camera Kit.

- Use anti-static clothes and materials, e.g., conductive shoes, anti-static gloves, and ESD protection wrist straps to decrease the risk of electrostatic discharge.
- Control the humidity in your environment. Low humidity can cause ESD problems.

NOTICE

Radio Interference Hazard: This is a Class A product that may cause radio interference in residential environments. In this case, you are required to take adequate preventive measures.

Observe the following items:

- Do not modify the hardware components in any way. Do not remove parts from the adapter board or solder in new parts.
- Do not allow, e.g., liquid, flammable, or metallic material to get in contact with the adapter board.
- Read the documentation before using the Add-on Camera Kit.
- For safety instructions related to the installation and operation of the Basler dart BCON for MIPI camera, refer to the Basler Product Documentation available at: docs.baslerweb.com
- For safety instructions related to the installation and operation of extra components that are not included in the Add-on Camera Kit and that you acquire from other sources, refer to the documentation of the corresponding manufacturers.

Environmental Requirements

This Add-on Camera Kit is intended for indoor use at room temperature only.

If you operate the Add-on Camera Kit at elevated temperatures or at high load, Basler recommends providing additional cooling, e.g., by installing a fan.

For specific environmental requirements of all the components, refer to the following documentation:

- Getting Started Guide of your camera model (in this package)
- Basler Product Documentation available at docs.baslerweb.com
- Corresponding documentation of the extra components

DELIVERED COMPONENTS

The Basler Add-on Camera Kit contains the following components:

- Basler dart camera module, S-mount
- S-mount lens
- Lock ring M12x0.5
- BCON for MIPI to Mini-SAS adapter ("adapter board")
- Flexible flat cable
- Basler dart Getting Started Guide
- This Add-on Camera Kit Quick Install Guide

ADDITIONAL COMPONENTS AND SOFTWARE

In order to set up a complete embedded vision system, you also require the following components, which are **not included** in the Add-on Camera Kit:

- Processing board (see Note on [page 11](#))
- SD card (min. 4 GB)
- Power supply
- HDMI monitor (full HD resolution)
- USB hub, USB keyboard, USB mouse
- HDMI cable

- International power cable plugs
- Software to stream, save, and process images

Note: Basler is constantly evaluating, testing and extending the list of **processing boards** that are compatible with the Add-on Camera Kit.

So far, Basler has approved the following processing boards for use with the Add-on Camera Kit:

- NXP® i.MX 8 Multisensory Enablement Kit (MCIMX8QM-CPU)
- NXP® i.MX 8MQuad Evaluation Kit (MCIMX8M-EVK)
- NXP® i.MX 8M Mini Evaluation Kit (8MMINILPD4-EVK)

Check the Basler website for the current list of approved processing boards.

Note: Basler is constantly evaluating, testing and extending the list of **adapter boards and lenses** that are compatible with dart BCON for MIPI cameras and the Add-on Camera Kit components.

Check the Basler website for the current list of compatible adapter boards and lenses.

HARDWARE INSTALLATION

Overview of the Add-on Camera Kit Components

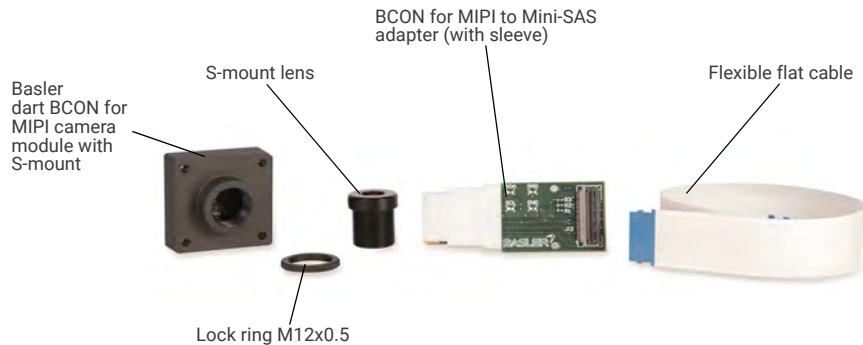


Fig. 1: Hardware Components of the Add-on Camera Kit (Example)

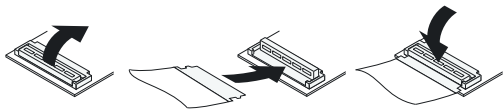
Installing the Add-on Camera Kit Components

NOTICE

Damage Hazard: Supplying power before the hardware installation is completed can damage camera and board components.

