

Xylon d.o.o.

Fallerovo setaliste 22
10000 Zagreb, Croatia
Phone: +385 1 368 00 26

Fax: +385 1 365 51 67
E-mail: support@logicbricks.com
URL: www.logicbricks.com

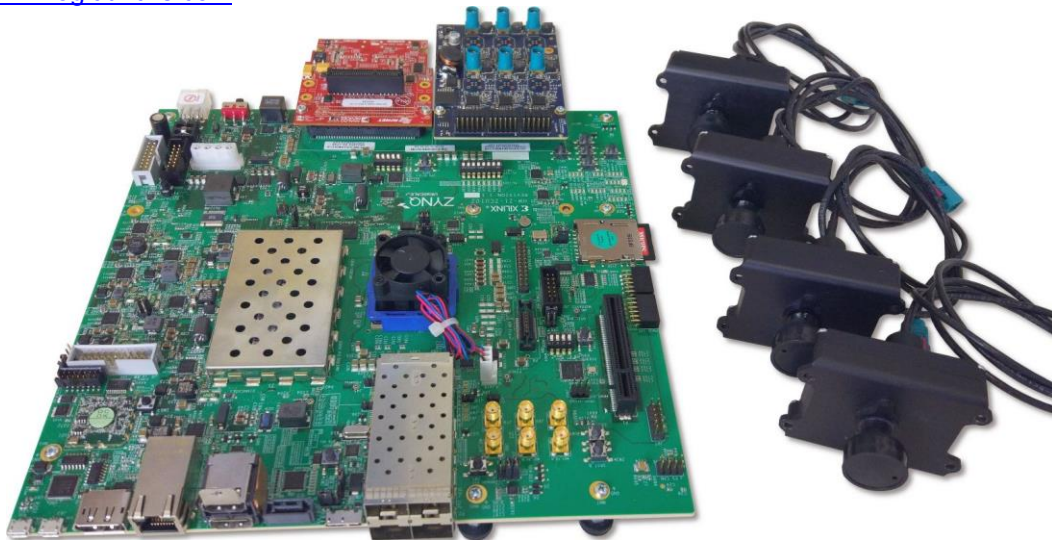


Figure 1: The logiADAK – Xilinx Zynq® UltraScale+™ MPSoC Based Automotive Driver Assistance Kit

Features

- Full design framework for real-time vision-based Advanced Driver Assistance Systems (ADAS)
- Xilinx Zynq® UltraScale+™ MPSoC based
- Optimized for evaluation and development of the 3D Surround View parking assistance
- Includes the complete ADAS demos:
 - Flying Camera Surround View
 - logiOWL Vehicle Self Calibration – quick and effortless automated system calibration
- Includes software for quick vehicle's setup:
 - logiADAK Builder for viewing modes setup
 - Calibration software for end of the production line and for service garages
- Can be upgraded with logiADAK-VDF-ZU video framework and customized at the SoC level
- Includes Xylon cameras compatible with the TI® FPD-Link III serial link (DS90UB933 serializer)
- Kit users can change demo views, add logo, etc. through the included software tools, and change the application software at the source code level
- All-in-one hardware platform is appropriate for test vehicle installations
- Xylon offers design services for user specific platform customizations, i.e. change cameras
- 25 hours of tech support (e-mail)
- Xylon Surround View is production-ready and in use in automotive production systems of today

Applications

- 3D Flying Camera Surround View Parking Assistance

General Description

The logiADAK Programmable MPSoC Advanced Driver Assistance (ADAS) kit is the Xilinx Zynq UltraScale+ MPSoC based evaluation and development platform for automotive ADAS applications that require intensive real-time video processing, parallel execution of multiple complex algorithms, and flexible interfacing with sensors and vehicle's communication backbones. This fifth version of the kit is a more powerful MPSoC successor of Xylon's popular logiADAK 3.x kit, which is based on the Xilinx Zynq-7000 All Programmable SoC.

The logiADAK kit is used to quickly bring new ADAS innovations to market, and it has been fully optimized for development of the surround view parking assistance. It provides ADAS designers all the resources they need to efficiently develop vision-based ADAS systems, save months of development time and focus efforts on system differentiating functions and performance.

