Product Flyer

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DKXC5VADAPT-1

DAC DK FPGA Adaptor

Features

- DAC development kit input data adaptor
  - For DK86064-2 or DK86065-2
  - Provides direct connection to HiTech Global® FPGA platform

- When combined with HiTech Global FPGA development platform:
  - LVDS data interface for one ('065) or two ('064) DAC cores
  - Loop Clock system for optimum timing
 - GPIO to FPGA
  - Support for single supply operation

Description

The DKXC5VADAPT-1 DAC DK adaptor provides a quick and effective way to demonstrate a high speed data interface to the Fujitsu DK86064 and DK86065 high performance DAC development kits. The adaptor directly connects the DKs to the HiTech Global V5-PCIE2 FPGA platform. The HiTech Global FPGA board uses the Xilinx® Virtex™-5 device.

Additional headers support data input and output to the FPGA, as well as power and control data for the DAC.

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DKXC5VADAPT-1 FPGA Board Adaptor

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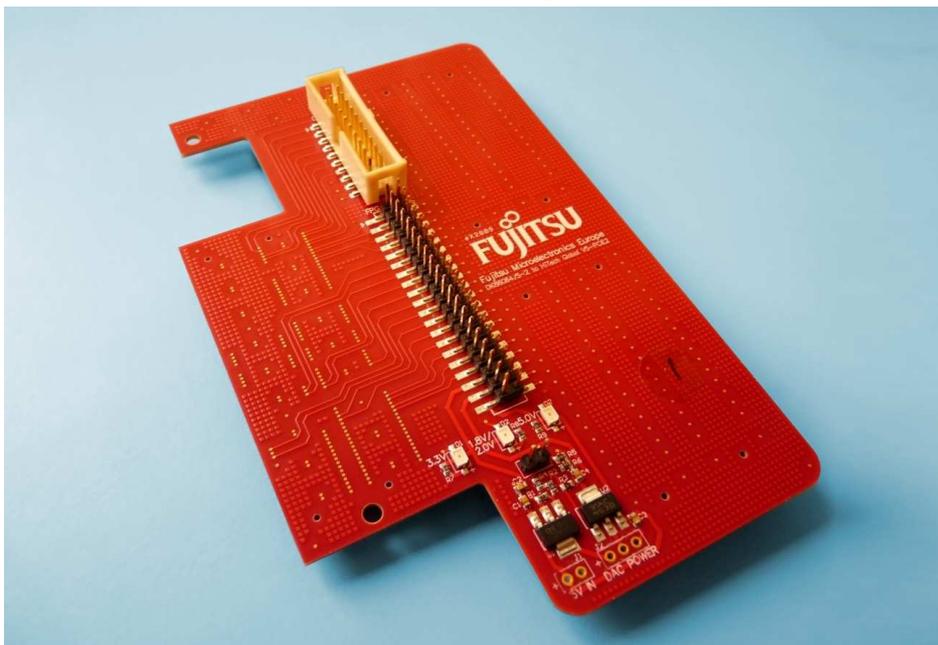
DKXC5VADAPT-1 DAC DK FPGA Adaptor

System Overview

The most popular device for interfacing to high-speed data converters is an FPGA. FPGAs provide a relatively low-cost platform for high-speed logic, data processing, digital data interfaces and clock management. The DKXC5VADAPT-1 adaptor demonstrates how simple it is to implement a high-performance interface between an FPGA and the Fujitsu DK8606x DAC DKs.

The adaptor is designed to interface directly to the HiTech Global V5-PCIE2 FPGA prototype board to combine the power of the Xilinx Virtex-5 with the high-speed Fujitsu DAC.

System Setup

The DKXC5VADAPT-1 provides a physical link between the data headers on the DK86064/65-2 and the HiTech Global V5-PCIE2. The underside of the adaptor features 6 Samtec® sockets that plug directly into the headers on the two boards.

Adaptor underside view

The board connects 28 LVDS data pairs, the DAC loop clock pairs and two divided clock signals between the two boards. All clock signals are routed to dedicated global clock inputs on the FPGA.

The complete system forms a compact solution ideal for testing and developing an FPGA-DAC interface.


Complete system

DAC Interface

All data and clock lines between the DAC and FPGA are matched LVDS pairs. The adaptor can be used with both the DK86064-2 and DK86065-2.

