



RSILink

Version 4.0.0 (2018-10-19)

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1 Overview

RSILink is an application designed to perform transfers between an embedded CF2 Persistor compute module and a desktop computer. Transfers are performed over a USB connection and achieve speeds that would otherwise not be possible over a serial port ~ 250 KB/s.

Using RSILink requires two connections between the host computer and the instruments. A USB connection which facilitates the bulk transfer of data and a RS-232 serial port (9-pin serial connector) responsible to control the CF2 Persistor. The latter is controled from a terminal responsible for launching data acquisiton and initiating USB data transfer.

NOTE: Some instruments do NOT have a RS-232 Connector. Those include an additional board to convert serial to USB signal. The communication process is otherwise identical.

2 Installation

2.1 Windows

Users of Windows must use the executable installer which will install the following:

- Motocross

Terminal software used to interact with the CF2 Persistor compute module. This software also provides the ability to upload new firmware to the CF2 Persistor.

CRITICAL: Motocross only works with COM ports 0 to 9. Should Windows assign a COM port outside this range, use the device manager to manually reassign the device to a suitable COM port.

- RSILink

Facilitates the transfer of bulk data over USB. Fully described by this document.

MotoCross is the terminal installed by default through our installer. It can however be convenient to use an alternative such as **Tera Term**, a popular open source terminal which has the following advantages over MotoCross:

- support for XMODEM and YMODEM (enabling download via the serial connection)
- improved handling of USB-to-serial devices.

Drivers

If your instrument does not have a RS-232 Connector (*i.e.* a 9-pin serial connector), you will require the FTDI drivers to be installed for Windows. These drivers are available from Windows Update and will be installed automatically when an instrument is first connected if your windows updates are enabled.

Using Windows Updates to manage the FTDI drivers is the recommended option as it will perform future updates automatically. Otherwise, you can download the latest version of the drive from the [FTDI website](#), see figure 1.

Finally, if both options above fail, you can use the driver provided on the USB flash device that was included with your instrument. This is not a recommended solution as it may not be the latest version of the driver.

Currently Supported D2XX Drivers:

Operating System	Release Date	Processor Architecture					Comments
		x86 (32-bit)	x64 (64-bit)	ARM	MIPS	SH4	
Windows*	2017-08-30	2.12.28	2.12.28	-	-	-	WHQL Certified. Includes VCP and D2XX. Available as a setup executable. Please read the Release Notes and Installation Guides.
Windows RT	2014-07-04	1.0.2	-	1.0.2	-	-	A guide to support the driver (AN_271) is available here
				1.4.8 ARMv5 soft-float	1.4.8		If unsure which ARM version to use, compare the

Figure 1: Drivers are available from the FTDI website; <http://www.ftdichip.com/>

Installation

1. When you are ready to install, run executable installer.
2. This dialog shows the required and optional components with the suggested options selected as shown. Click *next* (Figure 2).
3. Specify the destination folder and click on *install*. The default directory is the preferred choice.
4. After the installation is completed, you may close the installer by clicking on *close*

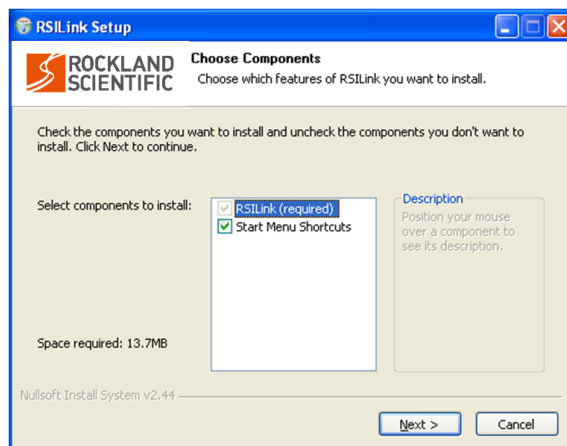


Figure 2: Dialog shows the required and optional components with the suggested options selected as shown. Click *next*.