The complete hardware platform includes four Xylon video cameras that use the TI FPD Link-III high-speed digital video interface for video transmissions. The kit also comes with a full set of user customizable demo applications, advanced software for quick setup on any vehicle, documentation and skilled Xylon technical support. The provided logiADAK hardware platform is appropriate for quick test vehicle installations and rapid engagements in proof-of-concept or demonstration projects

The logiADAK can be upgraded with the logiADAK-VDF-ZU Video Design Framework that includes complete and licensed camera-to-display SoC designs and enables quick utilization of the provided hardware platform by the end user. Instead of starting from a scratch, the logiADAK-VDF-ZU framework users can immediately focus on specific vision-based parts of their next SoC design for ADAS. Since the logiADAK hardware platform enables test vehicle installations, the new ADAS developments can be quickly tested and validated on the road.

Flying Camera Surround View Parking Assistance ADAS

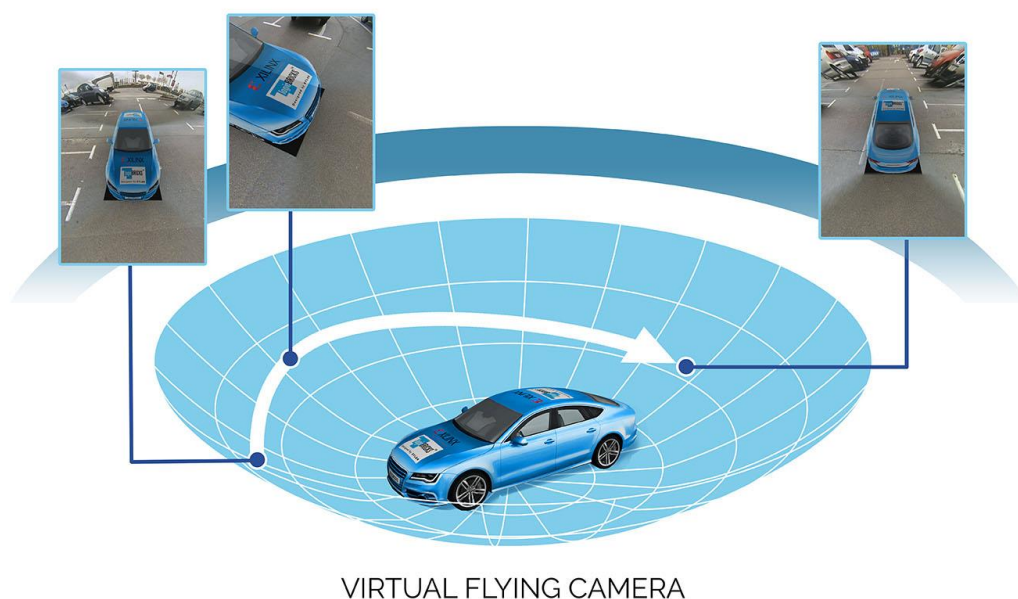


Figure 2: Xylon Surround View Parking Assistance ADAS – Illustration with Screenshots

Xylon's latest surround view solution enables drivers to dynamically adjust the position of the virtual flying camera and to see the vehicle's surrounding in a three-dimensional hemispheric view, displayed in fine-detail HD resolution. Such views eliminate all blind spots during critical and precise maneuvers in different traffic situations. Since it is based on programmable logic, it can be quickly upgraded to six or more cameras to support commercial and special vehicles.

Xylon's Surround View ADAS IP Suite enables fast implementation of Xilinx SoC/MPSoC and FPGA designs for popular four-camera parking assistance ADAS. The suite includes IP cores and all software pieces needed by automakers and their electronics suppliers for their own differentiated and scalable parking assistance ADAS.

Xylon's surround view technology is used on the road in production automotive systems today. For more information about the IP Suite, please contact sales@logicbricks.com.

logiOWL Vehicle Self Calibration

The body shape and the size of different vehicles dictate the camera installation points and each vehicle requires an unique setup of the system. The logiADAK kit includes the calibration software for the Surround View application, which is extremely simple to use.

