DKV1656

Vision Kit for SBC1656 ARM® Cortex®-A8 with Spartan®-6 FPGA includes FLIR® Lepton® Camera Module and OpenCV

Development Kit Features:

Firmware
- Linux BSP with U-Boot, Linux kernel, Ubuntu, or GNOME mobile built with Yocto
- Micro/sys' Vision Layer integrates powerful tools, libraries and sample programs
- Micro/sys' Yocto recipes enable users to create custom Linux distribution for applications

Software
- Easy access to OpenCV and GStreamer
- ARM® NEON™ GPU configurable for multimedia apps
- Sample application programs

Hardware
- SBC1656 single board computer included in Kit
- FLIR Lepton thermal imaging camera module stacks onto SBC1656 via stackable connector
- I2C and SPI sensor interfaces provided
- IPU and GPU sample programs

User Programmable FPGA
- Xilinx Spartan-6 XC6SLX16 FPGA
- Use ISE® development tools from Xilinx
- FPGA 95% available for user's applications
- Compatible with Xilinx vision cores

OEM SBC1656 Features:
- ARM Cortex®-A8, 800 MHz
- Xilinx Spartan®-6 FPGA
- 512 MB SDRAM, 4GB Flash, 4MB SPI NOR Flash
- LCD Touchscreen plus NEON GPU
- Two SD/MMC card slot
- Dual CAN Bus Interface
- Three USB ports
- Three serial ports (RS232 and RS485)
- PC/104 form factor
- Extended temperature operation
- See SBC1656 datasheet for more details
- Camera configuration program to ease Thermal Imaging system set-up

DKV1656 Contents: SBC1656, MIPI CSI camera, sample software, display, cables, and breakout assemblies

Vision Integrated Development Platform:

The DKV1655 is a ready-to-run vision development platform which includes Micro/sys' SBC1656 ARM Cortex-A8 single board computer and FLIR's Lepton thermal imaging camera module. The Development Kit eliminates the need for users to spend days or weeks integrating the complex hardware, firmware and software components of a vision system. The turnkey DKV1656 provides a Linux BSP hosted on the board which includes the integrated vision firmware layer. This layer provides users access to open source vision tools and sample software. Users slip the SD card into the socket, plug on the camera sensor module and enjoy video through the TFT display. An add-on FPGA development kit is available which includes firmware and tools to program the onboard Spartan-6 FPGA with vision processing cores.

Thermal Imaging Applications

FLIR's Lepton sensor provides a wealth of information and sensor configuration options to maximize its application potential. To showcase some of these capabilities, Micro/Sys's Infrared Imaging Module (IRIM) includes a GUI-based application which not only displays captured infrared images at full frame rate, but also displays accompanying telemetry information and gives users the ability to adjust a number of sensor parameters and immediately observe the results. This add-on option is provided as both an executable for the SBC1656 and in source form, to give customers a great starting point for their custom application.

MICRO/SYS

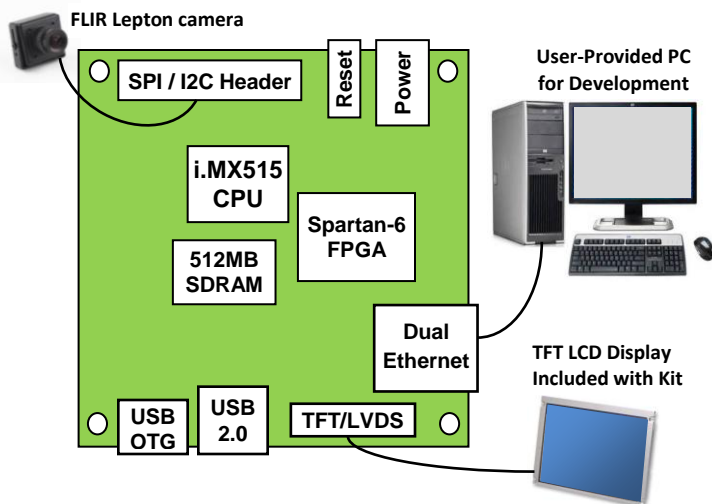## DKV1655 Provides a User-Friendly, Flexible Development Environment

The powerful advantage of the DKV1656 is ease of use and system level options for implementing embedded vision systems

Linux BSP Eases Application Program Development

The SBC1656 ships with a Linux image pre-loaded in NAND flash plus an SD card with the full Linux build including a comprehensive suite of development tools. Users can begin programming the SBC1656 at the command line out of the box. Eclipse is available for remote or local debug. For the more advanced Linux user, a full cross-development environment using Yocto is also available.

FPGA Development Kit Uses Standard Xilinx tools

Micro/sys' FPGA Development Kit for the Spartan-6 installs on top of the Linux OS and provides access to interfaces between the iMX515 and the Spartan-6 FPGA via a 16-bit memory bus. 90% of the FPGA is available for use. Sample FPGA cores are included. Users must register with Xilinx for access to Xilinx tools.

FLIR Lepton camera

SPI / I2C Header · Reset · Power · i.MX515 CPU · Spartan-6 FPGA · 512MB SDRAM · Dual Ethernet · USB OTG · USB 2.0 · TFT/LVDS

User-Provided PC for Development

TFT LCD Display Included with Kit

The combination of Micro/sys' Vision Development Kit and FPGA Development Kit provides users turnkey operation, saves man-weeks of setup and integration, plus ensures users spend their development time concentrating on their application rather than generic system integration having nothing to do with their application.

Vision Development Kit Contents:

Board, Camera & Display
- SBC1656 (Linux or WindowsCE)
- FLIR Lepton thermal imaging camera module
- Stackable camera carrier board
- 7in TFT LCD display
- 5V wall-mount power supply
- 4 GB Solid State Drive (SSD)
- RJ45 Ethernet Cable
- Mini B to Type A USB 2.0 Cable
- (2) 20-pin high density to 20-pin screw terminal
- (1) 50-pin high density to 50-pin screw terminal
- (4) 40-pin high density to 40-pin screw terminal

Board Support Package (BSP):
- U-Boot, kernel, Ubuntu, or GNOME Mobile
- Micro/sys Vision Layer/Recipe

Targeted Reference Designs & Demos
- How to implement ARM Cortex
- How to implement drivers to DDR3 memory
- How to implement DIO and drivers

Documentation
- SBC1656 Getting Started Guide
- SBC1656 Hardware User Manual
- Yocto Whitepaper
- OpenCV Whitepaper
- Popular StackableUSB™ expansion bus

Ordering Information:

DKV 1656 - ET - L

MICRO/SYS DEVELOPMENT KIT
(see separate datasheets)
DK: Standard Development Kit
DKF: FPGA Development Kit
DKV: Vision Development Kit
DKC: FPGA & Vision Development Kit

OPERATING SYSTEM
L: Linux
W: WinCE

ARM CORTEX-A8 w/ SPARTAN-6 FPGA & CAMERA INTERFACE
1654: MIPI CSI Camera Interface
1655: NTSC/PAL Camera Interface
1656: Thermal Imaging Camera Interface

OPERATING TEMP
Blank: Commercial (800 MHz CPU)
ET: Industrial (600 MHz CPU)