

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *National Instruments PXI-2172* at our website: *Click HERE*

NI PXI-2172 (HDMI interface device) (LEGACY)

»Table of Contents

Note The NI PXIe-1491 has replaced the NI PXI-2172 and NI PXI-654*x* in NI VMS test systems. While NI VMS still supports the NI PXI-2172 and NI PXI-654*x* legacy hardware solution, NI does not recommend using the NI PXI-2172 in new test systems. Refer to the *NI Video Measurement Suite Readme* for information about the latest recommended hardware solutions.

NI Video Measurement Suite Help

Edition Date: October 2012

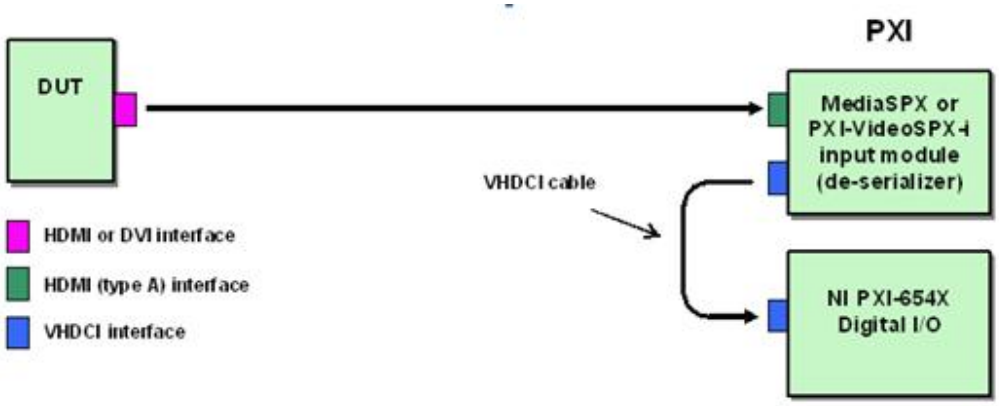
Part Number: 373389B-01

»View Product Info

Download Help (Windows Only)

NI VMS supports the use of the NI PXI-2172 for conditioning HDMI digital video signals. The NI PXI-2172 is designed for use in a PXI chassis.

The NI PXI-2172 input module allows the NI VMS test system to receive HDMI digital video signals and to perform analysis of digital video signals. The module is a PXI module intended for use in a PXI chassis. The input module serves as interface between a HDMI source and digital I/O modules such as NI-654X 100/200 MHz digital I/O. The following figure illustrates this solution.



Note In the above figure, the term "MediaSPX" refers to the NI PXI-2172.

The NI PXI-2172 input module features an HDMI-compliant input on a 19-pin HDMI connector, two 68-pin digital interface VHDCI connectors for video, one small-geometry connector for audio, and one CEC output.

In order to satisfy the requirements to security and robustness defined by the HDCP license holders, the module includes scrambling of the HDCP content on the video and audio outputs. The descrambling is handled automatically by the NI VMS software.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



The module accepts a HDMI-compliant digital video signal on its HDMI input, converts the signal to a parallel signal designed to be loaded into NI VMS through the NI-654X 32 channel digital waveform acquisition board.

Interfaces

The table below summarizes the available interfaces of the NI PXI-2172:

Name	Connector type	Function
INPUT	HDMI type A	HDMI compliant input, including DDC and HPD
A - VIDEO OUT & CONTROL	68-pin VHDCI	Primary VHDCI; 24 bits of video plus I2C control channel
B - VIDEO OUT	68-pin VHDCI	Secondary VHDCI; Additional 12 bits of video
AUDIO OUT	Hirose LX series	Multiplexed audio data (S/PDIF and I2S), DDC monitoring, and CEC (as LVCMOS)
CEC	SMB	CEC (as LVCMOS)

HDMI Input Connectors and Adapters

Three different types of connectors (A, B and C) are defined by the HDMI specification.

The NI PXI-2172 input module uses a type A HDMI connector. The following table specifies which connector to use to connect the NI PXI-2172 to different devices under test:

device under test	Connector or adapter to use
devices using type-A HDMI connectors	type A cable
devices using type-B HDMI connectors	type A to type B cable adapter
devices using type-C HDMI connectors (cameras and similar devices)	type A to type C cable adapter
devices using DVI-D or DVI-I connectors	DVI to HDMI adapter or cable

VHDCI connectors

Of the two VHDCI connectors only the primary (A) connector is mandatory for the operation of the NI PXI-2172. The primary (A) connector includes the control interface between NI VMS and NI PXI-2172, and it supports acquisition of up to 32 bits of video.