Only connect the power supply to the mains socket when the hardware installation of all embedded vision system components is completed.

1. Attach the lock ring on the thread of the lens (see [Figure 2](#)).
To obtain a first setup, screw the ring onto the lens so that there is a distance of approximately 0.5 mm between the lock ring and the lens.
2. Remove the protective cap from the lens and mount the lens on the camera.
3. Connect the flexible flat cable with the FCC connector of the camera.
To insert the cable:
 - a. Open the locking bar of the FCC connector.
 - b. Push the end of the cable firmly into the connector with the ground tab facing down until the retaining tabs slide into the recesses on both sides.
 - c. Flip the locking bar down to lock the connector.



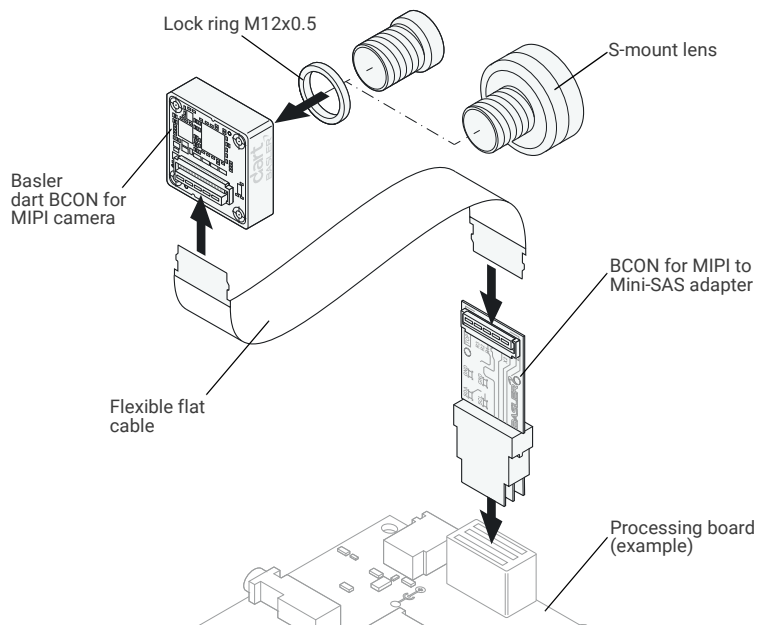


Fig. 2: Installation of the Hardware Components of the Add-On Camera Kit

4. Connect the other end of the flexible flat cable with the FCC connector of the adapter board.

Proceed as described in step 3.

5. Connect the adapter board to the processing board and ensure that the adapter board is oriented as shown in [Figure 2](#).
6. Install and connect the additional components that are not part of the Add-on Camera Kit according to the documentation of the corresponding manufacturers.
7. Connect the power supply to the mains socket.

Note: When your entire system is completely set up, adjust the focus of the lens by changing the intrusion depth of the lens in the camera mount. Fix the optimum intrusion depth of the lens by **tightening the lock ring** on the lens thread.

SOFTWARE INSTALLATION

Install the software from the Basler website at www.baslerweb.com:

1. Open the **Embedded Vision** menu and select the **Basler's Embedded Vision Kits** entry.
2. Select your camera model in the list of the model names.
3. Go to the **Software** tab.
4. Select the software: **Camera Enablement Package**.

Note: For each combination of a specific camera module with a specific processing board you must install the appropriate variant of the **Camera Enablement Package**, available from the Basler website.

The name of each package variant indicates the respective camera model and processing board. For example, if you want to use the daA2500-60mci camera module and the i.MX 8QuadMax processing board, you must install the appropriate variant of the Camera Enablement Package from the Basler website.

5. Download the software.

Included in the Camera Enablement Package, you can find a **readme.txt** file that shows how to proceed.