Maintaining valid clock-to-data timing can prove to be a difficult task when using high-speed data converters. The MB86064/65 DACs avoid potential problems through the provision of a Loop Clock system.

The Loop Clock is generated in sync with the DAC data at the FPGA output. This clock is passed through a user programmable delay in the DAC and then routed back to the FPGA's PLL feedback input. Altering the delays in the divided clock or Loop Clock signals allows the user to advance or retard data timings in order to find the optimum data eye. Once calibrated, the system automatically compensates for the effects of device-to-device variations, voltage and temperature (PVT).
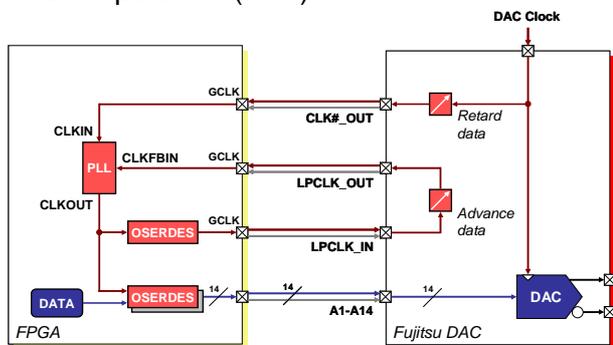
Loop Clock block diagram

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DKXC5VADAPT-1 DAC DK FPGA Adaptor

V5-PCIE2 Features

In addition to providing a high-speed interface to the DAC, the V5-PCIE2 development platform has a number of other features. These include:

- Tri-mode Ethernet (10/100/1000)
- 4-lane PCI Express End-Point connector (upstream)
- DDR2 SO-DIMM socket (up to 4GB)
- 512Mb DDR3 component
- 128Mb Platform Flash XL for configuration and user flash
- On board clocking

The board is available directly from HiTech Global with a number of different Virtex 5 parts, including the XC5VLX50T and the XC5VFX100T.

The FPGA can either be programmed directly over JTAG or via the on-board 128Mb flash. The configuration can be saved into flash, thereby removing the need to reprogram the device at power on. Programming is performed via a Xilinx USB programming cable.

Adaptor Additional Features

The adaptor has a number of other features.

- Voltage regulators to provide the DAC supply voltages (1.8V and 3.3V) using the 5V supply for the V5-PCIE2 board. This allows the entire system to be powered from just one power supply
- GPIO header to FPGA
- Socket to allow connection to DK serial programming header, thereby removing requirement for external serial programmer to program DAC
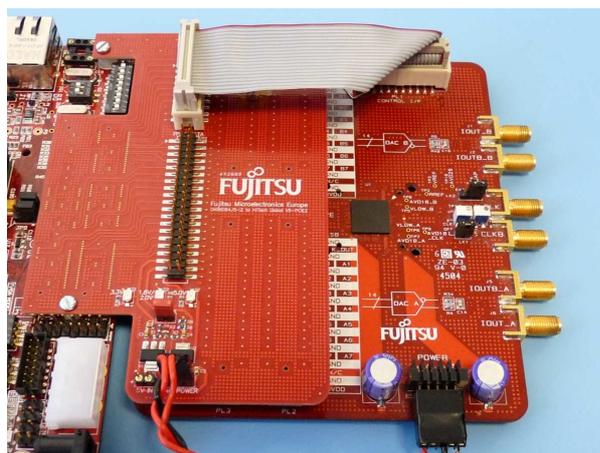
DK programming and power from adaptor

Sample Software

To help get started with the system Fujitsu are pleased to offer a sample implementation for the FPGA interface. Please contact Fujitsu customer support as detailed below for more information.

Ordering Information

Part	Order Reference
DAC DK FPGA adaptor	DKXC5VADAPT-1
Complete development kit (including evaluation board with device fitted, PC USB programming cable & control software and user manual)	DK86064/65-2
HiTech Global V5-PCIE2 FPGA Development Platform	HTG-V5-DDR3-PCIE2-#### **CONTACT HITECH GLOBAL** (www.HiTechGlobal.com)
Xilinx USB Programming Cable	HW-USB-II **CONTACT XILINX** (www.Xilinx.com)

Customer Support

General enquiries and requests for support on any aspect of Fujitsu's high performance DACs should be e-mailed to:

msd.support@fme.fujitsu.com

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