The secondary (B) connector provides further 32 bits of video and is intended only for applications of streaming deep-color (ie. 10 or 12 bit components) material. Note, however, that the NI PXI-2172 accepts deep-color material both for configurations with one VHDCI connector (A) or two VHDCI connectors (A and B). For a description of the supported video formats refer to Digital formats in this manual.

The VHDCI interfaces of the NI PXI-2172 are intended for interconnection to a DIO module using the 0.5 m shielded cable SHC68-C68-D4, NI part no. 196275A-0R55, or any cable that meets or exceeds the specifications of this cable. Add ferrite clamps NI part no. 711627-01 (one at each end of the cable, close to the connector shell) to comply with EMC regulations.

Audio connector

If you need to acquire audio you must connect the NI PXI-2172 to an R-series module. Use the dedicated cable NI part no. 195596A-0R3.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Add ferrite clamps NI part no. 712170-01 (one at each end of the cable, close to the connector shell) to comply with EMC regulations.

Refer to the software description for clarifications on the audio formats, if supported.

DDC and EDID support

The DDC (Display Data Channel) lines in the HDMI connection is used by the HDCP protocol and provides a back channel from the sink (ie. the NI PXI-2172) to the source (ie. the DUT) to indicate events like hot-plug and to communicate the sink's output capabilities back to the source device. The NI PXI-2172 includes buffered outputs of the DDC clock and data to allow monitoring of the DDC traffic. These buffered outputs are available on the AUDIO OUT connector. Refer to the relevant parts of the software manual (if DDC monitoring is supported) for further guidance.

EDID stands for Extended Display Information Data. This is the data located in the EDID EEPROM.

The NI PXI-2172 supports Hot Plug Detect (HPD) operations, which can be used to reauthenticate the HDCP data or to tell the connected HDMI device that the EDID is being resent. You can force HPD operations using the NI EDID Update Utility or the niEDID_ - Hotplug VI. Refer to the NI EDID Update Utility Help for information about using the NI EDID Update Utility.

The NI PXI-2172 supports removal of the HPD Hot Plug signal to allow HDCP re-authentication.

Note on DDC pull-up strength:

It has been observed that some sources have a weak pull-up resistance for the DDC clock and data that does not match the requirement in the HDMI specification (minimum 1.5 kOhms, maximum 2.0 kOhms).

The NI PXI-2172 expects that the source is compliant with the HDMI specification. If the pull-up of the source is too weak, it may compromise the DDC communication and prevent proper operation.

For that reason, the NI PXI-2172 allows you to add further pull-up for the DDC clock and data.

- If you need to increase the pull-up strength for the DDC clock, insert jumper J8.
- If you need to increase the pull-up strength for the DDC data, insert jumper J10.

The jumpers are found in the upper left corner of the NI PXI-2172 module.

Note: To ensure that the NI PXI-2172 complies with the HDMI specification the jumpers J8 and J10 must be left out.

CEC support

The NI PXI-2172 provides access to the CEC link in the HDMI connector via an HDMI compliant CEC level translator. The AUDIO OUT connector and the dedicated CEC connector may be connected to a module with LVCMOS level input / open-drain output. The CEC protocol is not handled by the NI PXI-2172. Depending on your configuration you may need to get access to the CEC link via the AUDIO OUT connector or via the dedicated CEC connector. Refer to the NI CEC Analyzer Help for information about using the NI CEC Analyzer or corresponding VIs.

Front panel LEDs

POWER: Green - Indicates operative power rails on the NI PXI-2172

READY: Yellow - Indicates that sync is detected for an active HDMI input

NI PXI-2172 specifications summary

The NI PXI-2172 supports a maximum TMDS clock rate of 225 MHz, and a maximum pixel clock rate of 165 MHz.

This pixel clock will allow 148.5 MHz deep-color video (1920x1080p @ 60 Hz), and up to UXGA (1600 x 1200) @ 60 Hz computer graphics.

The NI PXI-2172 supports up to 8 channels of I2S audio or 6 channels DSD.

Note: The supported video and audio formats depend on your software and PXI configuration.

Your Feedback! Poor | Excellent

Document Quality? 1 2 3 4 5

Add Comments

Answered Your Question? Yes No

Submit

My Profile | Privacy | Legal | Contact NI © 2017 National Instruments Corporation. All rights reserved. | E-Mail this Page

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP