**USER MANUAL UMAX070500**
**USER MANUAL UMAX070501**
**Version 5.19.156**
**Valid for EA 5.19.156.x**

# USER MANUAL

## Electronic Assistant

**P/N: AX070500 – Windows Software**

## USB-CAN Converters

**P/N: AX070501, AX070506 – Hardware Interfaces**

## Electronic Assistant Kits

**P/N: AX070502 – USB-CAN Converter AX070501,**
**2 Cables, Installation Instructions**

**P/N: AX070506K – USB-CAN Converter AX070506,**
**2 Cables, Installation Instructions**

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## ACRONYMS

| | |
|---|---|
| AIN | Analog Input |
| AOUT | Analog Output |
| BLDC | Brushless DC electric motor |
| BPS | Bucket Positioning System |
| CAN | Controller Area Network |
| CD | Compact Disk |
| DC | Direct Current |
| DIN | Deutsches Institut für Normung or Digital Input |
| DM | Diagnostic message. Defined in J1939/73 standard |
| DOUT | Digital Output |
| DTC | Diagnostic Trouble Code |
| EA | Electronic Assistant |
| ECU | Electronic control unit (from SAE J1939 standard) |
| EMI | Electromagnetic Interference |
| ENET | Ethernet |
| FD | Flexible Data-Rate |
| FI | Frequency Input |
| FO | Fiber Optic |
| FS | Full Speed |
| HS | High Speed |
| HSLS | High-Side/Low-Side |
| HVCI | Hypervisor-Protected Code Integrity |
| IP | Ingress Protection |
| LED | Light-Emitting Diode |
| LIN | Local Interconnect Network |
| LVDT | Linear Variable Differential Transformer |
| MAP | Memory Access Protocol. Defined in the J1939-71 standard |
| NC | Normally Closed |
| NFC | Near-Field Communication |
| PC | Personal Computer |
| PGN | Parameter Group Number. Defined in J1939/73 standard |
| PLC | Programmable Logic Controller |
| P/N | Part Number |
| POUT | Proportional Output |
| PWM | Pulse Width Modulation |
| RTC | Real Time Clock |
| RTD | Resistance Temperature Detector |
| RTU | Remote terminal unit |
| RS | Recommended Standard (in RS-232) |
| SAE | Society of Automobile Engineers |
| SDK | Software Development Kit |
| TC | Thermocouple |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| UIn | Universal Input |
| UM | User Manual |
| UOUT | Voltage Output |
| USB | Universal Serial Bus |

| | |
|---|---|
| VDC | Voltage Direct Current |
| XML | Extensible Markup Language |

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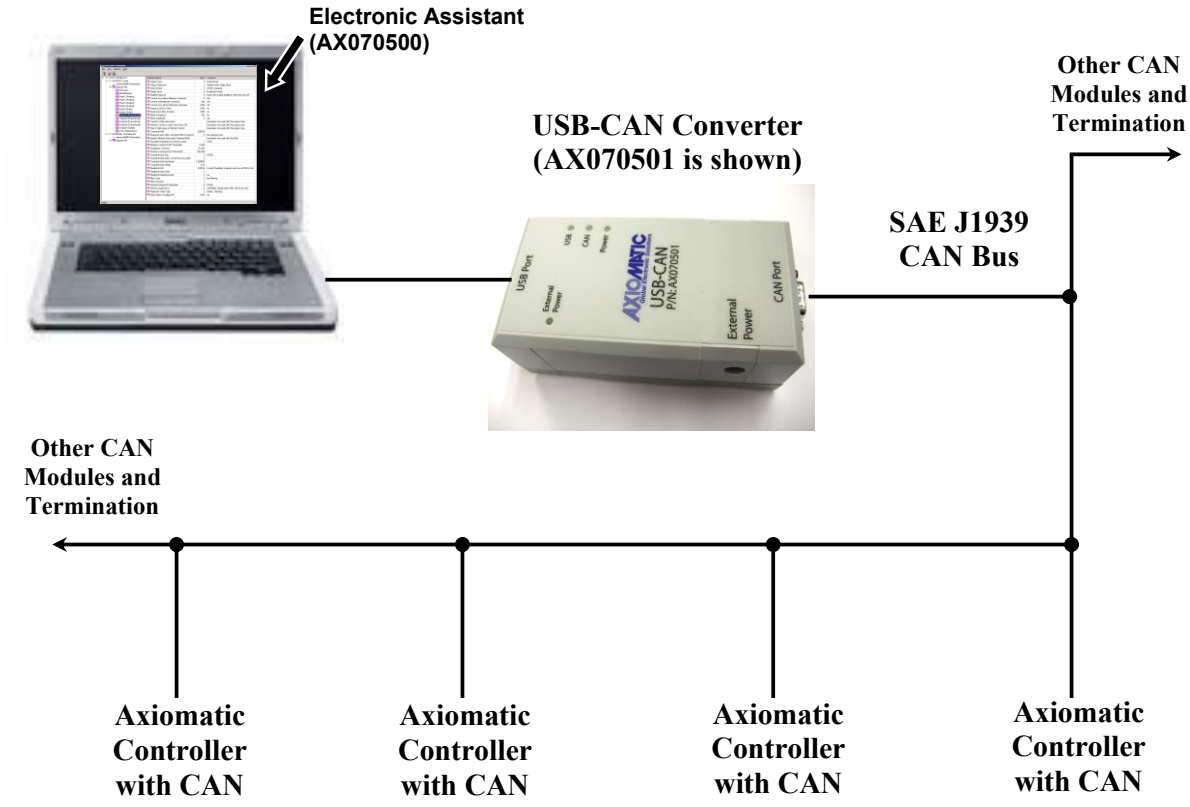
# 1 OVERVIEW

The Electronic Assistant (EA) is a software tool for configuring Axiomatic J1939 CAN units. It runs on a PC and, by default, uses one of Axiomatic USB-CAN converters to connect to the CAN bus. Other interface converters can be used as well, see APPENDIX A.

