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Chameleon/JTAGjet for the Logic LH-79520 SDK

Getting
Started

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CHAMELEON/JTAGJET FOR THE LOGIC LH-79520 SDK

Getting Started

SWII-ChamJTAGjet-LogicSDK 7.21.03.18.01



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Purpose *This document describes the Signum Systems JTAGjet emulator and Chameleon Debugger setup process for use with the Zoom™ LH-79520-10 Starter Development Kit from Logic Product Development based on Sharp Microelectronics' BlueStreak™ Microcontroller (MCU) and System-on-Chip (SoC).*

Introduction

The Getting Started manual assumes the following major components in your development and evaluation system:

- Zoom™ Application Board
- Zoom™ LH79520 Card Engine
- Signum JTAGjet emulator
- Signum Chameleon debugger

Design, development and validation of an embedded system using the Zoom™ SDK are greatly improved by the use of JTAGjet, the Signum Systems palm-size (2.5 × 5.5 × 1.0 in) high-speed JTAG interface emulator for ARM cores. In conjunction with Signum's Chameleon debugger, the JTAGjet offers ultra-fast application download, a rich array of instant code and data inspection tools, code optimization utilities, superior user interface, remote debug option and powerful target control features.

The customization features provided by the Signum emulator and debugger and for the Zoom™ SDK include:

- Startup macro to set up the crucial memory and peripheral device settings of the Zoom™ Board Engine and Application Board
- Access to all the peripheral device registers of the LH79520
- Flash programming plug-in fully integrated with Chameleon that enables the designer to upload code to the Flash memory on the Board Engine.

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The product-ready Signum solution for the Zoom™ SDK significantly reduces product development time, cost, and risk. This allows designers to focus on innovation and on tailoring the final product to the needs of the customer.

Hardware Installation

Please refer to Figure 2 when following the hardware installation instructions below. Beware of static electricity. Handle the system elements only in a static-free environment.

► To install the hardware:

1. Make sure that both the emulator and the application board are turned OFF.

Enable JTAG mode on the application board. This requires setting JTAG jumpers J6 to the “B) SHARP” configuration. For details, refer to the *Zoom™ Starter Development Kit QuickStart Guide*.

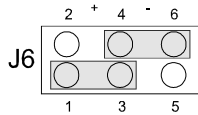


FIGURE 1 J6 JTAG jumper setting enabling the Application Board to work with the JTAGjet emulator.

2. **Connect the JTAG emulation probe and JTAG cable to the SHARP JTAG header on the application board.** Since the application board Sharp processor JTAG does not enforce the correct orientation of the JTAG probe, observe the orientation shown in Figure 2.

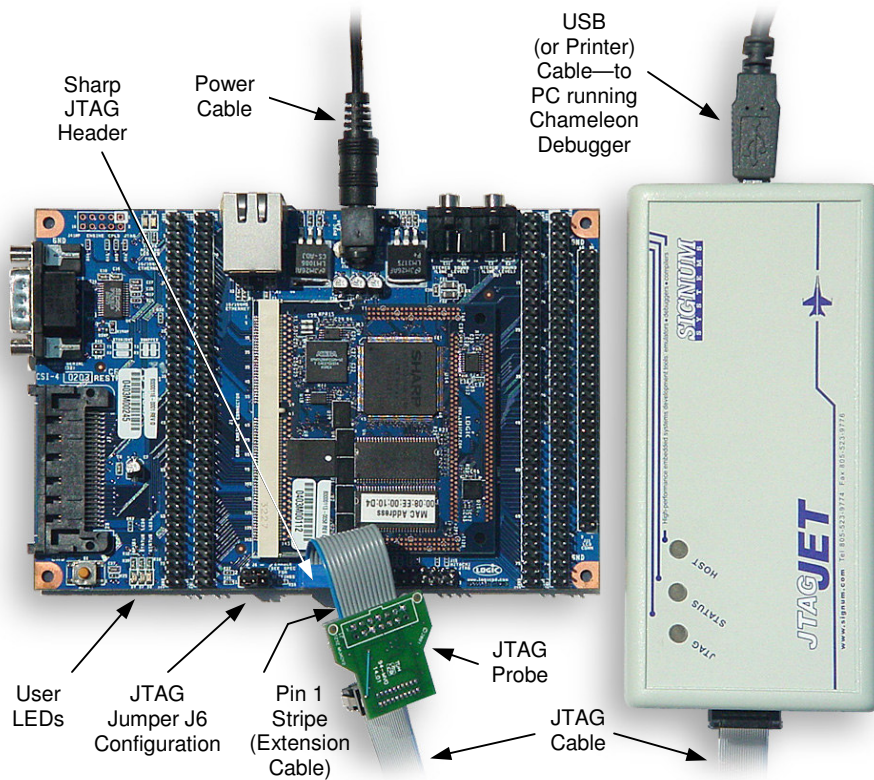


FIGURE 2 JTAGjet emulator (right) in configuration with the Logic Application Board and Logic Card Engine for the Sharp LH79520 microprocessor. The JTAG Probe is connected to the Sharp JTAG Header, and its proper orientation indicated by the Pin 1 stripe of the JTAG Probe extension cable.