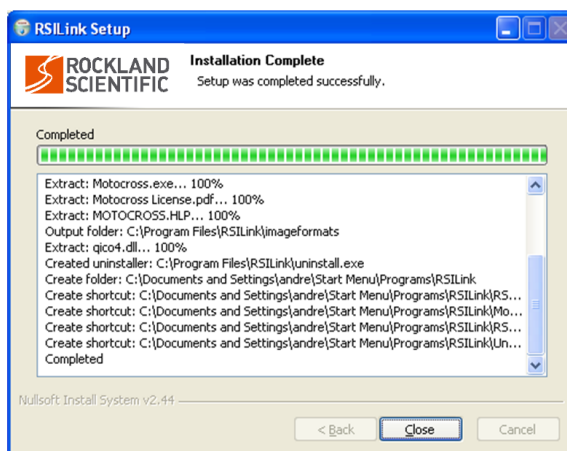


Figure 3: Specify the destination folder and click on *install*. The default directory is the preferred choice.

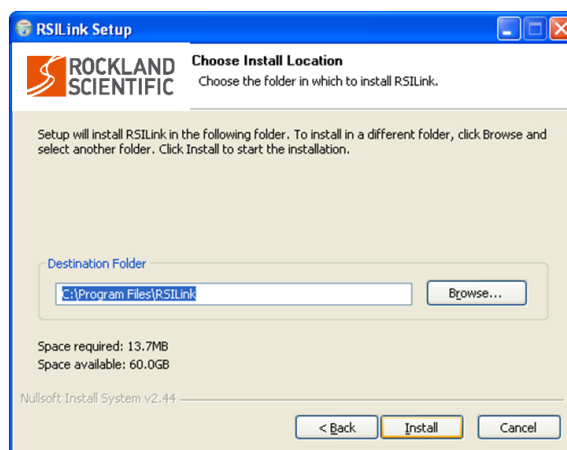


Figure 4: After the installation is completed, you may close the installer by clicking on *close*

2.2 macOS

Installing RSILink on macOS is as simple as dragging the application to a suitable directory. No other installation steps are required.

Users must however provide their own terminal software for communication with the instrument. A reasonably simple, free, terminal application we recommend, is [CoolTerm](#).

MacOS includes by default a terminal called “SCREEN”. While its not our recommended terminal, it has the advantage of already being installed on your machine if you have limited internet access.

In the event where firmware needs to be updated, it *must* be done using the Motocross software in Windows. For instruction to update your firmware, refer to the ODAS5IR User Manual.

NOTE: Users who have installed a previous version of RSILink might have to remove the embedded D2xxHelper driver. This driver prevents macOS from loading the default FTDI USB driver and was required by the previous version of RSILink

This version of RSILink uses the default macOS provided drivers. If the previous D2xxHelper driver is present, it will have to be removed using:

```
sudo rm -rdf /Library/Extensions/D2xxHelper.kext
```

After executing the above line within a terminal, reboot the computer. This only has to be done once and only on computers that have the previous RSILink installed. However, if you haven't previously installed RSILink, executing this command will not cause issues.

2.3 Linux

Linux users must figure out how to install the application on their own. This will require you to copy the files to a local directory and launch the binary file. The default, open source, FTDI driver should be included with most distributions.

Users will then have to adjust their PATH or install shortcuts as required by the distribution. Other details will be distribution dependent, therefore left to the user.

Updating the CF2 Persistor firmware must be done from Windows using Motocross. Once the firmware is installed, it is reasonable to use Linux to operate and manage the RSI instrument.

3 Usage

RSILink works in conjunction with a daemon running on the CF2 Persistor compute module. Therefore, to use RSILink, one must launch the USBL daemon on the persistor.

3.1 Executing USBL

USB Link (USBL) can be accessed from the ODAS5IR software. When connecting to the persistor with your selected terminal you can launch USBL by typing USBL. This should create the display shown in listing 1

The default communication settings used to connect to the CF2 Persistor are:

- 9600 baud
- 8N1

Listing 1: USBL command line output

```
C:\> usbl

USBL Version 4.0,      2018/09/11
Persistor CF2 SN:6774   BIOS:4.6
PicoDOS: 4.3
USB Link Active.
CIOPuts diverted!
Press 'q' to quit
```

3.2 Connecting with RSILink

After executing USB Link, (see 3.1), RSILink should be able to establish a connection with the CF2 Persistor compute module. Note that it can take up to 60 seconds for USBL to boot so please be patient when first connecting.

The next step is to select the serial port which connects to the FTDI chip from the pull-down menu box. The list of available ports is filtered to a limited degree but users might still have to select multiple ports before finding the correct one. Be certain to refresh the list of ports after connecting the RSI instrument.

For each possible serial port, select the port from the drop-down menu box and attempt to get a directory listing by clicking the “*Get Root Directory*” button. If a directory listing is displayed, the correct port has been identified. This port will be saved and selected by default in the future.

