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USB-1149.1/4E™

High-Performance USB 2.0 Boundary-Scan Controller

CORELIS An EWA Company

Preferred JTAG Solutions—Acclaimed Technical Support



Features

- High-performance multi-TAP JTAG controller with integrated I^2C and SPI interfaces.
- Four TAP connections for designs with multiple scan chains.
- User programmable JTAG TCK rate up to 100 MHz, SPI SCK rate up to 50 MHz, and I^2C SCL rate up to 5 MHz.
- Assignable pins including three general purpose I/O signals per TAP.
- Variable output voltage and configurable input voltage threshold.
- Automatic signal delay compensation for long cable lengths.
- High-speed bus-powered USB 2.0 interface ideal for the bench and desktop; no external power supply required.
- Scan Function Library software supports Windows XP, Windows Vista, and Windows 7 operating systems (32-bit and 64-bit).

Benefits

- **Save time** at test stations with high performance—up to 100 MHz on all four TAPs for lightning fast test and in-system-programming.
- **Increase programming rate** for in-system-programming; the advanced architecture provides persistent scan vector output and extraction, ensuring that throughput remains high at all times.
- **Reduce costs** associated with fixtures; the portable multi-TAP controller directly connects to up to four TAPs of a Unit Under Test (UUT) and fits easily anywhere.
- **Compatible** with the complete ScanExpress™ family of boundary-scan, ISP, and JTAG embedded test software.

The **USB-1149.1/4E** high-speed boundary-scan controller is a multifunction JTAG and serial in-system programming (ISP) unit designed for value while still providing high performance, versatility, and convenience.

The compact form factor with four independently configurable Test Access Ports (TAPs) make the USB-1149.1/4E hardware ideal for integration in any environment—from the engineering desktop to the manufacturing line.

The USB-1149.1/4E controller works with the complete ScanExpress™ family of boundary-scan and JTAG-based test tools, enabling comprehensive multi-TAP boundary-scan test and ISP in lieu of or as a complement to traditional in-circuit test systems, reducing or eliminating the need for expensive bed-of-nails test fixtures.

Applications

- **Boundary-Scan Test -** Leverage boundary-scan to test, debug, and verify hardware through all product life cycle phases—from development through production and into the field.
- **JTAG Embedded Test -** Control a microprocessor through the JTAG debug port to run functional tests, without requiring boot code.
- **In-System Programming -** Read, erase, program, and verify Flash Memories, serial PROMs, CPLDs, FPGAs, and other programmable devices directly within a circuit or system design.

Learn More: For more information about Corelis products, please visit www.corelis.com

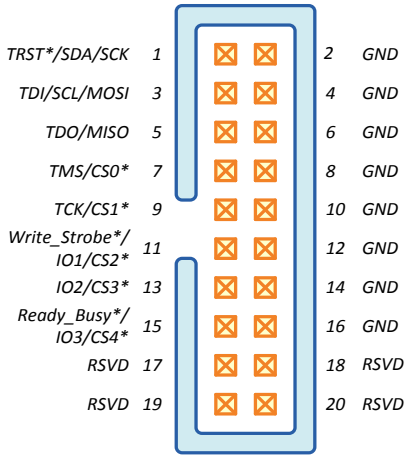
USB-1149.1/4E™

High Performance, Endless Versatility

The Corelis USB-1149.1/4E JTAG controller is fully compliant with the IEEE Standard 1149.1 for test access. The USB-1149.1/4E connects effortlessly between the host PC high-speed USB port and up to four TAP connectors on any JTAG-based target system and is specifically designed to be both portable and durable. Integrated SPI and I^2C interfaces on each TAP connector make the USB-1149.1/4E ideal for multi-TAP JTAG and in-system serial bus programming integration. For further flexibility, all odd TAP connector pins may be arbitrarily assigned in software to accommodate a variety of UUT pin-outs.

Scan Function Library

For applications that require a low level interface or integration with third party software, Corelis offers a Scan Function Library (SFL). The SFL is provided as a 32-bit DLL for Microsoft Windows and provides all functions necessary to operate the JTAG port and send or receive JTAG instructions and data to the target system. Users can incorporate the drivers in their own application software or integrate the SFL with third party systems such as National Instruments LabVIEW, National Instruments TestStand, and Agilent VEE.



USB-1149.1/4E Default TAP Pin Assignments

USB-1149.1/4E Hardware Specifications

General	
Mechanical Dimensions	4.75 inches x 3.75 inches x 1.0 inches
Certifications	RoHS Compliant
USB Interface	
USB Transfer Rate	High-speed USB 2.0
USB Cable	Ships with a 6 foot USB 2.0 A to B cable
Target Interface	
TAP Connectors	20-pin (2x10) shrouded header (0.050 x 0.100 inches) AMP/Tycho part no. 5-104069-1 or equivalent
Included TAP Cables	Four 20-pin to 10-pin (12”), Corelis P/N 15390-2 One 20-pin to 16-pin (12”), Corelis P/N 15391-2 One 20-pin to 20-pin (12”), Corelis P/N 15392-2 Additional options are available.
Output Voltage	Programmable from 1.25V to 3.30V in 0.05V steps
Threshold Voltage	Programmable from 0.50V to 3.30V in 0.05V steps
JTAG Interface	
Compliance	IEEE-1149.1 Compliant Interface
Maximum TCK Rate	100 MHz
I^2C Interface	
Maximum SCL Rate	5 MHz
SPI Interface	
Supported Chip Selects	5 per TAP
Maximum SCK Rate	50 MHz

Ordering Information

Part Number—10390

For more information about Corelis hardware and software products, please visit our website at

http://www.corelis.com/

Software Support

ScanExpress Tools

Corelis offers a complete family of boundary-scan test, JTAG embedded test, and in-system-programming software tools, all compatible with the USB-1149.1/4E advanced features.

For more information about ScanExpress products, please contact the Corelis sales team.

Email: sales@corelis.com

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