

## KAE-0815x TEC Image Sensor Evaluation Kit

### Description

The ON Semiconductor KAE-0815x TEC image sensor evaluation kit enables customers to evaluate the performance of KAE-08151 and KAE-08152 Interline Transfer EMCCD image sensors that include an integrated thermoelectric cooler (TEC) without the need to develop a full camera design. When combined with ON Semiconductor SensorStudio software, the kit allows easy camera control such as VGA/CDS gains, black levels, integration time, electron multiplication factor and readout configuration (single / dual / quad). Image capture and analysis functions such as video recording, still image capture, gain merging and image analysis are also supported.

Separate part numbers are available to evaluate devices with either standard or enhanced NIR sensitivity in monochrome, color, and Sparse CFA configurations where available. Separate product configurations with an integrated TEC can also be evaluated using this hardware by purchasing individual image sensors. Please see ordering information for more details. Individual components of this kit are also available in an à la carte manner. Please contact your ON Semiconductor sales representative for more details.

US export controls apply to shipments of IT-EMCCD devices designated for destinations outside of the US and Canada. Please contact your ON Semiconductor sales representative for more details.

### Features

- Three Operating Modes Supported:
  - ◆ Normal: All Signal Routed to Standard CCD Output
  - ◆ EM: All Charge Routed to Electron Multiplication Output
  - ◆ Mixed: Intra-scene Switchable Gain Routes Charge Based on Signal Intensity on a Per Pixel Basis
- USB Interface for Sensor Control, Image Capture, and Firmware Downloads
- Optional Camera Link Interface Supports Faster Display Rates

### Kit Includes

- FPGA Capture Board with Base and Tripod Mount (1/4-20)
- Imager Board with Socketed Engineering Grade Image Sensor Installed
- F Type Lens Mount, No IR Cut Filter
- USB 3.0 Cable (2 meter Length)



ON Semiconductor®

[www.onsemi.com](http://www.onsemi.com)

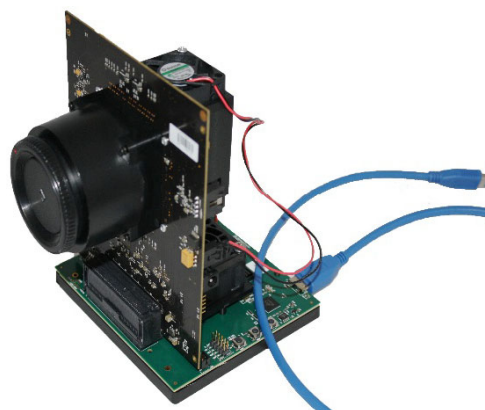


Figure 1. Evaluation Board Picture

Parameter	Typical Value
Hardware Interfaces	USB 3.0 Camera Link Medium
Typical Data Rate USB 3.0 Camera link Medium	79 MB/sec 158 MB/sec
Sensor Output Pixel Rate AFE Data Rate	Analog 20 MHz LVDS 120 MHz
Sensor Frame Rate (fps) Full Resolution @ 20 MHz	single / dual / quad 1.8 / 3.6 / 7.2
Display Frame Rate (fps) Full Resolution USB 3.0 Full Resolution Camera Link	single / dual / quad 0.9 / 1.8 / 3.6 1.8 / 3.6 / 7.2
On Board Frame Buffer Capacity	16 frames
Optics	F type lens mount included. To use C mount, order optional lens mount kit mentioned in "Ordering Information".

- Cooling Tower with TE Controller Interface
- Quick Start guide

**Not included (required):** Lens, Tripod, Power Supply, TEC Controller, Windows 7 and Windows 10 64 bit Computer

**Not included (optional):** Components to enable camera link interface (Microtronix A6287 interface board and 2 MDR-SDR cables)

**ORDERING INFORMATION**

Part Number	Description
KAE-08151-AB-SD-A-GEVK	KAE-08151 TEC image sensor evaluation kit, monochrome (image sensor included)
KAE-08151-FB-SD-A-GEVK	KAE-08151 TEC image sensor evaluation kit, color (image sensor included)
LENS-MOUNT-KIT-E-GEVK	Lens mount kit. Includes C mount, C mount IR cut filter, F mount.