3.3 Changing Directories

To change directory, you can simply double-click on the desired directory. The directory entitled “.” brings you up a directory level. Finally you can go back to the top directory by pressing the “*Get Root Directory*” button.

3.4 Downloading Files

When files are selected from the list of Persistor CF card files, the “*Download*” button will be enabled, press it to download the selected files.

When files are downloaded, RSILink will set the file modification date to the same date as observed on the CF2 Persistor compute module. The CF2 Persistor is expected to have time set to UTC time so it might not initially appear to be correct because while the Persistor is in UTC time, your computer will be in local time. However, assuming the Persistor time is correct, a file recorded on the Persistor at, for example 11:00 am, will have the file set the 11:00 am after being downloaded to the local computer.

3.5 Uploading Files

Click the “*Upload*” button to upload files to the CF2 Persistor CF card. Files will be uploaded to the current directory.

After selecting “*Upload*”, RSILink will provide an open dialog box to request the files which should be uploaded. The CF2 Persistor only supports DOS 8.3 file naming. In the event that files with non-conforming names are selected, RSILink will suggest, and request conformation / correction, for alternative names to be used for those files. This functionality will remove the need to manually change the file names on your local computer. More information can be found in section [4.2](#).

3.6 Updating CF2 Persistor Time

As the CF2 Persistor compute module has no knowledge of time zones, it is therefore expected to be in UTC time. This can be set via the “*Set Time*” button which sets the Persistor to the current UTC time. We strongly recommend using this button to set time rather than other available options. This occurs since Rockland’s data processing software assumes the data was acquired in UTC when generating plots.

Once the Persistor clock is set correctly, the reported file modification dates will have a UTC offset applied. The offset is removed when downloading files to the local computer. Therefore, please do not manually configure the CF2 Persistor to use the local time in place of UTC time. Doing so will cause data files to have inaccurate dates when downloaded.

4 Hints and Tips

4.1 Adjust Text Size

Text size within RSILink can be adjusted by holding down the *Ctrl* key while scrolling with the mouse. If using macOS, a different modifier key must be pressed.

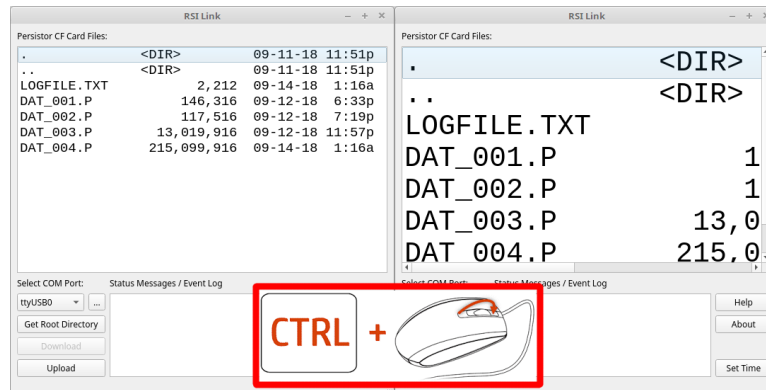


Figure 5: Change text size with Ctrl+Zoom command.

4.2 Configuration Files with Meaningful Names

PicoDOS on the CF2 Persistor only supports 8.3 character file names. As a result, the configuration file is almost always named *setup.cfg*.

It can be difficult to keep track of multiple configuration files when they all have the same file name. One typically provides a more descriptive name to prevent this source of confusion. The problem is that this file must be renamed before sending to the CF2 Persistor.

RSILink now looks at the file names when uploading files. If the file has the **.cfg* extension, the file is assumed to be configuration string file. Therefore, if the file name is inappropriate, an alternative name is recommended in a dialog box to verify if the modification is acceptable.

Automatic renaming of the configuration file allows for more descriptive file naming such as:

- *setup-2018-01-01.cfg* → *setup.cfg*
- *setup double sampling rate (1024).cfg* → *setup.cfg*
- *blue ocean.cfg* → *blue_oce.cfg*
- *configuration_20180910* → *configur.cfg*

NOTE: If the configuration file is not renamed to “*setup.cfg*” ensure to update your *autoexec.bat* file to select the correct configuration file. We strongly recommend running data acquisition through the *autoexec.bat* file to ensure the file was properly uploaded and called by the function. Otherwise, the error will be detected and reported within ODAS5-IR (see the ODAS5-IR user manual for more information).

– End Of Document –