Sega Saturn USB DataLink Setup Instructions

The Sega Saturn DataLink device is a USB accessory, which can be used to transfer data. The DataLink utilizes the 5V power from your PC's USB port to operate. It is a very low-power device, which consumes < 50mA of current.

After unpacking the USB DataLink device, please follow the steps below.

Step1 – Install USB Drivers

For this step, you will need only the DataLink device, USB cable, and Driver CD.
On the CD is a PDF with instructions for installing the USB drivers. Open the instructions (or print them out) corresponding to your operating system (XP, 98, …etc).

Plug the USB cable into your PC. Plug the other end of the USB cable into the DataLink device. The DataLink's LED indicator light should come on, and your PC should indicate that it has found a new device.

* On some of the newer versions of Windows (like Windows 7), it may automatically install the VCP drivers without any user action necessary.

Otherwise, follow the driver installation instructions (for VCP drivers). When selecting the location for the drivers, they are located in the "Drivers" folder on the CD. When you are finished with the driver installation, the PC will have assigned a virtual com port to the DataLink device. To see which com port is being used, go to your PC's Device Manager. Expand the "Ports(COM & LPT)" directory. Make a note of which com port number has been assigned to the USB device.

COM_____

* Currently, the software does not support a COM assignment higher than 16. If the COM installed as a number higher than 16, you can re-assign it using Device Manager. It is ok that it uses a COM number assigned to another device, as long as both devices are not plugged in at the same time.

Step2 – Install DataLink Software

This will install the DataLink software application to your PC.
On the CD is a folder named "Software Installation". Inside this folder is the file setup.exe. Run setup.exe and follow the on-screen instructions. When installation is complete, the software may be launched by selecting "Saturn_USB" from the Start Menu. When the DataLink software starts, it should automatically choose the correct com port. The com port may be manually selected, by choosing "File…Configure" from the DataLink software main menu.

Step3 – Connecting the Datalink device to the Saturn

This is the connection sequence for attaching the DataLink device to the Saturn.
1) The Sega Saturn should be powered OFF.
2) Insert a Pro Action Replay cartridge into the Saturn cartridge slot.

3) The DataLink device should be UNPLUGGED from the USB cable.
4) Plug the DataLink's 25pin ribbon cable connector into the connector on the cartridge.
5) Plug the USB cable into the DataLink and into the PC. The DataLink's LED indicator should light.
6) Apply power to the Saturn. After the Main Menu of the PAR cartridge is displayed, start the DataLink software on the PC.

When shutting down, first turn power OFF to the Saturn. Next, disconnect the USB cable from the DataLink Device. Finally, remove the 25pin ribbon connector from the cartridge.


