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AN702 – Reflashing Firmware Through the Axiomatic Electronic Assistant

Introduction

Axiomatic's J1939 devices can be upgraded with new application firmware using the Bootloader Information section.

This application note provides simple, step-by-step instructions on how to upload new firmware provided by Axiomatic onto a J1939 device via CAN, without requiring it to be disconnected from the J1939 network.

Bootloader

1. When the Axiomatic EA first connects to the ECU, the Bootloader Information section will display the following information. To use the bootloader to upgrade the firmware running on the ECU, change the variable "Force Bootloader to Load on Reset" to "Yes".

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|--|--|--|--|
| J1939 CAN Network LECU AX141100, CAN-Bluetooth #1 General ECU Information Setpoint File B Bootloader Information | Parameter Hardware ID | Value 16003 | |
| | Hardware Revision Number | 1.00 | |
| | Hardware Description | CAN2BT | |
| | Bootloader ID | 16003 | |
| | Bootloader Version Number | 1.00 | |
| | Bootloader Compatibility Level | 1.00 | |
| | Bootloader Description | CAN-BOOT-J1939.ARM_STM32F4 | |
| | Bootloader ECU Address | 253 | |
| | Force Bootloader to Load on Reset | No | |
| | Application Firmware ID | 16003 | |
| | Application Firmware Version Number | 1.00 | |
| | Application Firmware Compatibility Level | 1.00 | |
| | Application Firmware Description | CAN to Bluetooth | |
| | + Application Firmware Flash File | CAN2Bluetooth.bin | |
| | Application Firmware Flashing Date | November 04, 2016, 11:35 AM | |
| | Application Firmware Flashing Tool | Electronic Assistant VX.XX.XX.X, XXXX 2016 | |
| | Application Firmware Flashing Comments | | |

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2. When the prompt box asks if you want to reset the ECU, select "Yes".

| | × |
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| | ~ |
| | Set Default |
| | 1 |
| OK | Cancel |
| | OK |

3. Upon reset, the ECU will no longer show up on the J1939 network as an AXnnnnnn device, but rather as J1939 Bootloader #1 (or J1939 Bootloader #2, depending on which CAN interface is being used for reflashing).

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|--|--|--|--|
| - J1939 CAN Network | Parameter | Value | |
| JECV J1939 Bootloader #1 | Hardware ID | 12005 | |
| General ECU Information Bootloader Information | + Hardware Revision Number | 1.02 | |
| | Hardware Compatibility Level | 1.00 | |
| | Hardware Description | PCB-12005-01-R1 | |
| | Bootloader ID | 12005 | |
| | Bootloader Version Number | 2.01 | |
| | Bootloader Compatibility Level | 1.00 | |
| | Bootloader Description | DUAL-CAN-BOOT-J1939 | |
| | Bootloader ECU Address | 253 | |
| | Force Bootloader to Load on Reset | Yes | |
| | Application Firmware ID | 12118 | |
| | Application Firmware Version Number | 4.06 | |
| | Application Firmware Compatibility Level | 1.00 | |
| | Application Firmware Description | J1939-CANopen-Modbus Converter | |
| | Application Firmware Flash File | AF-12118-4.06.bin | |
| | + Application Firmware Flashing Date | July 03, 2017, 04:04 PM | |
| | + Application Firmware Flashing Tool | Electronic Assistant V5.13.90.0, June 2017 | |
| | Application Firmware Flashing Comments | | |
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- 4. When the Bootloader Information section is selected, the same information is shown as when it was running the AXnnnnn firmware (Application Firmware ID nnnn), but in this case, the Flashing feature is enabled.
- 5. Select the 'Flashing' button and navigate to where the .bin file was saved, sent by Axiomatic. (Note: only binary (.bin) files can be flashed using the Axiomatic EA tool).



6. Once the Flash Application Firmware window opens, comments such as "Firmware uploaded by [Name]" may be entered if desired. This field can be left blank.

Note: The file does not have to be date/time stamped, as this is done automatically by the Axiomatic EA tool when the new firmware is installed. Please note, that it is always good practice to select the "Erase All ECU Flash Memory" option. This will make sure that the whole application Flash is erased, and proper default settings are written to Flash. Please also note that selecting this option will erase all settings previously programmed to the Protocol Converter. Thus, settings should be saved to the PC before the hardware is reprogrammed.



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| sh Application Firmware | |
|--|----------------------------|
| Flash File Name: | AF-12118-4,06.bin |
| Flashing Comments: Press CTRL+ENTER to add a new string | Firmware uploaded by X |
| | |
| - Flashing Status | Erase All ECU Flash Memory |
| Flashing Status Idle | Erase All ECU Flash Memory |
| Flashing Status Idle | Erase All ECU Flash Memory |

7. A progress bar will show how much of the firmware has been sent as the upload progresses. The more traffic there is on the J1939 network, the longer the upload process will take.

| Flash Application Firmware | × |
|--|--------------------------------|
| Flash File Name: | AF-12118-4,06.bin |
| Flashing Comments: Press CTRL+ENTER to add a new string | |
| | |
| Finders Status | I Erase All ECU Flash Memory 🔽 |
| -Flashing Status | Erase All ECU Flash Memory 🔽 |
| Flashing Status Flashing Memory | Erase All ECU Flash Memory 🔽 |

8. Once the firmware has finished uploading, a message will pop up, indicating that the operation was successful. Select to reset the ECU. The new version of the AXnnnnn application will start running, and the ECU will be identified as such by the Axiomatic EA. The next time the ECU is power cycled, the AXXXXXXX application will run rather than the bootloader function.





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| Version | Date | Authors | Comments |
|---------|----------------|---------------------------|--------------------------------------|
| 1.00 | March 25, 2020 | Greg Laronde / Sue Thomas | Initial Release |
| 1.01 | July 6, 2023 | Kiril Mojsov | Legacy Updates & Marketing Review |
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