AN711

Version 1.01

AN711 – Re-flashing Firmware on CANOpen® Axiomatic Devices

Introduction

This application note highlights the procedure for re-flashing CANopen® application firmware for Axiomatic devices in the field.

Prerequisites:

1. A Personal Computer with a USB port, running on a Windows operating system.
2. An application firmware flash file for the Axiomatic device, with the following name:

   AF-nnnnn-x.xx-sss.bin

   Where:
   a) 'nnnnn' represent the specific project number,
   b) 'x.xx' is the firmware version number,
   c) 'sss' are file comments for information purposes.

3. The Axiomatic Electronic Assistant (EA) software.
4. The Axiomatic CAN Assistant – Scope software (P/N: AX070501SCO).
5. An Axiomatic USB-CAN Converter (P/Ns: AX070502 or AX070506K), connected to the USB port of the PC.
6. A power supply to power the controllers.
7. A wire harness to connect the controllers to the power supply and the CAN port of the Axiomatic USB-CAN converter with the correct network termination resistor.

Starting the Bootloader on the Device:

1. Connect an Axiomatic controller to the power supply and the Axiomatic USB-CAN converter.
2. Open the CAN port and start monitoring the CAN bus in 'CAN Assistant – Scope'. Ensure that the baud rate is set equal to the baud rate configured in the CANopen® Axiomatic device.
3. Power-up the controller. A single message should be sent from the unit, followed by heartbeat messages (if configured):

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1445 Courtneypark Dr. E.
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sales@axiomatic.com
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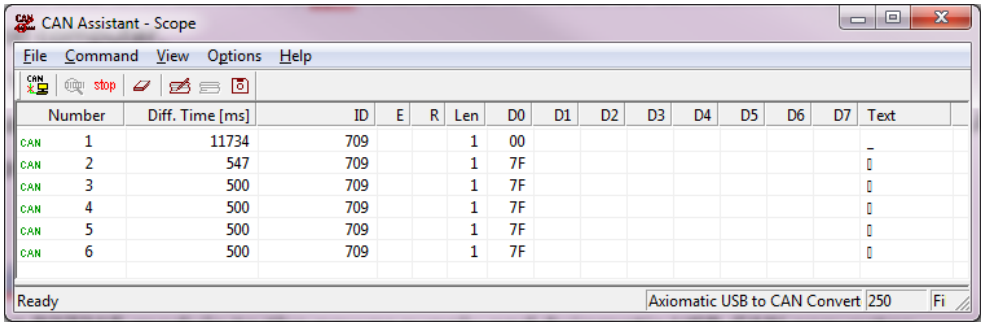
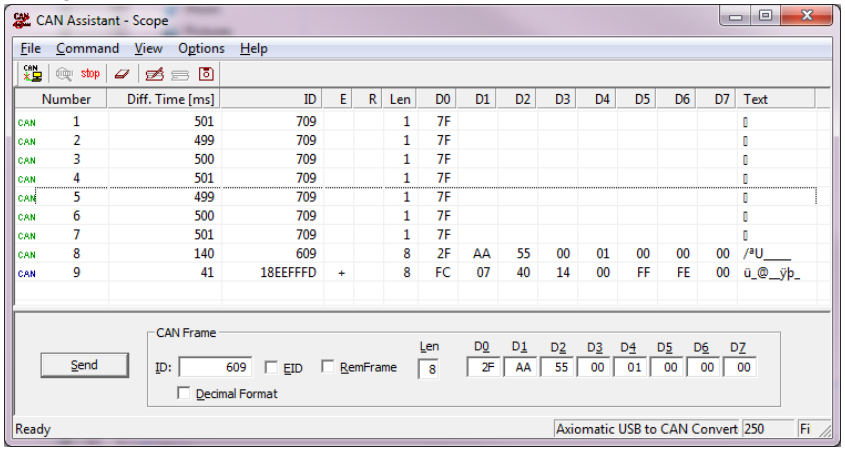


4. Set the CANopen® object 0x55AA to 1 using SDO protocol. To do so, send the following message using 'CAN Assistant – Scope':

ID	Len	D0	D1	D2	D3	D4	D5	D6	D7
609	8	2F	AA	55	00	01	00	00	00

Note: The device in this document has a Node ID of 0x09; SDO messages to the Axiomatic device will have ID with this structure: *0x600 + NodeID (0x09)*, which results in an ID of 0x609.