Step4 – Using the DataLink Software
This software enables you to transfer game-saves back and forth between your PC and the Saturn. Also homebrew Saturn games may be downloaded to the Saturn.
Running the Saturn_USB software brings up the main screen.
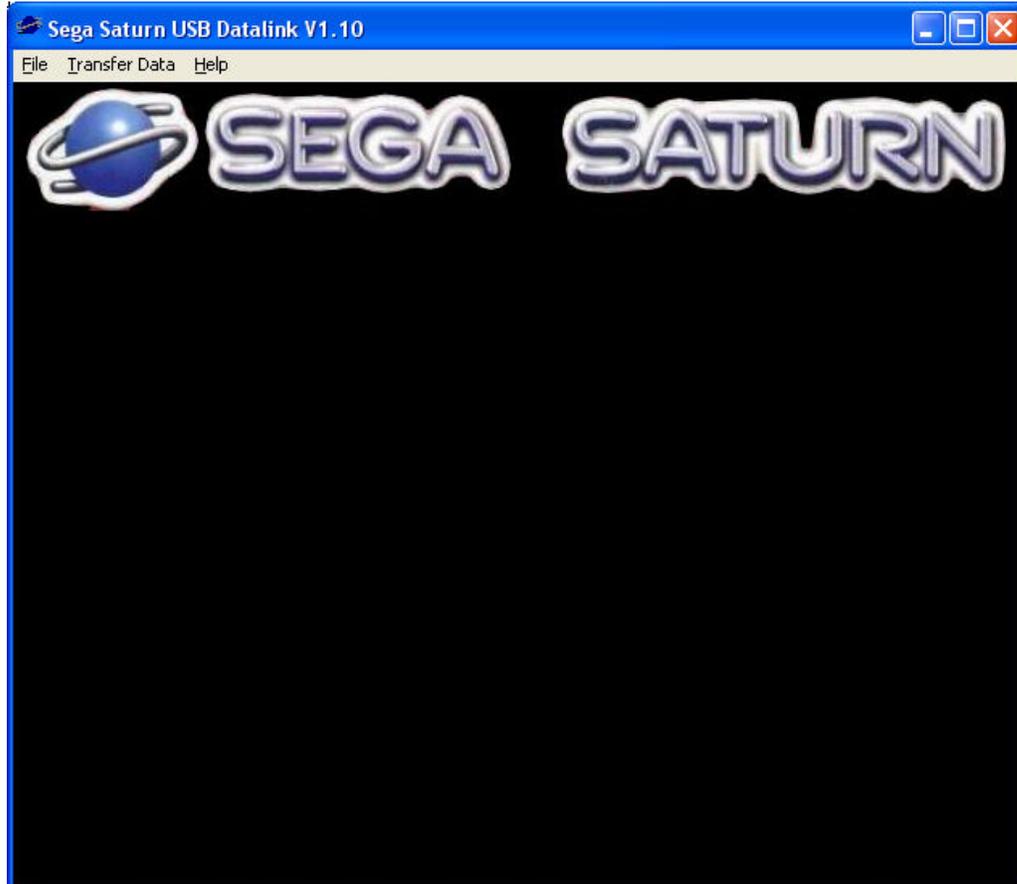
Selecting **File** gives you the option to **Exit**, or **Configure** the com port.
Selecting **Transfer Data** allows you to open a window for:

1) Receive Gamesave – Retrieves Game-save data from the Saturn
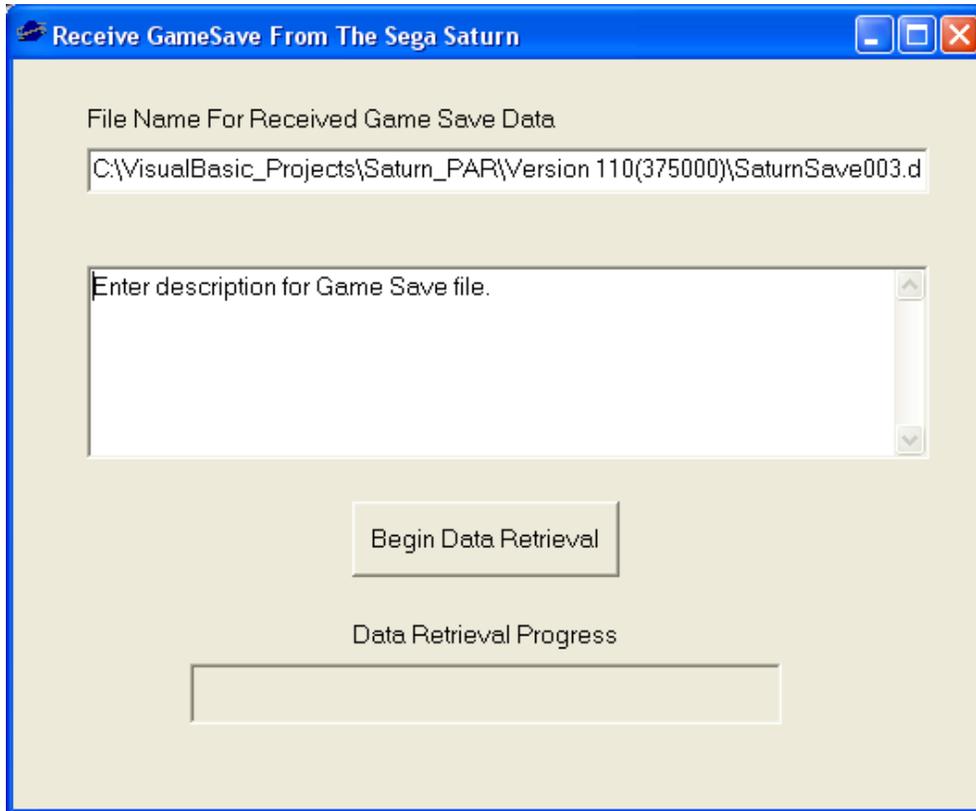
A filename will be automatically generated (SaturnSavexxx.dat). The number is automatically incremented as files are saved. The file is saved on the PC's harddrive in the directory that the application is running from. A text box is available for describing the contents of the Game-saves. When the **Begin Data Retrieval** button is pressed, the entire contents of the Saturn's battery-backed ram is saved to the PC's harddrive. As the transfer is occurring, the progress bar shows the status of the data transfer. Also, while data transfer is occurring, the LED indicator on the DataLink will be flashing rapidly.