The patented Xylon's logiOWL Vehicle Self Calibration enables an automatic end of line camera calibration. While traditional electronic means of alignment are challenging, time consuming and require specialized calibration environments, Xylon's end of line calibration solution runs fully embedded in the vehicle and enables full vehicle level multi-camera calibration in as little as 10 seconds. The process is simple and inexpensive, does not require a complex calibration site, and can be executed easily in repair shops without specialized training for service personal.

For more information about the logiOWL, please contact Xylon at info@logicbricks.com.

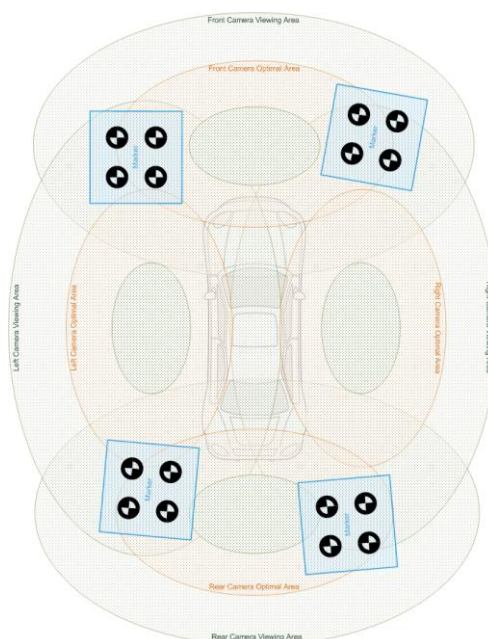


Figure 3: logiOWL Calibration – Markers Setup Example

logiADAK Builder PC Application

The logiADAK Builder implements a convenient PC user interface towards the target ADAS system embedded in a vehicle. It enables quick customizations of the Surround View system features, modes and mode views. All previews are done on the target and there is no mismatch between the PC settings and the final target system settings. Required vehicle calibration data and customized views must be setup once for the specific vehicle model. In combination with the logiOWL Vehicle Self Calibration, the determined setup enables quick and precise vehicle self-calibration suitable for volume production.

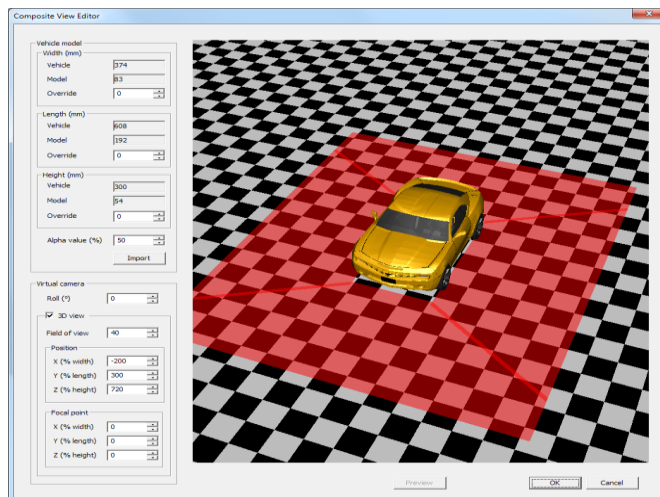


Figure 4: logiOWL Calibration – Markers Setup Example

Xylon Video Camera

Xylon video cameras, which are provided with the logiADAK kit, include OmniVision OV10635 1-megapixel camera sensor that combines high-definition 1280x800p30 WXGA (HD) video with the color high dynamic range (HDR) functionality, FPD-Link III serializer (transmitter) board, the Sunex DSL219 miniature fish-eye Wide FOV lens and a short cable lead with a connector. All camera parts are enclosed in the waterproof aluminum housing (Figure 5). The housing is sealed with rubber gaskets to ensure a weather-proof rating of IP67. Its rugged metal construction provides excellent lens and imager module protection and enables safe and easy installations on different vehicles (cars, robots...).