NEXT STEPS

Developer Resources

For information about installing the software and developing your own embedded vision solution, refer to the **readme.txt** file included in the Camera Enablement Package.

Technical Support

If you experience technical problems, please feel free to contact Basler's customer service team.

Basler provides direct support for the unmodified hardware and software reference design as well as problems arising from the use of this design and original Basler components only. To qualify for support, issues resulting from the use of Basler's reference design must be reproducible on the same unmodified setup. Off-the-shelf hardware, proprietary as well as open-source software from third-party suppliers that are contained in this Add-on Component Kit are excluded from Basler's support services.

If you need help with porting to other hardware platforms or modifying the software stack provided, please contact Basler sales.

SPECIFICATIONS

Camera Specifications

For the specifications of your camera model, see the dart Getting Started Guide (in this Add-on Camera Kit) or the documentation for your specific model on the Basler website www.baslerweb.com. Download the manual:

1. Select your camera model.
2. **Documents** tab > **Manuals** section > select the user's manual.

Lens Specifications

The lenses listed below are a selection of suitable lenses. Since Basler is constantly increasing the range of suitable lenses, go to the Basler website to find out about all currently appropriate lenses: www.baslerweb.com

	Evetar Lens N118B05518W	Evetar Lens M13B0618W
Focal Length	5.5 mm	6 mm
Aperture	<i>f</i> /1.8	<i>f</i> /1.8
Lens Mount	S-mount	S-mount
Iris Type	Fixed	Fixed
IR Cut Filter	Yes	Yes
Max. Image Circle	1/1.8"	1/3"
Working Distance	200 mm	200 mm
	For dart MIPI 5 MP	For dart MIPI 13 MP

Specifications of Additional Components

For information about the specifications of additional components that are not part of the Add-on Camera Kit, refer to the documentation of the corresponding manufacturers.

Power Supply Specifications

For specific power supply specifications, refer to the following documentation:

- Getting Started Guide of your camera model (in this package)
- Documentation of the corresponding manufacturer (e.g., power supply specification of the processing board)

DISCLAIMER AND LICENSING INFORMATION

Disclaimer

This Add-on Camera Kit is intended for use for evaluation, engineering development, demonstration, or test purposes only. It is not considered a finished end product. The product is only offered for the use of professional business personnel. It does not fulfill the requirements for consumer use. Persons handling the product must have electronics training and observe good engineering practice standards. Basler does not assume any liability for the use of this Add-on Camera Kit in environments other than evaluation, engineering development, or demonstration and test environments. If the product is to be used with or integrated into a salable application, please contact your nearest Basler sales representative.

As such, the goods of this Add-on Camera Kit being provided are not intended to be complete in terms of required third-party licenses, design, marketing, and/or manufacturing-related protective considerations, including product safety and environmental measures typically found in end products that incorporate such products. For its use in salable applications the user is responsible to assure compliance with all applicable regulatory and licensing requirements. Basler shall not be liable for claims arising from an infringement of third-party intellectual property rights.

Software Licensing

The software that you can download on our website for the Add-on Camera Kit (the "Software") is licensed to you under the conditions of the "dart BCON for MIPI Add-on Camera Kit License Agreement". Please see the license text file included in the Software for further information. This Software contains non-proprietary Basler software or software provided under open-source license by third parties ("third-party software") and is licensed to you subject to the terms and conditions of the software license agreement accompanying such third-party software. The use of the third-party software shall be governed entirely by the terms and conditions of such license. Please find the license terms and conditions of the applicable third-party licenses in the Software or contact Basler support. The Software provided by Basler includes some open-source software that may be used and modified by anyone and everyone, provided they, in turn, make the source code available to everyone else with the same licensing agreement. For a period of three (3) years, commencing from the reception of this Software, you or any third person may obtain a complete machine-readable copy of the source code for the components licensed under open-source licenses in the extent required by the respective licenses and on a medium customarily used for software interchange without charge, except for the cost of physically performing source distribution upon written request to Basler.

For further information and documents about
Basler's embedded vision portfolio, please visit:

www.baslerweb.com/embedded