Note: To use this received gamesave file on an emulator, you can do the following:

- For SSF: Rename the "SaturnSavexxx.dat" file to "InternalBackupRAM.bin", and replace the existing SSF "InternalBackupRAM.bin" file with this new one. Make sure that "Hook Backup Library" is NOT checked in the options. If "Hook Backup Library" is enabled, the emulator uses a different format for the save files, which is incompatible with the DataLink.

- For Cassini: Rename the "SaturnSavexxx.dat" file to "BKRAM1.bin" and replace the existing "BKRAM1.bin" file to this new one. The file will be located in "C:\Windows\profiles\saturn".

2) Send Gamesave – Sends Game-save data to the Saturn
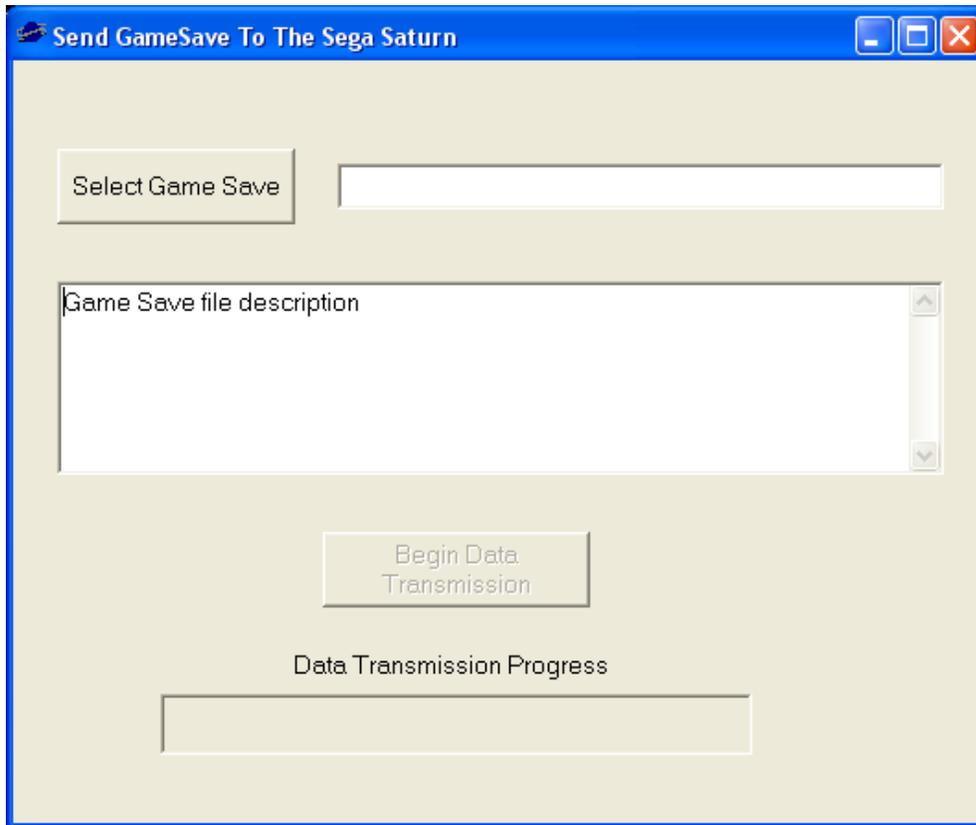
First, click the **Select Game Save** button to choose a Game-save file for download to the Saturn. If you typed a description when you saved the file, it will show up in the text box. Once a file has been chosen, the **Begin Data Transmission** button will become enabled.

**WARNING sending the Game-saves to the Saturn will overwrite the entire contents of the Saturn battery-backed ram.

As the transfer is occurring, the progress bar shows the status of the data transfer. Also, while data transfer is occurring, the LED indicator on the DataLink will be flashing rapidly.

