

## 概述

XJAPI一个简单易用的连接硬件的DLL应用程序接口 ( API ) , 进入 JTAG 链通过 XJLink 或是 PXI 硬件 , 易于集成更广泛的系统 , 例如开发评估板 , 测试系统... ..

USB 到 JTAG 硬件和软件的接口是由一个高速 USB 到 JTAG 硬件模块 ( XJLink2 或是 XJLink ) 和 XJAPI , 使您能够直接访问和控制 JTAG 链。

到 JTAG 的 PXI 总线的硬件和软件的接口是由一个高速的 PXI 到 JTAG 硬件模块 ( PXI XJLink2 ) 和 XJAPI。



USB 到 JTAG 接口

## XJAPI函数

### 初始化&结束函数

#### XJAPI\_HardwareSetup

建立硬件和引脚视图的函数。指定所需的频率赫兹 ( XJAPI 将设置接近MHz ) , 所需的引脚映射和是否对板加电。

#### XJAPI\_HardwareRelease

解除硬件函数。在退出之前调用。

#### XJAPI\_SetPinMap

设置pin map。让用户可以指定任何的 JTAG 功能16配置引脚的任何一个。

### 底层次的访问JTAG

#### XJAPI\_SetFrequency

设置频率函数 --- 必须在100 KHz 和 60 MHz之间

#### XJAPI\_TmsReset

请求 TMS reset 函数

#### XJAPI\_GotoState

进入具体的JTAG状态函数

#### XJAPI\_SetEndState

设置最终的状态函数系统进入 DR 或是 IR 扫描操作之后。默认情况下, 两者扫描进入 JTAG\_IDLE 状态

#### XJAPI\_ClockChain

JTAG链时钟函数, 一个具体倍数

### 高层次的扫描函数

#### XJAPI\_Scan

执行JTAG/DR/IR扫描周期的函数。默认情况下, 在扫描之后处在JTAG\_IDLE状态。指定不同的结束状态, 使用:

#### XJAPI\_SetEndState

#### XJAPI\_ScanMultiple

执行多重扫描的函数。这个函数用于扫描 ( nScans ) 多个混合 ( DR and IR scans ) 型和混合长度的链。

### 辅助函数

#### XJAPI\_AutoSkew

对当前的TCK频率, 自动补偿时钟偏差函数。

#### XJAPI\_GetLastError

#### XJAPI\_GetVersion

#### XJAPI\_ReadPins

#### XJAPI\_SetPins

#### XJAPI\_SetTrst

#### XJAPI\_Shutdown

#### XJAPI\_Startup

#### XJAPI\_Trst



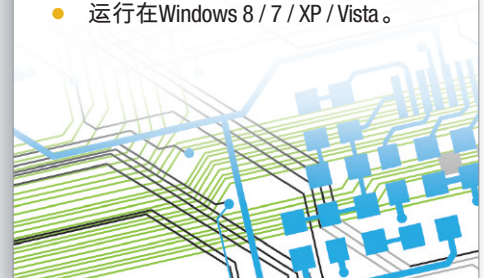
PXI 到 JTAG 接口

## 主要优点

- 快速通信/下载 USB (480 Mbps), JTAG (60 Mbps peak) ;
- USB 到 JTAG : 小巧, 轻便的硬件设计---用于实验室和现场工作 ;
- PXI 到 JTAG 也可提供外形 : 所有软件兼容USB到JTAG版本 ( 3U/32位的PXI /PCI总线接口 ) ;
- 自载许可, 使得 XJTAG 可随意安装在多台机器上 ;
- 可用于任何 pinout, ARM, Xilinx, Altera, 等等 ;
- 易控制。

## 特征

- 兼容JTAG/IEEE 1149.x ;
- 高速的 USB 2.0 接口, 向下兼容USB 1.0 & 1.1 ;
- USB 总线供电 ( 无需额外的 PSU ) ;
- 可供目标板电源 ( 3.3V, <100 mA ) ;
- TCK 时钟频率可达 60 MHz ;
- 可调的JTAG信号终端 ;
- 自动信号偏差控制 ;
- 软件配置Pin mapping ;
- JTAG 信号支持到 +5V ;
- 在JTAG连接器上多余的信号可以用来控制其他项目, 例如控制目标重置/启动电源 ;
- 提供所有的文件, 库和应用实例 ;
- 设计应用在C或是C++ ;
- 提供XJDemo 板 ;
- 运行在Windows 8 / 7 / XP / Vista。



## XJAPI数据类型

### JTAG\_STATE

This enumeration defines the possible states for the JTAG TAP controller as defined in the IEEE 1149.1 specification.

### XJAPI\_ERROR

This enumeration contains error codes that can be returned from the various API functions.

### XJAPI\_PIN\_DEF

This structure is used to define an individual pin in a user-defined pinmap.

### XJAPI\_PIN\_DRIVE

Enumeration of the two different pin output impedance values.

### XJAPI\_PIN\_TYPE

Enumeration of the 8 different pin types available when creating a user-defined pinmap.

### XJAPI\_PINMAP

Enumeration of the different standard or user-defined pinmaps. Used as an argument to the [XJAPI\\_HardwareSetup](#) and [XJAPI\\_SetPinMap](#) functions.

### XJAPI\_SCAN\_TYPE

An enumeration of the different scan types available. Used as an argument to [XJAPI\\_Scan](#) and [XJAPI\\_ScanMultiple](#) functions.

### XJAPI\_USER\_MAP

A datatype for describing a user-defined pinmap.

## Supplied files

### xjapi.h

Header file describing the XJAPI functions and datatypes.

### jtag.h

Header file with the states defined in IEEE 1149.1 JTAG specification.

### xjapi.dll, hwif.dll, common.dll

The DLLs required to use XJAPI.

### xjapi.lib

The XJAPI import library in COFF format (used by Microsoft Visual Studio).

### xjapi\_omf.lib

The XJAPI import library in OMF format (used by Borland's C/C++ compilers).

### xjapi\_example.c

C code example demonstrating how to use most of XJAPI's functionality (works on XJDemo board for validation).

## Broadcom Videocore® platform

Application example using the USB to JTAG HW & SW interface (courtesy of Broadcom).



Broadcom Corporation - XJTAG - Windows Internet Explorer

http://www.broadcom.com/products/software/mobmm\_xjtag.php

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**XJTAG**

**Hardware tools (Tools for JTAG integration with the Debugging environment)**

Every Broadcom Development system comes with a USB XJTAG solution. This advanced and easy to use test and debug suite enables the user to download code from the software toolchain to a VideoCore device.

Debugging on the VideoCore® platform is extremely easy. Each Development Kit includes a USB JTAG device. This links a PC to the JTAG interface on a Development System or on your target circuit board. It is physically small and is simple to install and use, due to the USB plug and play ability.

The device fully integrates with the Development Toolchain, making it very easy to single step, set breakpoints, set watches, and more on a circuit using a VideoCore device. In addition, it can integrate with Xilinx parallel, Altera ByteBlaster®, ARM MultiICE®, or any other pin out currently in use.

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Software CD, XJDemo board, Flat ribbon cable, Carry case

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\*提供USB/JTAG电缆线

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www.xjtag.com/Partners