Upon being connected to the bus, the EA will find all the Electronic Control Units (ECUs) on the bus and recognize those manufactured by Axiomatic. From there, a user has easy access to all configuration parameters, a.k.a. setpoints, in a particular unit. With the EA, viewing and changing the configuration parameters is made easy and intuitive. Using this tool, a user can quickly configure an Axiomatic ECU for the desired performance over a wide variety of applications.




**Network Termination:** It is necessary to terminate the network with external termination resistors. The resistors are 120 Ohm, 0.25W minimum, metal film or similar type. They are placed between CAN_H and CAN_L terminals at both ends of the network. CAN modules should be powered; no power is transmitted over CAN bus.

***Figure 1-1. Electronic Assistant and Axiomatic USB-CAN Converter as part of J1939 Network***

Axiomatic units supporting the *J1939 Bootloader* can be flashed with the new application firmware over the CAN bus using the EA, see Flashing New Application Firmware section.

The user should set up CAN network with necessary termination resistors and power up the Axiomatic unit to change configuration parameters or to flash a new application firmware.

The EA supports SAE J1939 CAN bus. It is assumed, that the user is familiar with the J1939 group of standards; the terminology from these standards is widely used in this manual.

# 2 USB-CAN CONVERTERS

*Axiomatic USB-CAN Converters*, p/ns *AX070501, AX070505*[1]*, and AX070506,* are designed to provide a hardware interface between PC and a generic CAN bus. All of them can be used with EA.

[1]AX070505 is phased out and replaced with AX070506.

The converters are plugged one side to a USB PC port and the other side to a CAN bus through a DB9 CAN connector. The AX070501 converter supports only USB Full-Speed (FS) communication (up to 12Mbit/s), while the AX070506 converter runs at USB High-Speed (HS) with up to 480Mbit/s communication rate. The AX070501 can also be powered from an external power supply without drawing current from the USB port. Due to low supply current, this feature is rarely used in AX070501 and is considered obsolete.

The AX070501 converter full technical description can be found in APPENDIX D. Technical specifications of the AX070506 converter are presented in its own user manual, UMAX070506.

## *2.1 CAN Bus Connection*

Axiomatic USB-CAN Converters are connected to a CAN bus the following way.

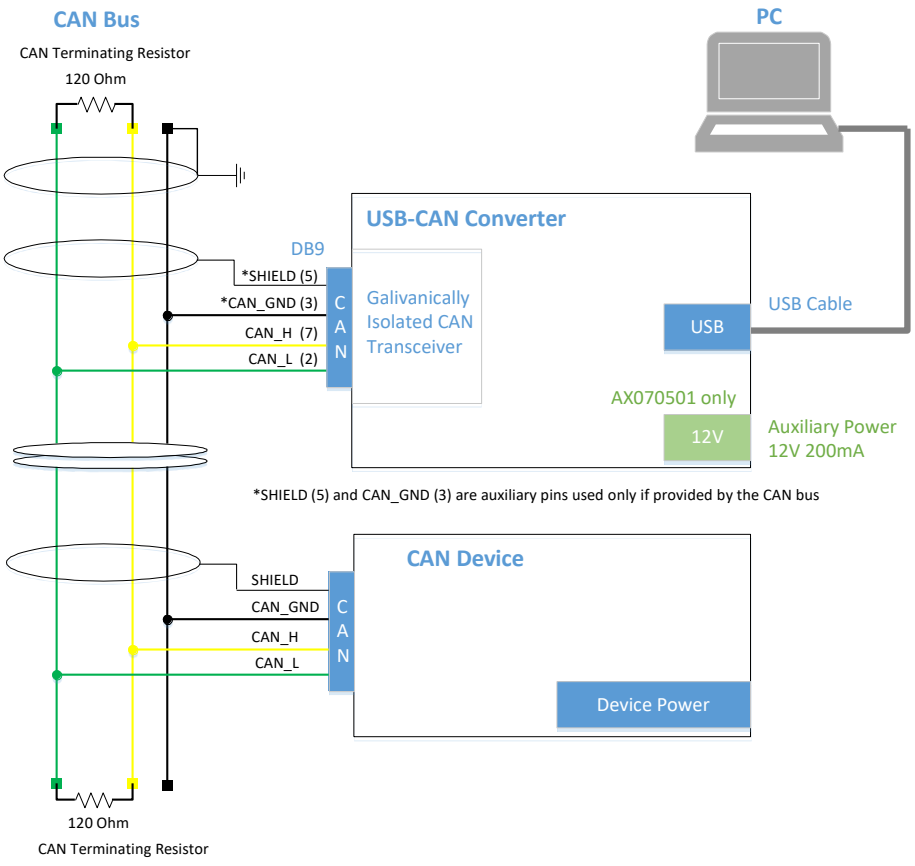



***Figure 2-1. Connecting Axiomatic USB-CAN Converter to CAN Bus***

The CAN bus line contains a twisted differential signal pair CAN_H, CAN_L, and auxiliary CAN_GND and SHIELD conductors. The devices are connected to the bus line using short-length stubs. The twisted pair CAN_H, CAN_L is terminated on both sides with 120 Ohm resistors. In some cases, the terminating resistor can be embedded in the last CAN device connected directly to the bus line.