Note: To send a gamesave file created by an emulator, you can do the following:

- Rename the SSF file "InternalBackupRAM.bin" to "*.dat".
- Rename the Cassini file "BKRAM1.bin" to "*.dat".
- Create a text file, with the same name as your "*.dat" file, to create a description.

3) Send Homebrew Game – Sends a Homebrew game to the Saturn
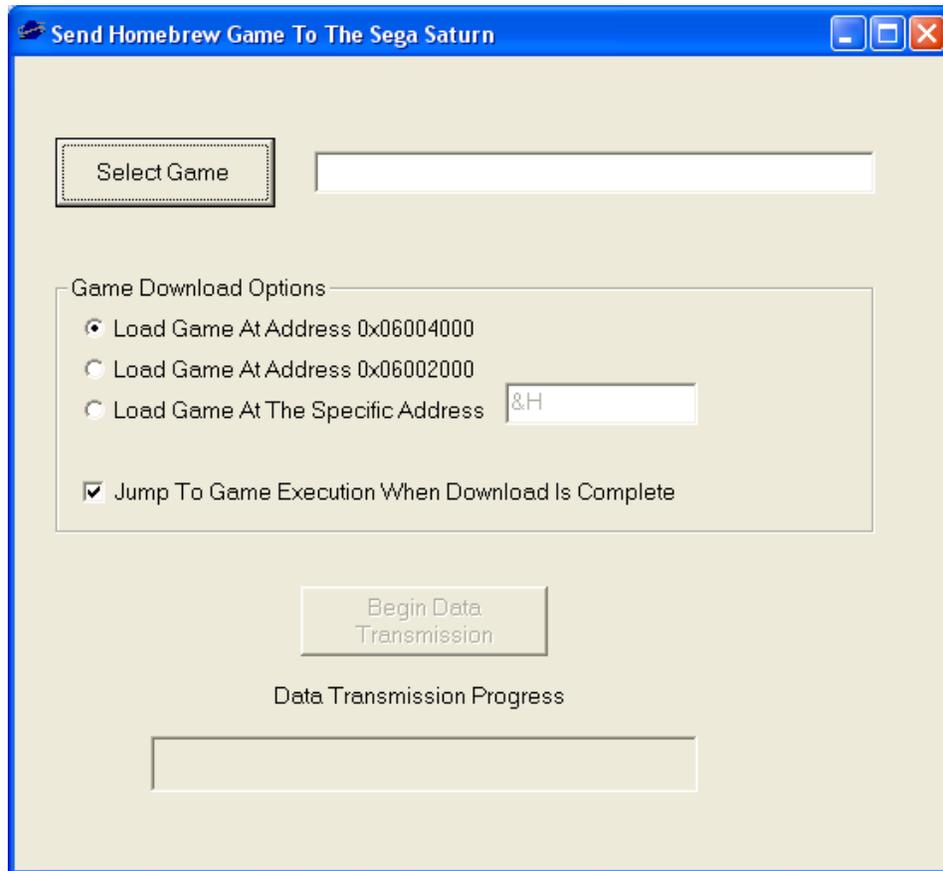
First, click the **Select Game** button to choose a homebrew file for download to the Saturn. Once a file has been chosen, the **Begin Data Transmission** button will become enabled.

Most homebrew games need to be loaded at address 0x06004000, and this option is selected by default. If loading a game to a specific address, use the &H prefix to enter an address in Hex format. There is a checkbox below the option buttons. This box must be checked in order for the game to execute after download is completed.

Press the **Begin Data Transmission** button. As the transfer is occurring, the progress bar shows the status of the data transfer. Also, while data transfer is occurring, the LED indicator on the DataLink will be flashing rapidly.