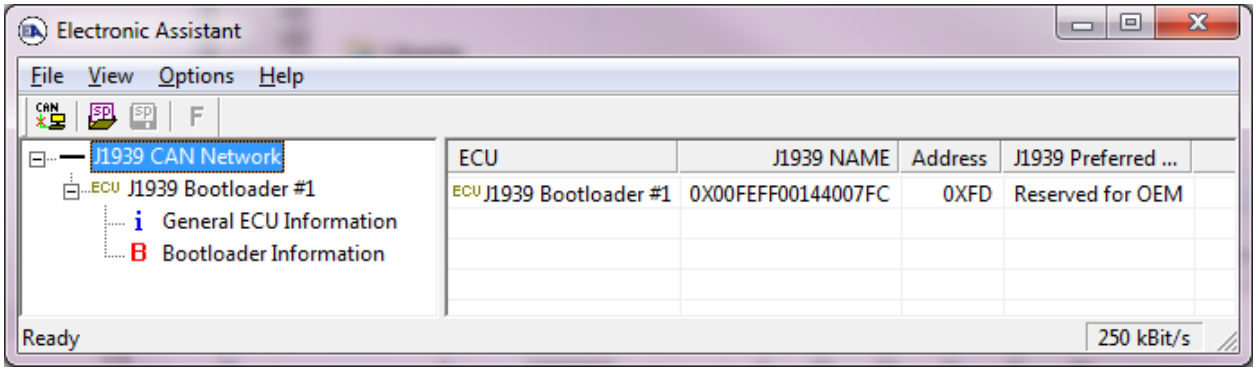
If everything is correct, the controller will acknowledge the writing operation and activate the software reset after the message is sent.



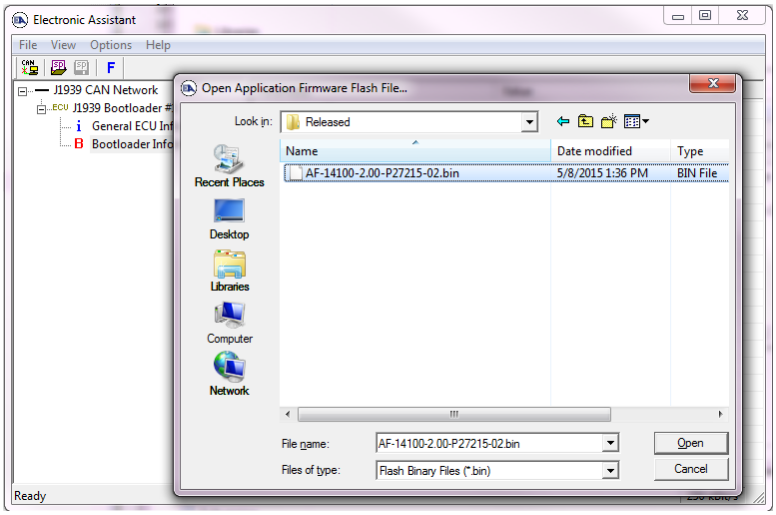
The last message with extended ID is the Address Claimed message of the J1939 bootloader.

Re-flashing Firmware:

1. Run the Axiomatic Electronic Assistant (EA) software and connect to the CAN port. The following screen should pop-up:



2. Click on the Bootloader Information group in the left pane and then on the F button in the Axiomatic EA toolbar. Select the flash file in the format: **AF-nnnnn-x.xx-sss.bin**



3. Open the flash file and begin the flashing operation by pressing the 'Flash ECU' button.

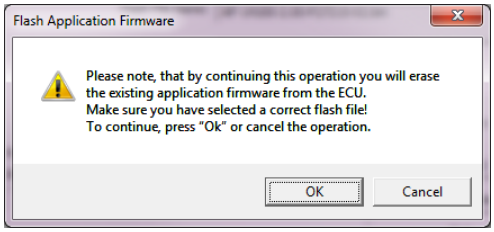
After reading and confirming the recommendations of **Note 1** and **Note 2,** check 'Erase All ECU Flash Memory'.

Note 1: Contact Axiomatic Customer Service prior to checking 'Erase All ECU Flash Memory'. This is because for some units, checking this field may erase calibration data, which would in turn require the unit to be returned to Axiomatic for calibration.

