Overview

The XJAPI gives you low-level access to the JTAG chain via either the XJLink or the PXI hardware, allowing easy integration with a wide range of other systems such as development/evaluation boards, test systems...

The USB to JTAG hardware and software interface is composed of a high-speed USB to JTAG hardware module (XJLink2 or XJLink) and a simple-to-use DLL Application Program Interface (XJAPI) designed to allow you to access and control the JTAG chain directly.

The PXI to JTAG hardware and software interface is composed of a high speed PXI to JTAG hardware module (PXI XJLink2) and the same simple-to-use DLL API (XJAPI).

USB to JTAG interface

XJAPI functions

Initialising & Terminating

XJAPI_HardwareSetup
Function to set up the hardware and the pin mapping, the desired frequency, and whether power should be applied to the board.

XJAPI_HardwareRelease
The function to release the hardware should be called before exiting.

XJAPI_SetPinMap
Function to set the pin map. Allows you to assign any JTAG function to any of the 16 configurable pins.

Low Level JTAG Access

XJAPI_SetFrequency
Function to set TCK frequency - between 100kHz and 60MHz.

XJAPI_TmsReset
Function to apply a TMS reset.

XJAPI_GotoState
Function to go to a specific JTAG TAP state.

XJAPI_SetEndState
Function to set the final TAP state that the system goes to after a DR or IR scan operation.

XJAPI_ClockChain
Function to clock the JTAG chain a specific number of times.

High Level Scan functions

XJAPI_Scan
Function to execute a JTAG DR/IR scan cycle. By default, it will leave the system in the JTAG_IDLE state after the scan. To specify a different end state, use **XJAPI_SetEndState**.

XJAPI_ScanMultiple
Function to implement multiple scans. This function is used to scan multiple (nScans) chains of mixed type (DR and IR scans) and of mixed length.

Miscellaneous functions

XJAPI_AutoSkew
Function to automatically compensate for clock skew for the current TCK frequency.

XJAPI_GetLastError
XJAPI_GetVersion
XJAPI_ReadPins
XJAPI_SetPins
XJAPI_SetTrst
XJAPI_Shutdown
XJAPI_Startup
XJAPI_Trst

PXI to JTAG interface

Key Benefits

- Faster communication / download USB (480 Mbps), JTAG (60 Mbps peak)

- USB to JTAG: Small, lightweight, portable hardware design — ideal for lab and field work

- PXI to JTAG form factor also available: fully software compatible with the USB to JTAG version (3U/32 bit PXI/c PCI bus interface)

- Self-contained licence allowing you to use the XJTAG system on multiple machines

- Can be used with any pinout, ARM, Xilinx, Altera, etc.

- Easily customisable

Features

- JTAG/IEEE 1149.x compliant

- High speed USB 2.0 interface, backwards compatible with USB 1.0 & 1.1

- USB bus-powered (no external PSU)

- Can supply power to the target board (3.3V, <100 mA)

- TCK clock frequencies up to 60 MHz

- Adjustable JTAG signal termination

- Automatic signal skew control

- Software configurable pin mapping

- JTAG signals are +5V tolerant

- Spare signals on JTAG connector can be used to control other items e.g. hold a board in reset / turn on a PSU

- Provided with all needed files, libraries and an application example

- Designed to be used in C or C++ applications

- XJDemo board available

- Runs on Windows 8 / 7 / XP / Vista

XJAPI Software & Hardware Interface

www.xjtag.com

XJAPI Data types

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).

Provided when ordered in quantities 1 to 4: XJLink2*, XJLink* or PXI module (with unique Serial Number and Authorisation Code), Software CD, XJDemo board, Flat ribbon cable, Carry case.

Provided when ordered in quantities 5 and above: XJLink2, XJLink or PXI module (with unique Serial Number and Authorisation Code).

*USB/JTAG cable also provided

Distributor / Technology Partner

www.xjtag.com/Partners