**REQUIRED HARDWARE AND SOFTWARE****Host Computer**

- 2 GHz processor, 8 GB RAM, USB 3.0 interface, Windows 7 and Windows 10 64 bit Operating System
- SensorStudio software. Available for download at [onsemi.com](http://onsemi.com)
- Camera lens
- IR cut filter (required for evaluating color image sensors)
- Table-top tripod (optional)

**Other (User Supplied)**

- +12 VDC, 2 Amp, power supply with 2.1 mm center positive DC jack
- TE Controller (tested with TE Technology models TC-48-20 and TC-720). See Quick Start Guide for connection information.

**onsemi**, **onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

The evaluation board/kit (research and development board/kit) (hereinafter the "board") is not a finished product and is not available for sale to consumers. The board is only intended for research, development, demonstration and evaluation purposes and will only be used in laboratory/development areas by persons with an engineering/technical training and familiar with the risks associated with handling electrical/mechanical components, systems and subsystems. This person assumes full responsibility/liability for proper and safe handling. Any other use, resale or redistribution for any other purpose is strictly prohibited.

**THE BOARD IS PROVIDED BY ONSEMI TO YOU "AS IS" AND WITHOUT ANY REPRESENTATIONS OR WARRANTIES WHATSOEVER. WITHOUT LIMITING THE FOREGOING, ONSEMI (AND ITS LICENSORS/SUPPLIERS) HEREBY DISCLAIMS ANY AND ALL REPRESENTATIONS AND WARRANTIES IN RELATION TO THE BOARD, ANY MODIFICATIONS, OR THIS AGREEMENT, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING WITHOUT LIMITATION ANY AND ALL REPRESENTATIONS AND WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, NON-INFRINGEMENT, AND THOSE ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE CUSTOM OR TRADE PRACTICE.**

**onsemi** reserves the right to make changes without further notice to any board.

You are responsible for determining whether the board will be suitable for your intended use or application or will achieve your intended results. Prior to using or distributing any systems that have been evaluated, designed or tested using the board, you agree to test and validate your design to confirm the functionality for your application. Any technical, applications or design information or advice, quality characterization, reliability data or other services provided by **onsemi** shall not constitute any representation or warranty by **onsemi**, and no additional obligations or liabilities shall arise from **onsemi** having provided such information or services.

**onsemi** products including the boards are not designed, intended, or authorized for use in life support systems, or any FDA Class 3 medical devices or medical devices with a similar or equivalent classification in a foreign jurisdiction, or any devices intended for implantation in the human body. You agree to indemnify, defend and hold harmless **onsemi**, its directors, officers, employees, representatives, agents, subsidiaries, affiliates, distributors, and assigns, against any and all liabilities, losses, costs, damages, judgments, and expenses, arising out of any claim, demand, investigation, lawsuit, regulatory action or cause of action arising out of or associated with any unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of any products and/or the board.

This evaluation board/kit does not fall within the scope of the European Union directives regarding electromagnetic compatibility, restricted substances (RoHS), recycling (WEEE), FCC, CE or UL, and may not meet the technical requirements of these or other related directives.

**FCC WARNING** – This evaluation board/kit is intended for use for engineering development, demonstration, or evaluation purposes only and is not considered by **onsemi** to be a finished end product fit for general consumer use. It may generate, use, or radiate radio frequency energy and has not been tested for compliance with the limits of computing devices pursuant to part 15 of FCC rules, which are designed to provide reasonable protection against radio frequency interference. Operation of this equipment may cause interference with radio communications, in which case the user shall be responsible, at its expense, to take whatever measures may be required to correct this interference.

**onsemi** does not convey any license under its patent rights nor the rights of others.

**LIMITATIONS OF LIABILITY:** **onsemi** shall not be liable for any special, consequential, incidental, indirect or punitive damages, including, but not limited to the costs of requalification, delay, loss of profits or goodwill, arising out of or in connection with the board, even if **onsemi** is advised of the possibility of such damages. In no event shall **onsemi**'s aggregate liability from any obligation arising out of or in connection with the board, under any theory of liability, exceed the purchase price paid for the board, if any.

The board is provided to you subject to the license and other terms per **onsemi**'s standard terms and conditions of sale. For more information and documentation, please visit [www.onsemi.com](http://www.onsemi.com).

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at [www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)