4) Receive BIOS – Retrieves BIOS file from the Saturn
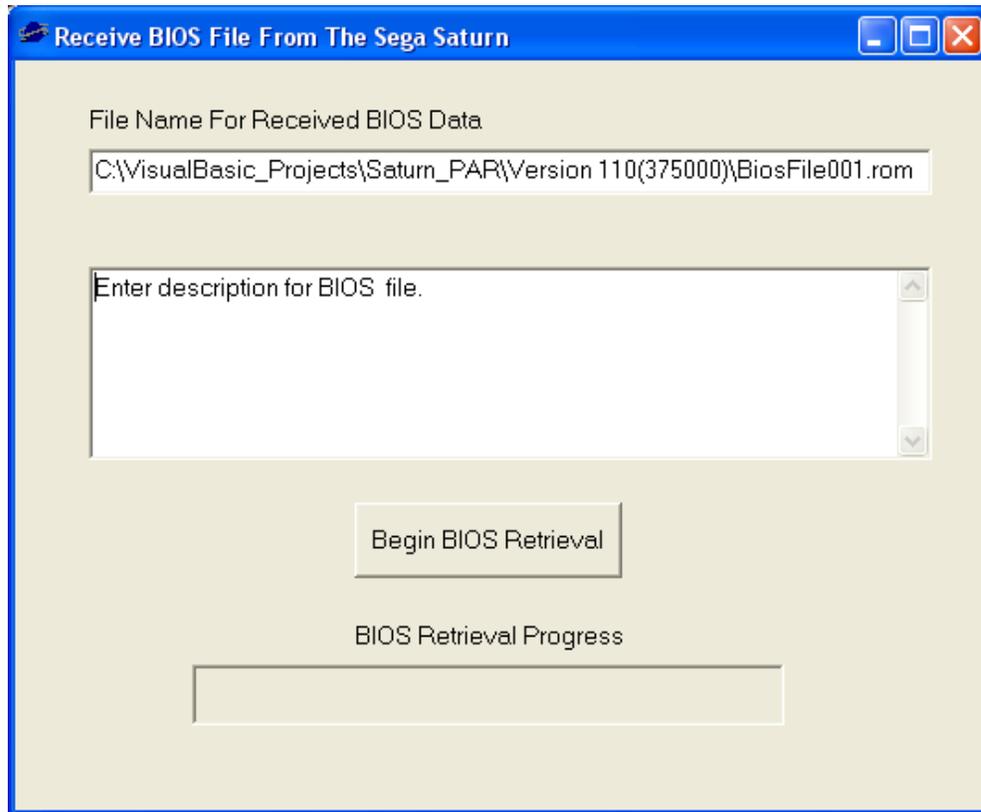
A filename will be automatically generated (BiosFilexxx.rom). The number is automatically incremented as files are saved. The file is saved on the PC's harddrive in the directory that the application is running from. A text box is available for describing the version/region of the BIOS file. When the **Begin BIOS Retrieval** button is pressed, the BIOS of the Saturn is saved to the PC's harddrive. As the transfer is occurring, the progress bar shows the status of the data transfer. Also, while data transfer is occurring, the LED indicator on the DataLink will be flashing rapidly.

5) Receive DataFlash – Retrieves DataFlash file from the Cartridge
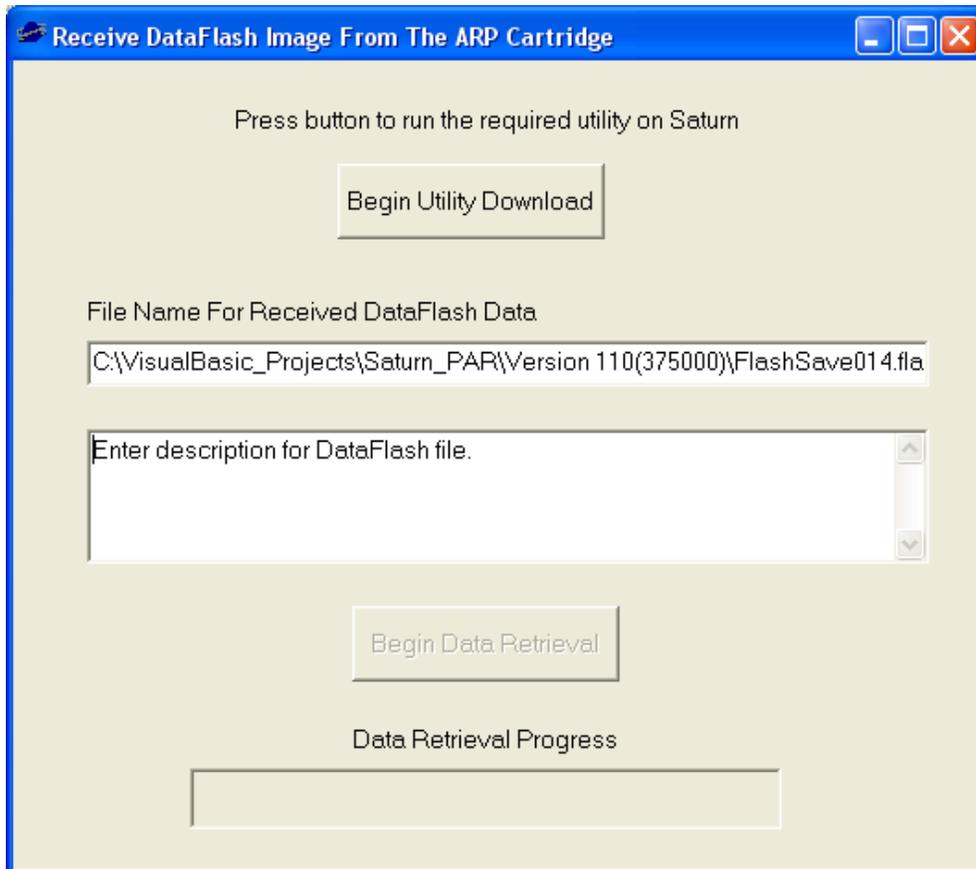
In order to perform DataFash operations, a small application must first be executed on the Saturn. The **Begin Utility Download** button must be pressed. After approximately 5 seconds, a dialog box will show whether the download was successful.