### 2.1.1 Workbench Connection

For configuring CAN devices on a workbench, when space is limited and a dedicated CAN bus is not used, the user can directly connect CAN_H and CAN_L signals of the device to CAN_H and CAN_L signals of the USB-CAN converter using a short (less than 1m) pair of wires. It is also necessary to connect at least one 120 Ohm resistor in parallel with CAN_H and CAN_L conductors for normal operation of CAN transceivers.

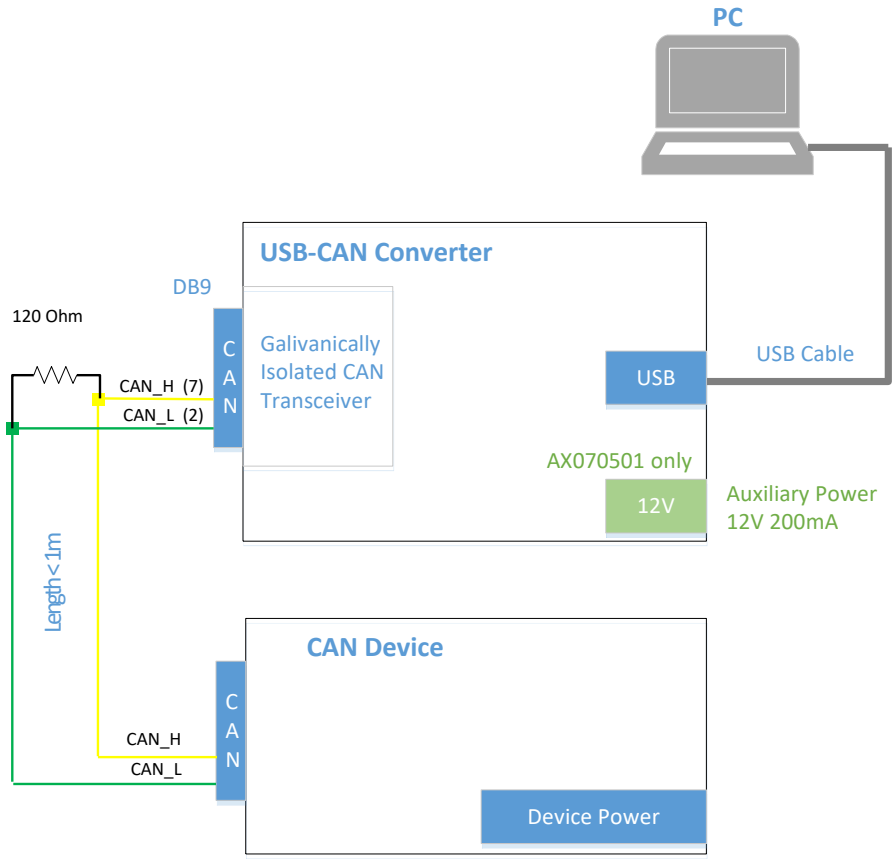



***Figure 2-2. Connecting Axiomatic USB-CAN Converter to CAN Device on Workbench***

The user can extend this configuration, if necessary, by adding several CAN devices in parallel, provided that the summary length of CAN_H and CAN_L signal wires for all devices is kept short (less than 1m).

If longer wires are used, a standard CAN bus connection with two-side 120 Ohm termination is required, see Figure 2-1.

## 3 ELECTRONIC ASSISTANT KITS

Axiomatic prepacked all hardware necessary to work with Axiomatic products in EA kits for the customers' convenience. The following EA kits are available depending on the included USB-CAN converter p/n[1].

| Kit p/n | Contents |
|---|---|
| AX070502 | • USB-CAN Converter, P/N: AX070501<br>• USB Cable 5 ft (1.5 m), P/N: CBL-USB-AB-MM-1.5<br>• CAN Cable with female DB-9 12 in (30 cm), P/N: CAB-AX070501<br>• Installation Instructions |
| AX070506K | • USB-CAN Converter, P/N: AX070506<br>• USB 2.0 A to Type-C Cable, 3.3 ft (1m), P/N: CBL-USB2.0A-C-1M<br>• CAN Cable with female DB-9 12 in (30 cm), P/N: CAB-AX070501<br>• Installation Instructions |

[1]AX070505K, based on the phased out AX070505, is not being offered.

The EA kit's *Installation Instructions* contain instructions for downloading: EA software, this user manual, and the USB-CAN Converter drivers from the Axiomatic website www.axiomatic.com.

The user can also download CAN bus monitoring software together with the USB-CAN Converter SDK from the Axiomatic website, see *Additional Software* section for details.

# 4 SOFTWARE INSTALLATION

## 4.1 System Requirements

The Electronic Assistant (EA) and Axiomatic USB-CAN Converter drivers work with Microsoft Windows 32-bit and 64-bit operating systems, starting from Windows XP SP3[1]. Support for Linux and other non-Windows operating systems is not provided.

[1] Support for Windows 2000 was removed starting from EA version 5.15.127.0.

## 4.2 File Location

The most recent version of the installation software together with this user manual can be downloaded from the *Support -> EA & Other Configuration Tools* section of the Axiomatic website at www.axiomatic.com.