3. **Install the USB driver for the JTAGjet** if Windows prompts you to do so. The prompt may appear when connecting the emulator to a computer for the first time. Follow the instructions in *USB 2.0 Driver for JTAGjet Installation Instructions*.
4. **Connect the PC to the emulator** using either the printer cable or a USB 2.0 cable, depending on the type of your JTAGjet emulator.

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5. **Attach the power supply to the emulator and turn the emulator on** if it uses a parallel (printer) communication port. Skip this step if your emulator is equipped with a USB port.
6. **Connect the application board to its power supply.** Power up the board only after the emulator has been turned on.

Software Installation

The software installation and configuration process is described in *Chameleon/JTAGjet for ARM Processor Installation Instructions* found in the JTAGjet package. Please refer to these instructions before installing the debugger and its supporting software.

You should be mindful of two LH79520 specific aspects of the software installation process:

1. In the CPU selection step, choose ARM720 as the CPU model.
2. In the system startup configuration step (the Startup Configuration Options dialog box), select Logic SDS-LH79520-10 Configuration. See Figure 3.

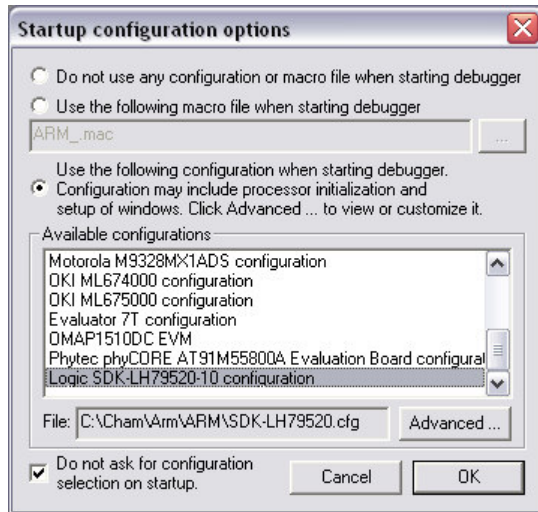


FIGURE 3 Selecting the startup configuration for the Logic SDK-LH79520-10 module in Chameleon Debugger.

Demo Test Program

You can verify that your LH79520 development system has been set up correctly by executing the Demo test program supplied with Chameleon. Demo causes the User LEDs (see Figure 2) to blink.

- ▶ To verify that operability of your LH79520 development system:
 1. Install, power up and configure the system as described in the Hardware Installation and Software Installation sections of this Guide.
 2. Run Chameleon Debugger.

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3. Execute the SDK-LH79520.mac macro found in the ARM subfolder of the Chameleon installation folder (C:\Signum\Chameleon\ARM, by default). This macro performs memory mapping and other initialization tasks.

4. Select Load from the File menu to load the Demo test program demo.elf into the target memory. The program is located in the Arm\Demos\BoardSupport\Sharp\SDK-LH79520-10 subfolder of the Chameleon installation folder (C:\Signum\Chameleon\Arm\Demos\BoardSupport\Sharp\SDK-LH79520-10, by default). Make sure that the Verify Code option is selected. Press Load. Then close the dialog box.

Hint: To run the SDK-LH79520.mac macro,

- Display the Macros toolbar by selecting *Toolbar Configuration* from the *View* menu and checking the *Macros* check box. Click the *Macro* button on the *Macros* toolbar and follow the on-screen instructions to create a button for executing the macrocommand.

— or —

- Select *Command* from the *View* menu and type `do SDK-LH79520.mac` in the *Command* window that appears. For more information on macro execution, refer to Chameleon User Manual.

