

Installation notes & Revision history

Starting with version 1.5 the DSP communication kernel has been modified to support access to the Flash ROM in the SP2 model. The modifications are described in the revision history section. The new kernel will replace the old one in the install directory (C:\Program Files\SignalRanger). However it will not replace it any place else on the computer. The user should replace the old file SRKernel.out with the new one in every application where the access to the Flash Boot Rom is required.

Starting with version 1.5, the mini-debugger does not systematically reset the DSP and reload the kernel when it is run. This is required to be able to interact with DSP code that has started from boot Flash at power-up. For the standard version of Signal Ranger, this means that the user must press the reset button in the mini-debugger interface before attempting to do any other operation with the mini-debugger.

The SP version of the drivers is not supported in Windows95. It is only supported in Windows 98 and upward.

Starting with version 1.5 of the software, the Windows 95 drivers of the board are no longer distributed. If you need the Windows 95 drivers for the Signal Ranger board, contact Soft-dB at www.softdb.com for support.

Installation procedure:

1) Software installation:

Simply execute Setup.exe, this will install two sets of files:

- The SignalRanger software, including the required libraries, documentation, and demo applications will be installed first. The installer creates a directory named "SignalRanger" in "C:\Program Files", and stores all the required files into it. It also creates a shortcut in the Windows START menu.
- The LabView run-time engine is installed afterwards. This run-time engine is required to execute the compiled versions of the demo applications, if you do not have LabView 6i or later installed on your computer. It is installed in a directory called "LabView" in "Program Files".

After both installations have been performed, it is necessary to install the USB drivers for the board. For this, refer to the hardware installation section below.

2) Hardware installation for the original Signal Ranger board:

2-1) If you are installing the SP or SP2 version of the board, power it from the 5V adapter first. At this time the Led should light-up red to indicate that the board is powered. For the SP2 version of the board the LED should turn to green after a second, to indicate that the DSP section is powered and the communication kernel is loaded in DSP memory.

2-2) Plug the SignalRanger board into the USB port of the PC. For the standard version of the board, the Led lights-up red at this moment, to indicate that the board is properly powered through the USB connector.

2-3) After a few seconds, Windows should detect the new board and present a standard driver installation wizard.

2-4) Make the proper selections to let Windows find the best drivers for the hardware, however, make a selection to specify the location of the driver.

2-5) When asked to, navigate to the directory
C:\ProgramFiles\SignalRanger\Drivers\Win98_2k or

C:\ProgramFiles\SignalRanger\Drivers\Win98_2kSP, depending depending if you are installing the standard or SP (or SP2) version of the board.

The behaviour at this point is slightly different for the various versions of the board:

- For the standard and SP versions of the board Windows installs a second driver. This second installation is completely automatic but may require the user to press "next" and "OK" in the driver installation window. At the end of the installation of this second driver, the Led should turn to orange to indicate that the DSP section is powered. If the Led does not turn orange at this point it means that there is not enough power available on the PC to power the board. This should never happen when the board is connected directly into the root USB connector on the PC. It may happen if the board is powered by a USB-powered hub which may have to power other devices.

- For the SP2 version of the board, only one driver is installed. There is no second installation.

After this installation, whenever the standard and SP versions of the board is plugged into the USB port, the LED lights-up red first, and then turns orange after about 1 second. The LED turning orange indicates that enough power was available at the USB port to power the DSP section, and that the board has been configured and is fully operational. For the SP2 version of the board the Led turns directly to green whenever the board is powered, even without a USB connection, indicating that it turns on the DSP section and loads the communication kernel on its own.

At any time when the LED is orange or green, you can execute the SelfTest application found in the START menu, under PROGRAMS\SelfTest. This application completely tests the hardware of the board. It turns the LED green, indicating that the kernel is loaded and functional on the DSP.

Revision history

Ver 1.51 29-10-2002

- Replaced the SRanger.dll and SRanger_HL.dll in the installation by their "release" versions. Originally "debug" versions were included.
- Modified the loader (SR_Extract_Out.vi) so that sections are loaded at their virtual address, rather than at their real address. This makes a difference for sections that are dynamically loaded, because they should be loaded at their "Load-Time" address, and not at their "Run-Time" address. This does not make any difference for a static section, which is the usual case. Modified the loader in the SRanger_HL.dll library in the same way.

ver 1.5 29-09-2002

- Modified the loader (SR_Extract_Out.vi) so that the load of a section is only attempted if the flags indicate that the section contains code or initialized data. Modified the loader in the SRanger_HL.dll library in the same way.
- Corrected a problem in the Demo1_C and Demo2_C applications that come with the Signal Ranger board. These demos attempted to load an initialized section in program memory above address 4000H. Although not possible, this seemed to work because the data loaded was all zeros, and the bus holders on the data bus made sure that the data read back was zero. The problem will be detected if a device is mapped in external program space (such as the SR_FlashBoot board).
- Added the documentation of the SP and SP2 versions to the installation.