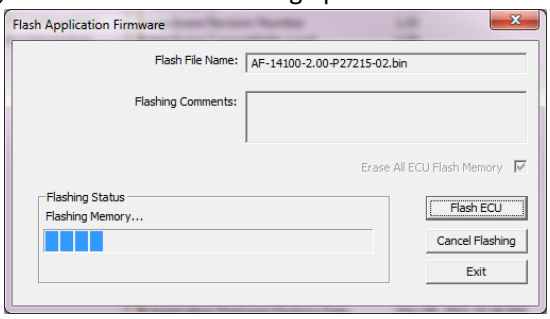
Note 2: Saving setpoints before flashing the firmware is highly recommended, to avoid errors.

Users have the option to write comments in the 'Flashing Comments' field.

4. Confirm this warning message from the Axiomatic EA:

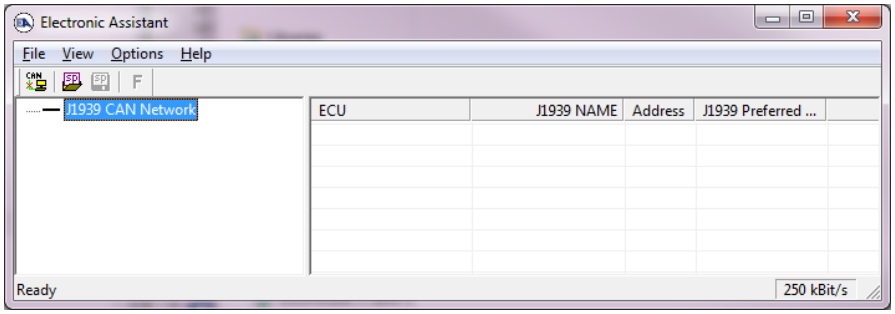


After confirming the flashing, users will see the flashing operation on the Axiomatic EA screen:

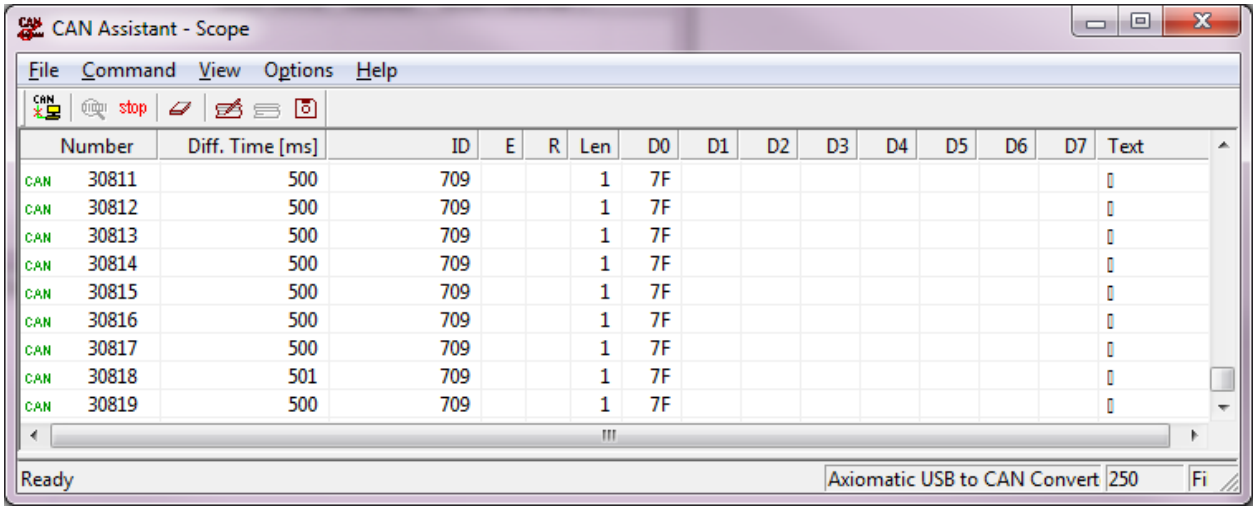


5. When the flashing is done, reset the ECU.

After the ECU is reset, the J1939 bootloader will no longer be active, and the new CANopen® application firmware should be running.



6. Check the new application firmware. Cycle power to the controller. In the 'CAN Assistant – Scope,' users should see a single message from the new application firmware reporting that the unit is in its pre-operational state:



Version	Date	Authors	Comments
1.00	August 20, 2021	Gustavo Del Valle/Sue Thomas / Kiril Mojsov	Initial Release
1.01	July 10, 2023	Kiril Mojsov/ Sue Thomas	Legacy Updates & Marketing Review; Name Update

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