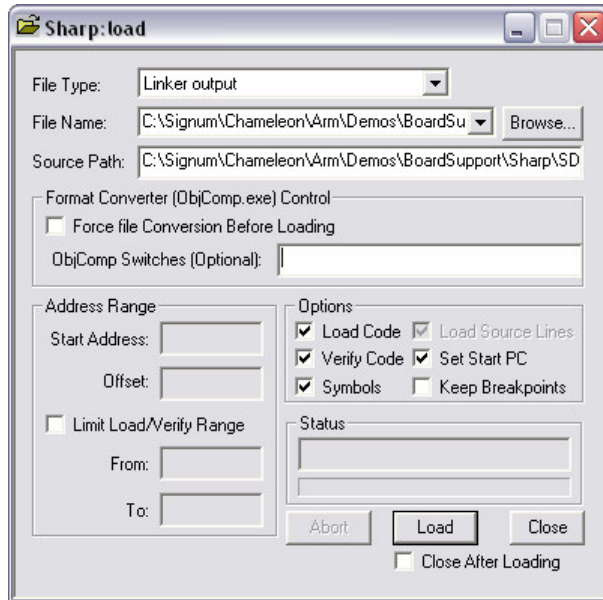


FIGURE 4 Loading the Demo test program.

5. On the CPU Control toolbar, press the Go button. As the program starts running, User LEDs on the target board begin blinking, which indicates that the major components of the system are functioning correctly.

You are ready to examine the system. One of the possible scenarios might be to stop the CPU by pressing the Stop button on the CPU Control toolbar. Then open the Source window, select Source as the display mode from the right-click menu. In this mode, you can conveniently set breakpoints, step through the code, and perform the usual debug actions. See Figure 5.

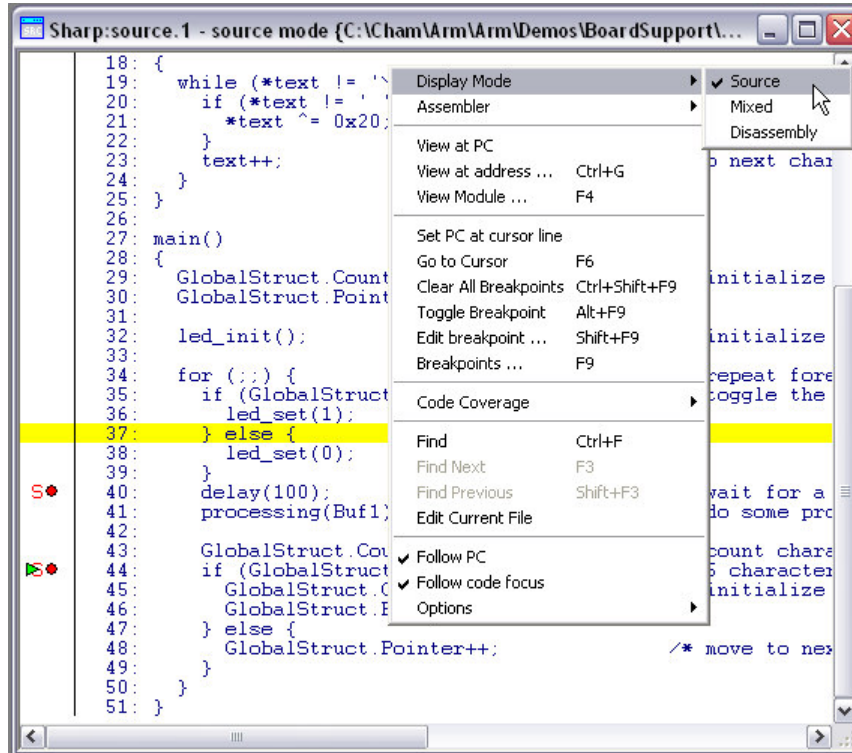


FIGURE 5 Selecting the display mode and examining the source in the Source window. Note the program counter and two software breakpoint indicators in the left margin of the window.

It is worth remembering that access to both the hardware and the software components of your development system is easily gained through the various windows found in the View menu and on the View Toolbar. JTAGjet-ARM and Chameleon User Manuals provide detailed information about individual windows and their capabilities.

Flash Programming

The Demo test program used for demonstration purposes in the previous section runs in RAM, a volatile type of memory. Therefore, the program must be reloaded each time the board is restarted. The SDK-LH-79520-10 Application Board is equipped with Flash, on-board non-volatile memory. Once loaded into the Flash memory, a program stays there indefinitely, or until erased or overwritten. It can be run and even debugged there.

Signum Chameleon debugger is furnished with a plug-in enabling you to program Flash directly from within the debugger. Please refer to the *Flash Programming Plugin for Chameleon Debugger User Guide* for details.