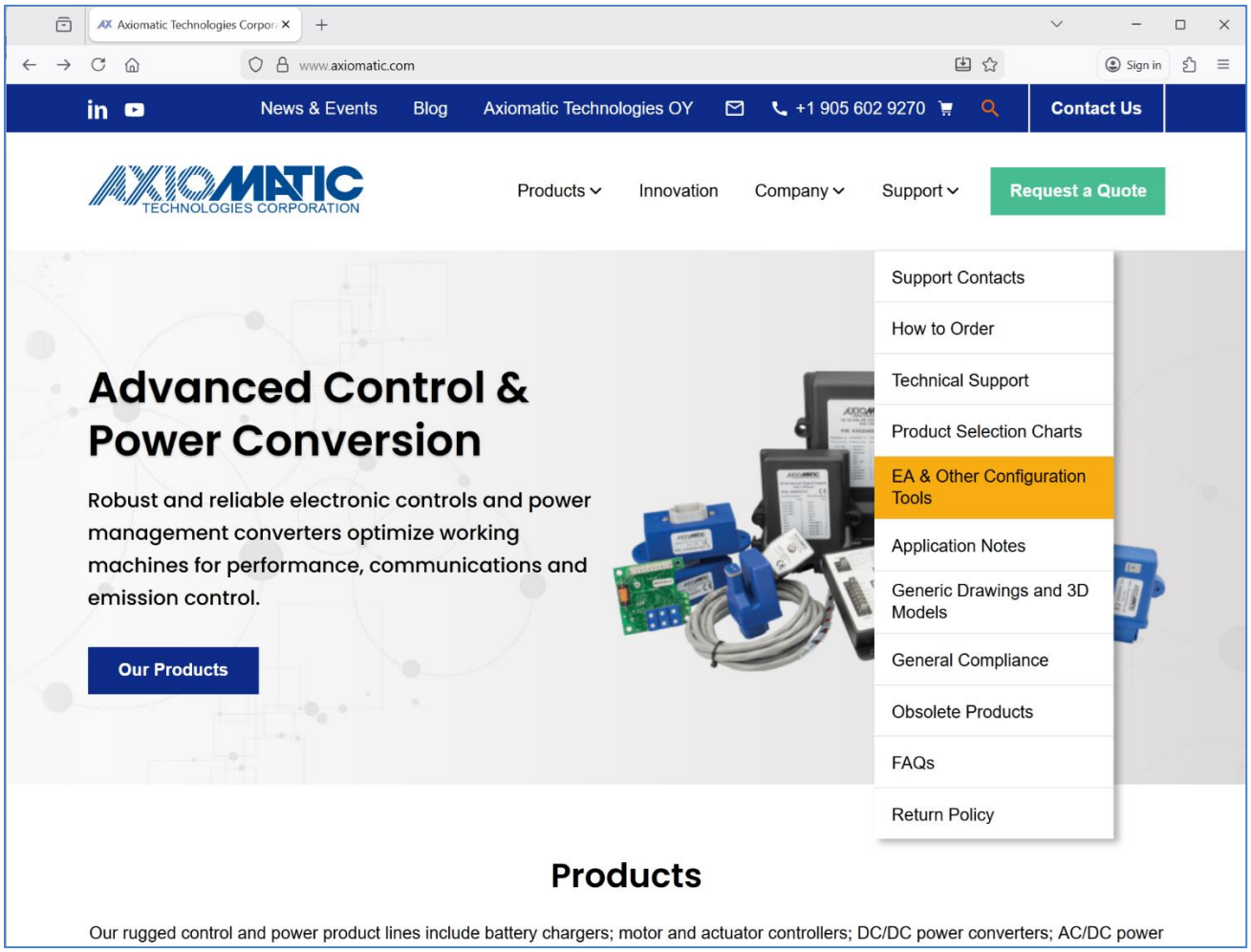



***Figure 4-1. Logging to Axiomatic Website***

On the password request, enter (case sensitive): **trillium**

This will bring you to the *Electronic Assistant Downloads* section:

