

## Low Voltage Adapter (adapter) Quick Start Tutorial

### Features and Benefits

- Converts JTAG signal levels between a TTL (3.3V) scan controller and a low voltage target.
- Mates with any Corelis Scan Controller which supports a standard 20 pin target cable (supplied with that product, not included here).
- Mates with a 60 pin BSH 50 mm socket (Samtec™ or equivalent) on the target, per the Agilent™ Logic Analyzer Test Point standard using direct plug-in.
- Target reference voltage level (0.4 to 2.5V) is detected from its connector pin (buffered) and automatically determines the drive/sense level at that end.
- 9VDC (500 mA) power supply provided.
- LED indicates power status.
- Operates up to 100 MHz.
- Capable of driving 90 mA into target (50 ohm loads readily accommodated).
- ESD protected pins.
- Compact Bare PCB form-factor.

### Connecting the Low Voltage Adapter to the Corelis JTAG Controller and Target

1. Plug the standard 20 pin ribbon cable from the Corelis JTAG Scan Controller (supplied with that product, not included here) into P1 of the adapter.
2. Plug the adapter into the target via P2, directly to the board at the JTAG socket.
3. Plug the supplied 9VDC power supply into an AC outlet and plug its 1.3 mm barrel power connector into P3 of the adapter. The adapter's LED should become lit up red (near P3)..
4. When the target is powered up, the host PC may now be operated using the installed scan controller and its Corelis s/w tools (see instructions for that product). Figure 1 shows the adapter as connected to the target, and the Corelis scan controller (in turn connected to its host PC), ready for operation.

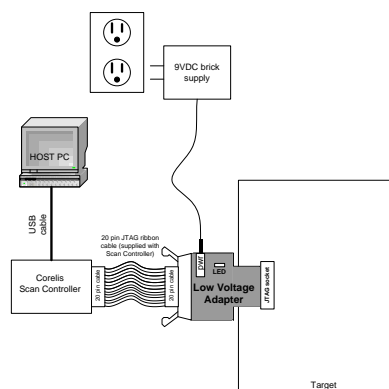


Figure 1 - Low Voltage Adapter connection setup

## Test Execution

When executing tests in ScanExpress Runner, Programmer, or Debugger, the delay compensation must be adjusted to account for the propagation delay introduced by the Low Voltage Adapter and any additional cabling. This may depend on cable lengths and TCK rate selected. Please adjust the delay compensation settings in the software by following the steps below. This attempts to accommodate the time delay for signals emanating from the Scan Controller, through the cabling, through the adapter, through target trace and device delays, and similar return paths all the way back to the Scan Controller.

1. Click the **Setup** menu item and then select the **Controller** entry to display the controller **Configuration** screen. Select the JTAG controller that will be used with the adapter from the *Controllers* section.
2. Using the table below as a reference, select the *TCK Frequency* for the test plan under *Controller Settings* and adjust the *Delay Compensation* based on the TCK frequency. Starting with the default setting of **1 MHz** and **No Delay** is recommended to establish basic operability (negligible delays in this case).

TCK Frequency	Delay Compensation
1.0 MHz – 6.0 MHz	No Delay
7.5 MHz – 12.0 MHz	0.5 Clock
15.0 MHz – 19.0 MHz	1.0 Clock
20.0 MHz – 25.0 MHz	1.5 Clocks
28.0 MHz – 31.0 MHz	2.0 Clocks
34.0 MHz – 38.0 MHz	2.5 Clocks
41.0 MHz – 44.0 MHz	3.0 Clocks

3. Under *Controller Settings*, the controller voltage must be set to **3.30V**. Additionally, if applicable, set the **Input Threshold** and **Slew Rate** to **Automatic**, and set the **TAP Off State** to **Active**.
4. After you have made your selections, click on the **Apply** button to save the settings. The figure below shows the controller settings in ScanExpress Runner after the USB-1149.1/E (as an example) is selected using a 10 MHz TCK frequency and 0.5 Clock delay compensation. The configuration screens for other controllers may appear slightly different.

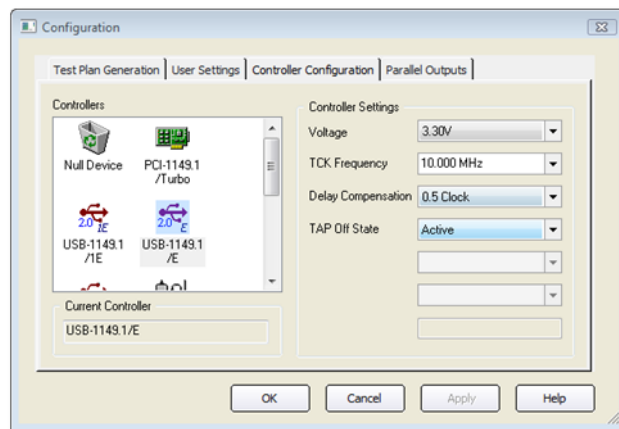


Figure 2 – Controller Configuration in ScanExpress Runner

## Additional Notes

1. You will need to revert the controller's **Delay Compensation** setting back to **Automatic** if you remove the Low Voltage Adapter from the test setup.
2. Please see the *Troubleshooting* section in the Low Voltage Adapter User's Manual on the Corelis Hardware Manuals CD.