- Modified the Mini-Debugger to support the programming of the Flash Boot ROM in the SP2 version.
- Modified the Self-Test application to detect the Flash Boot ROM in the SP2 version.
- Included the SP drivers in the installation. Removed the Windows 95 drivers which are no longer supported.
- Modified the kernel SRKernel.out so that the wait state multiplier is set to 2. This is required to access the Flash Boot ROM in the program space in the SP2 model. Note that external RAM wait states are also increased from 1 to 2.
- Modified the kernel SRKernel.out so that the data bus holders are enabled. This is required to properly access the Flash Boot ROM in the program space in the SP2 model. This should not change the operation of existing programs.
- Modified the Mini-debugger so that it does not reset the DSP and reload the kernel when it is launched. This way it is possible to debug code that has been loaded from Flash ROM on the SP2 version of the board. Pressing the reset button will still reset the DSP and reload the kernel.

ver 1.4 11-02-2002

Recompiled evrything for LabVIEW6.1 This version is identical in functionality to the 1.33 version, and is not distributed to properly support users of earlier versions of LabVIEW. It can be requested from Soft-db.

ver 1.33 26-01-2002

Corrected a problem in the mini-debugger that prevented the display or modification of RAM data when no code had been loaded.

ver 1.32 7-11-2001

- Corrected a problem that caused the Mini-Debugger to fail to release the driver at the end of its execution. Correspondingly, if the board was disconnected, and then reconnected with the Mini-Debugger still open, a new driver was opened for the board, and the board number had to be inreased from Ranger to Ranger1, then to Ranger2...etc at each disconnection/reconnection.

- Modified the management of the symbol table in the mini-debugger. The table is not cleared anymore when the board is reset. The Mini-Debugger tries to find the symbol `_C_int00` in the symbol table when a new COFF file is loaded.

ver 1.31 23-08-2001

- Added functionality in Self-test to test for SR-Parallel board presence.

ver 1.30 27-07-2001

- Modified the user interface of the Mini-Debugger so that symbols can be accessed using a list. Modified the documentation of the Mini-Debugger to reflect that change.
- Modified the `SR_ExtractOut` VI so that the Symbol Table structures indicates the memory space to which each symbol belongs, instead of the section No.

ver 1.23 02-07-2001

- Modified the self test application so that it closes the driver properly in case the RAM test fails.

ver 1.22 23-06-2001

- Modified the AIC driver for the DSP to reorganize the I/Os.
- recompiled the DSP code for the two demo applications.

ver 1.21 12-06-2001

- Modified the AIC driver for the DSP, so that it works with other silicon revision numbers of the DSP than what had been used for prototyping. Some revision numbers do not initialize the McBSP registers correctly upon DSP reset, and the communication with the AICs is erroneous.
- recompiled the DSP code for the two demo applications.

ver 1.2 5-5-2001

- Added High level DLL to support C/C++ development
- Modified documentation accordingly

ver 1.11 28-4-2001

- Rebuilt SRanger.dll to be able to implicitly link it to applications or higher level DLLs
- Included SRanger.lib and SRangerExports.h in the package to simplify the use of SRanger.dll
- Modified the documentation to better explain the use of the SRanger.dll DLL.

ver 1.10 4-04-2001

- Replaced the function K_Data_Move by a Polymorphic function to transfer integers and floats between the DSP and PC. This new function includes an offset, which is useful to transfer individual members of a structure. It also resolves alignment problems for 32-bit data. Updated the documentation accordingly.
- Modified the Minidebugger so that alignment occurs on the next even address, instead of the previous for long and float data (this is more coherent to the way the C compiler aligns data in memory).
- Corrected a bug in the Minidebugger so that floats can be written, as well as read.

ver 1.09 30-03-2001

- Modified the MiniDebugger to be able to present data in floating point format.
- Added information about the enumeration inconsistency under Win2k in the documentation.

ver 1.08 26-03-2001:

- Modified SR_Extract_Out.vi to rid the symbol table of all but global external symbols which actually belong to a loaded section. Otherwise, some symbols could be duplicated in the

table, with some instances having erroneous values.

Ver 1.07 19-03-2001:

- SR_Load_User now verifies the memory content after each section load, and gives an error message if the section does not check.

- Corrected a bug in the kernel that could cause a problem if a PC access to the IO space was initiated while the DSP was performing a Repeat block.