A filename will be automatically generated (FlashSavexxx.fla). The number is automatically incremented as files are saved. The file is saved on the PC's harddrive in the directory that the application is running from. A text box is available for describing the contents (firmware / gamesaves / codes) of the DataFlash file. When the **Begin Data Retrieval** button is pressed, the DataFlash contents of the cartridge are saved to the PC's harddrive. As the transfer is occurring, the progress bar shows the status of the data transfer. Also, while data transfer is occurring, the LED indicator on the DataLink will be flashing rapidly.

The DataFlash data retrieved is 256Kbyte in size. It contains the cartridge firmware, every game code, and every gamesave, which is stored in the cartridge. This provides a quick way to backup the entire contents that are stored on the cartridge.

This function is more of a backup for catastrophic cartridge failure. Sometimes when an ARP cartridge becomes corrupted, it can be re-flashed and made usable again. Or if there is an actual hardware failure (damage), a new cartridge must be purchased. In either case, a CD application which runs on the Saturn, must be used to reflash the cartridge.

An example of a Saturn CD application which can reflash the cartridge is ExCyber's ARFLASH utility. This can be found on Rockin'-B All Stars compilation at "http://www.rockin-b.de/saturn-rb-all-stars.html".

Also, there is a utility that may be run using the DataLink called "Saturn Cartridge Firmware Flash Utility" This can be downloaded here: http://ppcenter.webou.net/devblog/article/48/saturn-cartridge-firmware-flash-utility-small-update.html

This is a binary file (flasher.bin) that may be executed on the Saturn, using the DataLink's "Send Homebrew Game" function. This can be used to update your cartridge firmware. This can also be run from CD, if your cartridge is not functional.

Step5 – Troubleshooting
The DataLink software will attempt to communicate many times with the DataLink device before giving up and displaying an error message box. If you receive this communication error message, the possible reasons could be:
- The wrong COM port has been selected
- A COM port number higher than 9 has been assigned
- The USB cable is not plugged into both the PC and the DataLink device
- The 25pin ribbon cable connector is not plugged into the PAR cartridge
- The Saturn is not powered on
- The PAR cartridge is not at it's Main Menu screen
- The PAR cartridge is not making good contact and must be re-inserted
- The PAR cartridge firmware is too old, and must be updated

There has now been a test mode added to the software. It is under File...USB Test. This will allow the USB communication to be tested, between the PC and the DataLink. The Saturn and ARP cartridge are not required for this test, just plug the DataLink into the PC.

The following cartridge firmwares have been tested so far. Any newer versions should be compatible with the DataLink. If your cartridge has an older version of firmware, it may need to be updated to operate correctly with the DataLink.

- EMS Action Replay Plus version 2.01 (or newer)
- Pro Action Replay version 1.94 (or newer)
- Gameshark-USA version 1.91 (or newer)

 Feel free to send any further questions/comments to: gameofyou@bex.net