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AVT-718 - FLASH Re-Programming

The AVT-718 utilizes an on-board FLASH memory device to hold the operational firmware. This permits firmware updates/changes to be accomplished 'in the field' without the need to open the unit or replace a memory device.

Advanced Vehicle Technologies has developed, and makes available to customers at no charge, software to assist in downloading firmware to the AVT-718 unit. This application note describes the FLASH download software.

A customer is free to develop their own FLASH download software. The commands and responses for the AVT-718 FLASH programming mode are available in the "Master Commands and Responses" document available from our web site, Download Page.

Introduction

AVT offers two versions of the FLASH Download software. One is a pure DOS application. The other is a 32-bit application that should run under Windows95, Windows98, and Windows NT. We have not tested it under Windows 2000 or Windows Me.

Terminology

In this document the term "FLASH Software" refers to the code running on the host computer that 'talks' with the AVT-718.

The term "firmware" refers to the code and file (S19 file) that is loaded into the FLASH device on the AVT-718 board.

Hardware Requirements

The following are required to use the AVT supplied FLASH Download software:

- AVT-718 unit connected to a host computer via an RS-232 serial link [via a COMx: port].
- Host computer running MS-Windows95, Windows98, or Windows-NT.
or
- Host computer running DOS (6.22 preferred) [for the DOS software].
- Approximately 400 KBytes of disk space.

Obtaining the AVT-718 FLASH Software and Firmware

You will need to request a copy of the FLASH software as well as a copy of the AVT-718 firmware. We maintain all versions of firmware archived. To obtain both the FLASH software and a specific version of AVT-718 firmware:

- Write us an e-mail, send a fax, or call.
- Provide your name and company name.
- Provide us with an e-mail address (if you want the file sent by e-mail).
Or, provide us with your mailing address (if you want the file sent on a floppy disk via regular Postal mail).
- Tell us the model number, serial number, and hardware revision letter of the unit you want code for.
- Tell us the version of code you want.
Version descriptions can be found on our web site
http://www.avt-hq.com/718_asm.htm
- We will mail the file as quickly as we can (usually within 24 hours).
- If we are sending the file by e-mail, it will be 'zipped' up using PKZip (from PKWare).
- Notify us if you want the file sent any other means or method.

Software Installation

Create a directory or folder and name it as you wish; we suggest: 718FLASH or similar.

Copy the zip file we send you to that directory or folder. Unzip it.

The DOS version does not require any installation. It does not change any other files or require changes to any other files.

The 32-bit version of 718FLASH software does not require any installation; does not copy any files to any directory other than the one designated; does not make any changes to the registry; and does not make any changes to any other system setting or component.

Software Operations

The DOS version of the AVT-718 FLASH Download software is named: "718FL-xx.EXE" where xx is the version number.

For the DOS version:

- Go to the directory where the files have been copied and unzipped.
- Start the FLASH Download software (718FL-xx.EXE).
- Follow the on-screen instructions.
- If the program should hang or a problem be encountered, the <F1> key is an immediate abort key.

- Unless the boot sector of the AVT-718 FLASH device becomes corrupted, you can re-start the FLASH Download process again. However, you may have to cycle power on the AVT-718 unit to do so.
- When the download finishes successfully, the program will exit with a notice. Cycle power or issue a software reset to the AVT-718 will cause it to re-boot and begin running the firmware just downloaded.

The 32-bit version of the AVT-718 FLASH software is named: “718FLASHxx.EXE” where xx is the version number.

For the 32-bit version:

- Go to the directory where the files have been copied and unzipped.
- Launch the application (718FLASHxx.EXE).
- Select the firmware source file.
- Select and configure the com port.
- Click “Program FLASH” button to start.
- Select EXIT/ABORT when completed.

DOS Version Notes

It is not recommended that you run the DOS version of the FLASH Download software in a DOS box inside of Windows95/98 as it may or may not work properly.

The DOS version of the FLASH Download software has defined <F1> as an immediate abort key. Pressing the <F1> key at any time causes the program to terminate immediately and exit regardless of where in the programming sequence the software is. The <F1> abort key is provided should something go wrong and/or the software hang. It is possible (and even likely) that aborting the software will result in corrupted FLASH on the AVT-718. Recovery is possible and even likely (refer to the Notes, below).

The only way to restart the DOS software is to exit and restart.

32-bit Version Notes

The 32-bit version of the 718 FLASH software has an always active EXIT/ABORT button. Selecting the EXIT/ABORT button at any time causes the program to terminate immediately and exit regardless of where in the programming sequence the software is. The EXIT/ABORT button is provided should something go wrong and/or the software hang. It is possible (and even likely) that aborting the software will result in corrupted FLASH on the AVT-718. Recovery is possible and even likely (refer to the Notes, below).

If a problem is encountered during programming of the FLASH an error message is often displayed in the Debug window and programming is halted. It is not necessary to exit the application software to try again; simply press the PROGRAM FLASH button to try again; Downloading to the FLASH device starts again, from the beginning.

AVT-718 FLASH Notes

The AVT-718 FLASH device is programmed in two areas. One area of the FLASH device holds the boot firmware and the other area holds the operational firmware.

On power-up the firmware in the boot section is invoked, it checks for the presence of operational firmware in the other section of the FLASH device, performs a checksum of the firmware, if found, and then vectors to the operational firmware if all tests pass.

If a problem is encountered during that sequence (no code found, corrupted code found - bad checksum, etc.) then the boot firmware immediately loads the FLASH programming firmware, notifies the host that the FLASH programming firmware is running, and waits for the host to begin programming the FLASH device.

If, during an attempt to program the FLASH device, an error or problem occurs it is likely that the FLASH device will be corrupted. As long as the boot section of the FLASH device is not affected, then the AVT-718 will be able to recover when reset (power-on reset or software commanded reset).

Source Code

The source code for both versions of the AVT-718 FLASH Download software is available upon request. Contact the factory.