

LABVIEW VISA DRIVER

The STAR-Dundee SpaceWire VISA Driver has been implemented as a native LabVIEW driver, providing support for the STAR-Dundee PCI family of devices. Software written to control these devices may be deployed on any hardware platform that supports cPCI, PCI, PCIe and NI-VISA, including both Windows based hosts and LabVIEW Real-Time targets, without requiring modifications to source code. The software is provided as LabVIEW source with password protected block diagrams, allowing users to compile for any target.

The driver allows STAR-Dundee SpaceWire PCIe, PCI Mk2 and cPCI Mk2 cards to be detected with and controlled by National Instruments' MAX (Measurement and automation explorer) tool.

Key Features

- Provides low level DMA access to the SpaceWire channels.
- Transmit and receive time-codes and packets, including packets terminated with EOP, EEP or no end of packet marker.
- Receive link speed change and link state change (errors detected, link running) events.
- Perform link speed configuration operations.
- Inject errors onto a SpaceWire Link, on a given byte within a packet.

A number of example VIs demonstrating typical use cases for the API are provided.

List of provided VIs

General

- Open
- Close
- Reset
- Wait on SpaceWire Interrupt
- Set Application Name

Creating Traffic

- Create Data Chunk
- Create Error
- Encode Traffic

Decoding Traffic

- Decode Traffic
- Get Traffic Type
- Traffic Reference to Time-code
- Traffic Reference to Data Chunk
- Traffic Reference to Link Speed Change
- Traffic Reference to Link State Change

DMA

- Check IN Buffer Status
- Check OUT Buffer Status
- Configure DMA Operation
- DMA Read Interrupt
- DMA Write Interrupt

Device Configuration

- Traffic Enable**
 - Enable Time-code Rx
 - Enable Link Speed Change Event Rx
 - Enable Link State Change Event Rx
- Link Configuration**
 - Set/Get Link Configuration
 - Set/Get Link Divider
 - Set/Get Link Clock Frequency
 - Get Measured Link Speed
 - Get Link State (ready/started/run/etc.)
 - Get/Clear Link Errors

Examples

- Receive Loop
- Injecting Errors
- External Loopback
- Open Close Reset
- Obtain Measured Link Speed
- Get Device Information
- Perform Link Configuration Operations
- Get active Link Errors

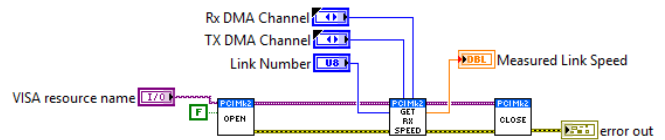
Specifications

Software:

- Designed for LabVIEW 2014 and later. (Contact STAR-Dundee regarding support for earlier LabVIEW versions.)
- Compatible with, but does not require, LabVIEW Real Time Module.

Supported Devices:

- SpaceWire PCI Mk2
- SpaceWire cPCI Mk2
- SpaceWire PCIe



Obtaining the measured speed of a SpaceWire Rx link