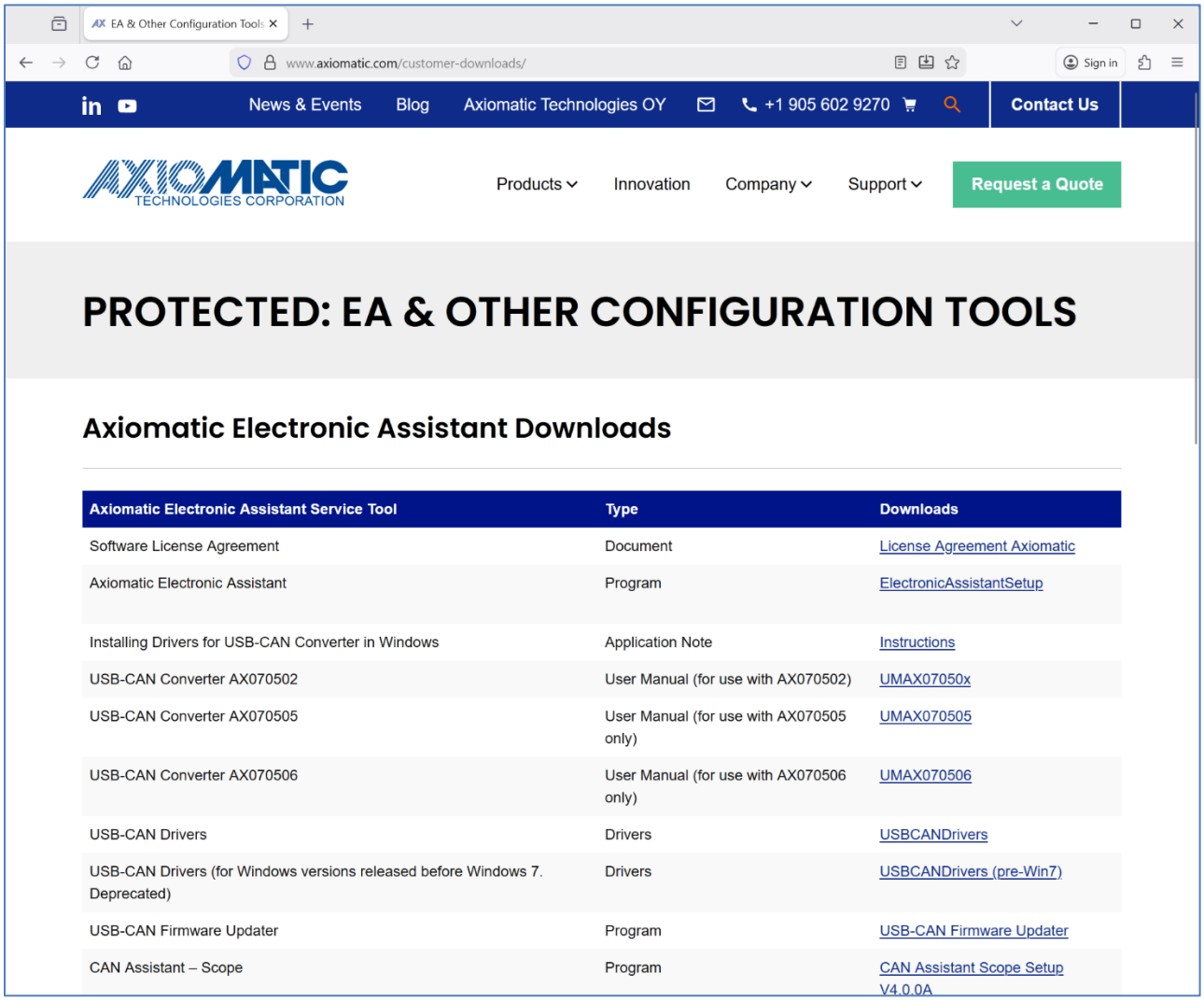



***Figure 4-2. Electronic Assistant Downloads Section[1]***

[1]The list of downloads is not complete and up to date.

Select and download the required software or documentation.

## *4.3 USB-CAN Drivers*

Both Axiomatic USB-CAN converters: p/n AX070501 and AX070506 use the same device driver, p/n AX070504.

In case automatic installation of the device driver by Windows fails, the driver can be installed manually. The manual installation should be performed for Windows older than Win 10.

A zip file with Windows 32-bit and 64-bit driver package can be downloaded from Axiomatic website, *Electronic Assistant Downloads* section, see Figure 4-2. The user should download the device driver package based on their Windows operating system, see Table 1.

***Table 1. USB-CAN Driver Package***

| Driver Package | Windows Operating System |
|---|---|
| USBCANDrivers, V1.2.0.0 | Win 7, 8.1, 10, 11 |
| USBCANDrivers, V1.1.0.1 (For Windows versions released before Win 7. Deprecated) | Win 2000, XP, Vista |

After the zip file is downloaded, it should be unzipped at a temporary location on the user's PC.

Once the user plugs the USB to CAN converter in one of the USB PC ports, Windows will automatically recognize a new device and start a hardware installation wizard. The user should direct the wizard to the root folder of the unzipped driver package and check the *Include Subfolders* option.

After successful installation of the driver, the *USB LED* on the front panel of the AX070501 USB-CAN converter will turn green. Similarly, the *Status LED* on the front panel of the AX070506 converter will change colour from yellow to green, indicating that the converter is ready for use.

### 4.3.1 Installation Example

An example of the Axiomatic USB-CAN Converter driver installation for Windows 11 is presented below.

The user should have administrative privilege on their PC account to install a device driver.

1. Download and unzip the driver package from the Axiomatic website in a temporary *…\Downloads\USBCANDriverv1.2.0.0* folder.

2. Unplug, wait ten seconds and then plug back in the USB cable of the USB-CAN Converter. The *LED* on the front panel of the converter should turn yellow.