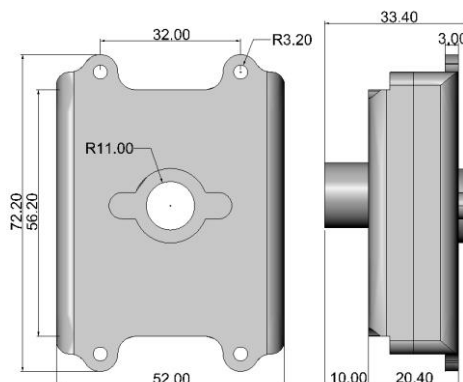


Figure 5: Xylon Video Camera Housing (All Dimensions in Millimeters)

Package Content

Hardware

- 1x Zynq UltraScale+ MPSoC ZCU102 Development Kit with the XCZU9EG-FFVB1156-2 MPSoC
- 1x Xylon logiFMC-FPD3-934 6-Ch FPD-Link III FMC add-on daughter card for up to 6 camera connections
- 1x Avnet HDMI Input/Output FMC board (Avnet part number: AES-FMC-HDMI-CAM-G)
- 4x Xylon Enclosed Camera Systems featuring the TI FPD-Link III serializers
- 4x Vehicle Calibration Carpets¹ and 4x Model-Sized Calibration Carpets (for use on lab desks)
- 1x SD card

¹ Internationally registered industrial design

Zynq UltraScale+ MPSoC Design

The reference SoC designs are prepared using Xilinx Vivado tools, version 2017.2 and delivered in the binary configuration format.

Applications and Drivers

- Demo application in source code
- logiADAK Builder
- logicBRICKS standalone (bare-metal) and Linux drivers with examples
- Xylon precompiled utility libraries

Documentation

- logiADAK User's Manual
- logiADAK Low Velocity Application User's Manual
- logiADAK Vehicle Setup Guidelines
- logicBRICKS User's Manuals

Cabling and Adapters

- power supply
- 4x long cables for camera interfacing; suitable for vehicle installations

Recommended Design Experience

The users, who want to make changes on the provided designs, should have experience in the following areas:

- Xilinx design tools
- C programming

Design Services

Design services are available to customers interested in customization and enhancement developments based on the presented hardware and software products. Xylon can change all parts of the logiADAK kit in order to adopt it to specific customer's requirements.

Related Xylon Products

logiADAK kit users can purchase the logiADAK-VDF-ZU Video Design Framework and quickly utilize the logiADAK hardware platform for their own ADAS SoC developments. The framework includes the complete camera-to-display SoC designs (included logicBRICKS IP cores licensed for prototyping) that use just a fraction of available programmable logic, significantly saves the design time and allows users to focus on their own ADAS innovation:

Email: support@logicbricks.com

URL: <http://www.logicbricks.com/Products/logiADAK-VDF-ZU.aspx>

Improve and accelerate test, validation and design of cutting-edge video and vision based ADAS/AD with an all-in-one automotive data logger for raw multi-channel video and network data recording, data analysis, and playback of the logged data in realistic Hardware-in-the-Loop (HIL) simulations. Xylon's logiRECORDER data logger connects to various types of vehicle's network data busses, and inserts between any type of the vehicle's camera installation and the Electronic Control Units (ECUs) to non-invasively record and playback Terabytes (TB) of multi-channel uncompressed video and network data with the low latency

Email: support@logicbricks.com
URL: <http://www.logicbricks.com/Products/logiRECORDER-30.aspx>

Computer vision applications (including ADAS) require quality video input. Xylon's logiISP Image Signal Processing Pipeline IP core is the Ultra-High Definition (UHD, including 4K2K) High-Dynamic Range (HDR) ISP pipeline designed for digital processing and image quality enhancements of an input video stream in Smarter Vision embedded designs based on Xilinx Zynq-7000 All Programmable SoC, 7 Series and newer FPGA/SoC devices. Learn more about this IP core:

Email: support@logicbricks.com
URL: <http://www.logicbricks.com/Products/logiISP.aspx>

Ordering Information

This product is available directly from Xylon. Please visit our web shop or contact Xylon for pricing and additional information:

Email: sales@logicbricks.com
URL: <http://www.logicbricks.com/Products/logiADAK-MPSoC.aspx>

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Related Information

Xilinx Programmable Logic

For information on Xilinx programmable logic or development system software, contact your local Xilinx sales office, or:

Xilinx, Inc.

2100 Logic Drive
San Jose, CA 95124
Phone: +1 408-559-7778
Fax: +1 408-559-7114
URL: www.xilinx.com

Revision History

Version	Date	Note
5.00	05.07.2018	Initial release describing the logiADAK 5.x kit based on the Xilinx Zynq UltraScale+ MPSoC.