

Linux Demo Software For Universal Driver version 7.0.0

C demo programs and graphical control panel



DS-MPEDAQ-0804

PCIe MiniCard Module

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This software is designed for use with Diamond Systems Universal Driver software version 7.0.0 and later on Linux OS which has 2.6.x to 3.x kernel version. This software is incompatible with earlier versions of Universal Driver and other kernel versions. This software is tested on Ubuntu-12.04 (3.2.x), Fedora 11 (2.6.x), and Fedora 17 (3.3.x) Linux OS.

Graphical Control Panel

For a quick demonstration of the board's capabilities and verification of the board's operation, we suggest to run the graphical control panel included in this demo package. The control panel runs on the QT platform and provides an easy to use, comprehensive demo of most of the board's features.

C Demo programs

This demo package contains a collection of "console" programs written in C that demonstrate the use of the Diamond Systems Universal Driver version 7.0.0 software to control the DS-MPEDAQ-0804 I/O modules. The demo programs are organized by folder. Each folder contains:

- The C source code
- A ready-to-run executable file
- A makefile to rebuild the program with GCC compiler

The Universal Driver software must be installed first before executing these demos. Refer to the instructions included in the universal driver package below.

To rebuild these programs, the static library file libdscud-7.00.a must reside in the path specified by the makefile. The libdscud-7.00.a is available in the main Universal Driver for Linux software package, which is available for separate download at the following URL:

www.diamondsystems.com/software/universaldriver

These demo programs may be freely copied, edited, and reused to develop your own applications for the DS-MPEDAQ-0804 I/O modules.

Simple instructions for using these demo programs

1. Connect the board onto your PCIE compatible SBC. Refer to the board's hardware user manual available on the product's web page at the following URL:
<http://www.diamondsystems.com/products/dsmpedaq0804>
2. Install Universal Driver – see the document “DSCUD 7.0 for Linux Installation Instructions.pdf” in the Universal Driver 7.0 for Linux release package.
3. Install these demo programs by copying them to the desired location in the mass storage device of the system containing your DS-MPEDAQ-0804 board.
4. Run the desired demo program.
5. For more detailed instructions, refer to the DS-MPEDAQ-0804 software manual included in the Universal Driver software package.

List of DS-MPEDAQ-0804 Demo programs included in this release

Program name	Description
MPEDAQ0804ADSample	Performs A/D sample operation on single channel i.e. user selected channel
MPEDAQ0804ADScan	Performs A/D sample operation on multiple channel at a time based on low and high channel number entered by user
MPEDAQ0804ADTrigger	Performs A/D sample operation on single channel i.e. user selected channel
MPEDAQ0804Convert	Executes D/A conversions based on user input for output mode and D/A code values
MPEDAQ0804ConvertScan	Performs a simultaneous update D/A conversion based on user input selections
MPEDAQ0804DAWave	Demonstrates the D/A waveform generator by outputting a Sine wave or sawtooth on selected D/A pin
MPEDAQ0804CounterFunction	Configures a counter/timer based on the all the options using user input
MPEDAQ0804CounterSetRate	Configures a counter/timer using the desired counting rate
MPEDAQ0804DIOFunctions	Configures DIO ports as input or output, reads bytes or bits from ports, and can perform external loopback
MPEDAQ0804LED	Toggles the board LED when the user presses the Space key
MPEDAQ0804PWMFunctions	Pulse Width Modulation executed based on user input
MPEDAQ0804UserInt	Triggers user-level interrupt with on-board counter/timers, and increments count on screen.
DS-MPEDAQ-0804_GUI	Demonstrates all the major features of the board with a graphical interface.

Reference list of DS-MPEDAQ-0804 Universal Driver functions and associated demo programs

Many driver functions are included in more than one demo program. This list is intended to provide a handy reference to help you quickly find a demo program that shows a typical use of a driver function for DS-MPEDAQ-0804. Since most functions have a wide range of possible options, most demos do not show all possible uses of any driver function.

Driver function	Demo program
DAQ0804InitBoard	MPEDAQ0804ADInt
DAQ0804ADSetSettings	MPEDAQ0804ADInt
DAQ0804ADSetTiming	MPEDAQ0804ADInt
DAQ0804CounterSetRate	MPEDAQ0804ADInt

DAQ0804ADSetTiming	MPEDAQ0804ADInt
DAQ0804ADIntStatus	MPEDAQ0804ADInt
DAQ0804ADIntResume	MPEDAQ0804ADInt
DAQ0804ADIntPause	MPEDAQ0804ADInt
DAQ0804ADIntCancel	MPEDAQ0804ADInt
DAQ0804ADConvert	MPEDAQ0804ADSAMPLE
DAQ0804ADTrigger	MPEDAQ0804ADScan
DAQ0804DASetSettings	MPEDAQ0804Convert
DAQ0804DAConvert	MPEDAQ0804Convert
DAQ0804DAConvertScan	MPEDAQ0804Convert
DAQ0804CounterConfig	MPEDAQ0804CounterFunction
DAQ0804CounterRead	MPEDAQ0804CounterFunction
DAQ0804CounterReset	MPEDAQ0804CounterFunction
DAQ0804CounterSetRate	MPEDAQ0804CounterSetRate
DAQ0804WaveformReset	MPEDAQ0804DAWave
DAQ0804WaveformConfig	MPEDAQ0804DAWave
DAQ0804WaveformBufferLoad	MPEDAQ0804DAWave
DAQ0804WaveformStart	MPEDAQ0804DAWave
DAQ0804WaveformPause	MPEDAQ0804DAWave
DAQ0804DIOConfigAll	MPEDAQ0804DIOFunctions
DAQ0804DIOInputByte	MPEDAQ0804DIOFunctions
DAQ0804DIOInputBit	MPEDAQ0804DIOFunctions
DAQ0804DIOOutputByte	MPEDAQ0804DIOFunctions
DAQ0804DIOOutputBit	MPEDAQ0804DIOFunctions
DAQ0804LED	MPEDAQ0804LED
DAQ0804PWMConfig	MPEDAQ0804PWMMFunctions
DAQ0804PWMStart	MPEDAQ0804PWMMFunctions
DAQ0804PWMStop	MPEDAQ0804PWMMFunctions
DAQ0804PWMReset	MPEDAQ0804PWMMFunctions
DAQ0804UserInterruptConfig	MPEDAQ0804UserInt
DAQ0804UserInterruptRun	MPEDAQ0804UserInt
DAQ0804DIOConfig	MPEDAQ0804UserInt
DAQ0804UserInterruptCancel	MPEDAQ0804UserInt

For more complete descriptions of how to use each driver function, see the DS-MPEDAQ-0804 Universal Driver Manual included in the main Universal Driver software package or the online DSCUD wiki documentation:

[http://docs.diamondsystems.com/dscud/manual Table of Contents.html](http://docs.diamondsystems.com/dscud/manual_Table_of_Contents.html)

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