3. Right click on *Start, Device Manager* and locate the *USBCAN Converter* in the *Other devices* group.

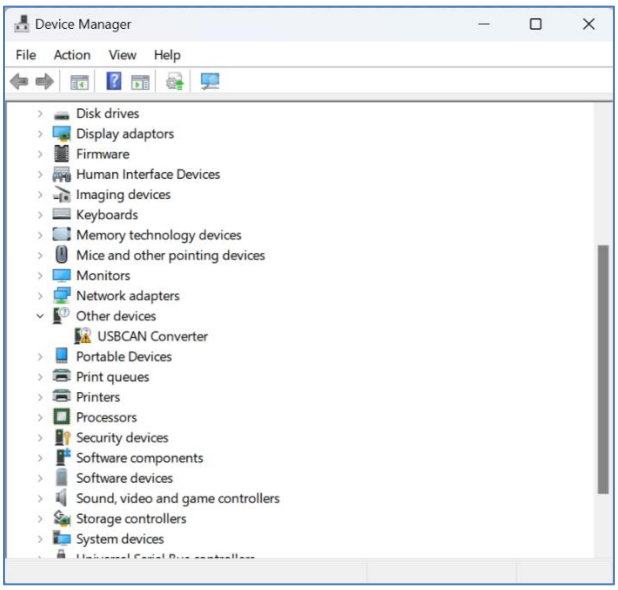



***Figure 4-3. Driver Installation. Device Manager Screen***

1. Double click on the *USBCAN Converter*. The Windows will open the *USBCAN Converter Properties* window.

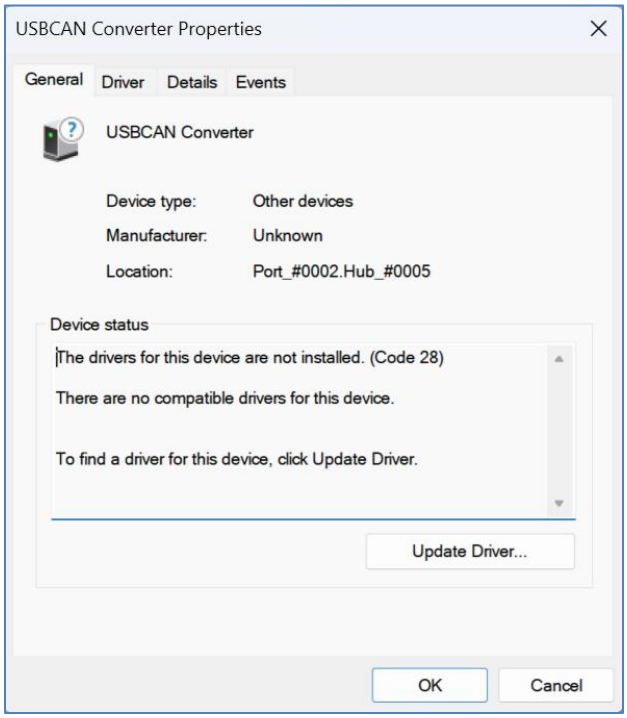



***Figure 4-4. Driver Installation. USB-CAN Converter Properties Window***

2. Click on *Update Driver…* button to launch the update driver wizard. The *Update Driver Software – USBCAN Converter* window will appear.

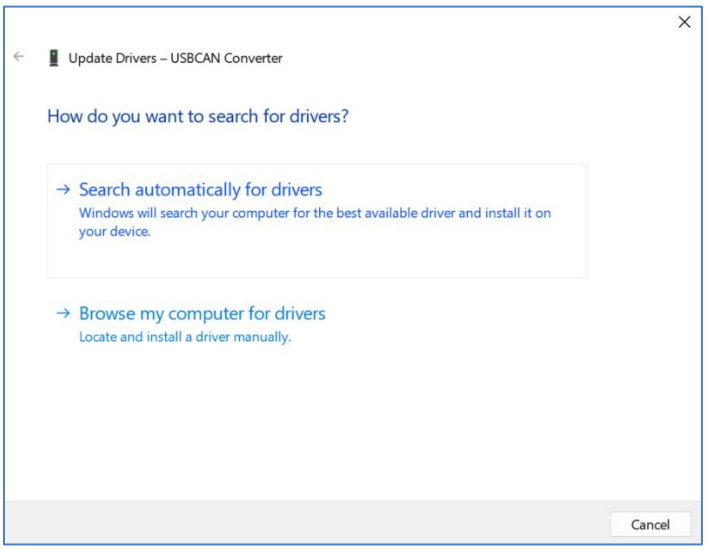



***Figure 4-5. Driver Installation. Driver Installation Wizard Window***

3. Click on *Browse my computer for drivers*. Go to the *…\Downloads\ USBCANDriverv1.2.0.0* folder. Select *Include subfolders* option.

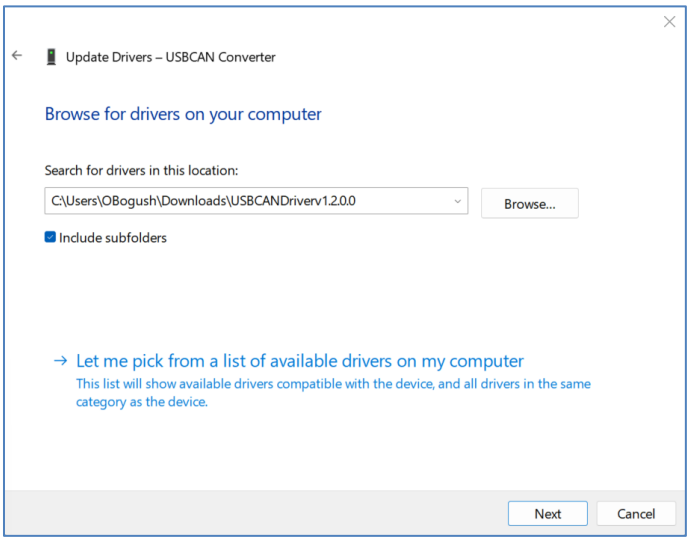



***Figure 4-6. Driver Installation. Selecting the Driver Package***

4. Press the *Next* button to install the driver. The following message should appear, telling the user that the driver installation was successful, see Figure 4-7.

   The LED on the front panel of the USB-CAN Converter should turn green, indicating that the driver has been successfully installed, and the converter is ready for use.

   In the older versions of Windows, when the driver V1.1.0.1 is used, a *Windows Security* window will pop-up asking whether the user trusts the device software from Axiomatic Technologies Corporation. The user should press the *Install* button to confirm the driver installation.

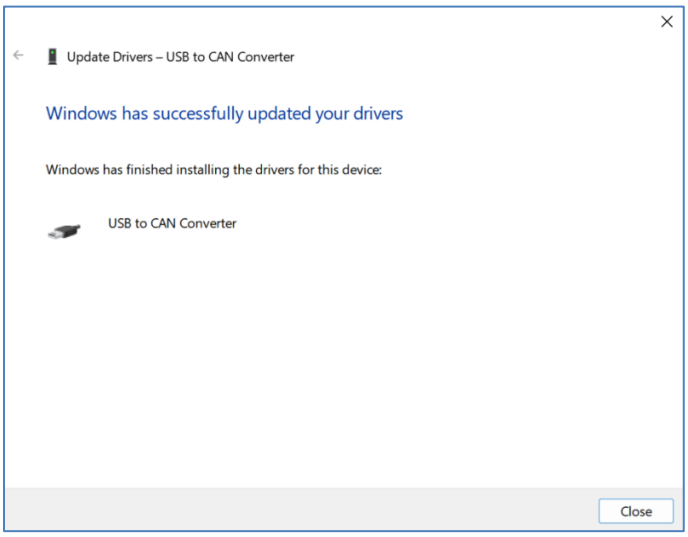



***Figure 4-7. Driver Installation. Successful Installation Message***

5. Press the *Close* button. Now, the user can delete the temporary folder with the driver package at *…\Downloads\ USBCANDriverv1.2.0.0.*

## *4.4 Electronic Assistant*

The newest version of the Electronic Assistant (EA) software can be downloaded from the *Electronic Assistant Downloads* section on the Axiomatic website, see Figure 4-2. It is marked *ElectronicAssistantSetup V<X.X.X.X>,* where: <X.X.X.X> field presents the EA version number.

After successful installation, the user will see the EA desktop icon and the *Electronic Assistant <X.X.X.X>* program group in the *Start, All Programs* menu folder.

### 4.4.1 Electronic Assistant Hardware Support

By default, the EA works together with Axiomatic USB-CAN converters. It can also work with Axiomatic Ethernet-CAN and some other converters, see APPENDIX A.

To use a different converter, the user should go to *Options, CAN Interface Setup…* from the main menu. Then select the *Hardware Interface Module* from a drop-down list on the *CAN Interface Setup* dialog window with the hardware interface used by your converter.

For setting the individual configuration parameters of the selected hardware interface module refer to the user manual of your converter.

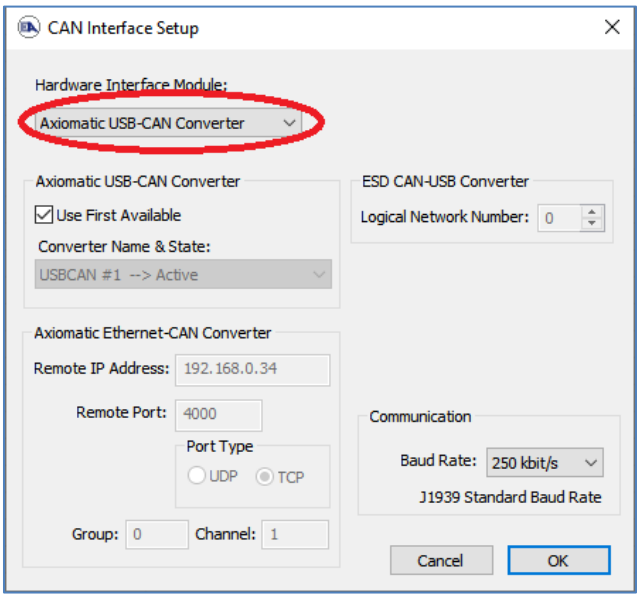



***Figure 4-8. CAN Interface Setup Dialog. Setting Hardware Interface Module***

## *4.5 Additional Software*

In addition to the EA installation software and Axiomatic USB-CAN Converter drivers, the *Electronic Assistant Downloads* section on the Axiomatic website contains the following CAN bus monitoring software that can be downloaded and installed separately:

- CAN Assistant – Scope, part number: AX070501SCO.
- CAN Assistant – Visual, part number: AX070501VIS.

Users that are interested in writing their own applications for Axiomatic USB-CAN converters can download and install the USB-CAN Converter Software Development Kit (SDK), p/n: AX070501SDK.

For updating firmware in the USB-CAN converters, p/n AX070506, the user can download USB-CAN Converter Firmware Update Tool, p/n AX070505UT. Firmware of the USB-CAN converter, p/n AX070501, is not normally updatable in the field.

# 5 USING THE ELECTRONIC ASSISTANT

## *5.1 Hardware Requirements*

The user should first set up a CAN network with termination resistors, connect the unit to the network and connect the CAN network to the PC running Electronic Assistant (EA) software through an Axiomatic USB-CAN Converter or other hardware interface module. The unit should be powered up. See OVERVIEW section for details.

## *5.2 Connecting to J1939 CAN*

To connect the EA to a J1939 CAN bus, the user should select *Open CAN Port* from the *File* menu or select the leftmost *Open CAN Port* icon from the toolbar.

Upon connecting to the bus, the EA will behave as any other Electronic Control Unit (ECU) on the bus and first will claim its address (Default 249, Off Board Diagnostic-Service Tool #1).

The EA is arbitrary address capable, so it will arbitrate if there is already another service tool on the bus using this address.

Immediately following the address claim, the EA will send out a request for *PGN 60928*, *Address Claimed Message*, and collect J1939 NAMEs of all ECUs on the CAN bus.

Then EA will identify and display ECUs with associated information and setpoint groups by using: *Industry Group*, *Vehicle System, Function, Function Instance,* and *Manufacturer Code* fields of their J1939 NAMEs.

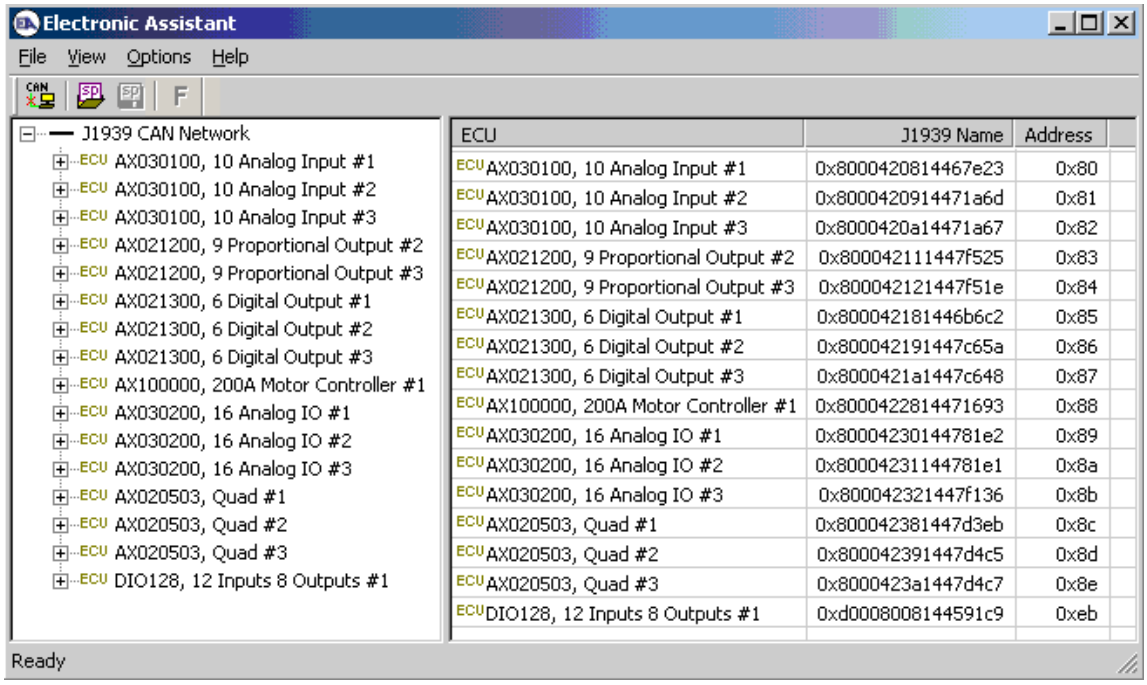



***Figure 5-1. List of ECUs on CAN J1939 Network***

All unsupported ECUs will be displayed as *Unknown* ECUs with only *General ECU Information* group available on the ECU list in the left pane.

All ECUs will be numbered based on their *ECU Instance Number*.

The EA ECU will be visible on the ECU list as a *Virtual ECU*, if the user enables it through the *View* menu, *Show Virtual ECU*.

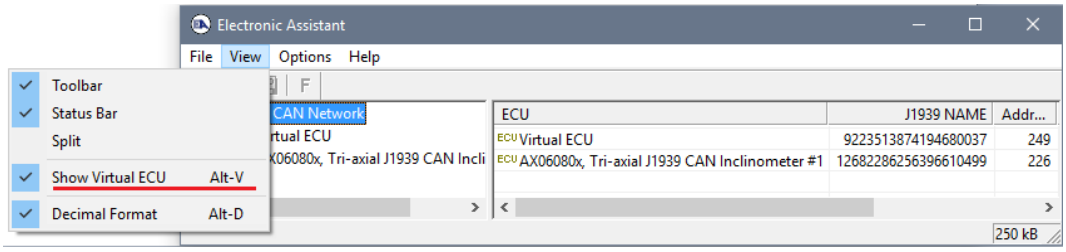



***Figure 5-2. Virtual EA ECU***

The *Virtual ECU*, presenting the EA, is hidden by default.

The user can change the numerical data presentation of EA parameters from *Hexadecimal* to *Decimal* format by using the *View* menu, *Decimal Format* option.

If the connection to the CAN bus was unsuccessful, or a hardware interface module other than the default *Axiomatic USB-CAN Converter* is used, the user should set CAN interface parameters based on the hardware interface used by the converter, see APPENDIX A. The *CAN Interface Setup* dialog is available through the *Options* menu, *CAN Interface Setup*, or by double-clicking on the baud rate indicator on the right side of the status bar in EA versions 4.3.x.x and higher.

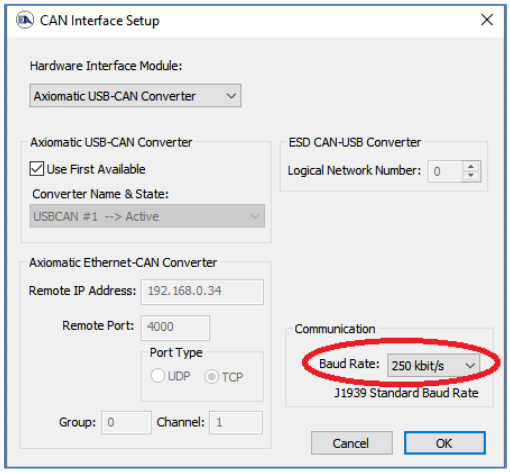



***Figure 5-3. CAN Interface Setup Dialog. Baud Rate***

From the *CAN Interface Setup* dialog window, the user can choose a hardware interface module, set up the module configuration parameters and, if the module allows it, change the CAN network baud rate.

For the *Axiomatic USB-CAN Converter,* the user can pick up an active converter from the *Converter Name & State* list if more than one converter is connected to the PC or keep the default *Use First Available* flag set when a single converter is used.

For the *ESD CAN-USB Converter*, the user should set the *Logical Network Number* assigned to the converter by its driver.

For the *Axiomatic Ethernet-CAN Converter*, the user sets *Remote IP Address, Remote Port*, and *Port Type* to establish IP connection with the *Axiomatic Ethernet-CAN Converter*. The *Group* and *Channel* parameters (added in EA versions 5.16.x.x and higher) are used for internal routing to the selected CAN channel in Axiomatic devices that support this feature. For Axiomatic devices without internal routing, these parameters should be set to *{Group=0, Channel=1}*.

The CAN baud rate can be changed through the drop-down *Baud Rate* menu for *Axiomatic USB-CAN Converter* and *ESD CAN-USB Converter*.

J1939 historically supported only 250kbit/s baud rate on the CAN bus. J1939/14 standard added support for 500kbit/s for compliant ECUs in 2011.

The user can change the baud rate from 250kbit/s to 500kbit/s or non-standard 125kbit/s[1], 667kbit/s or 1Mbit/s in EA. This option is password protected to prevent from accidental use. The password is **ChangeBaudRate** (case sensitive).

To warn the user of a potentially incompatible mode, the 500kbit/s baud rate is indicated in blue[1], and all J1939 non-standard baud rates are indicated in red in the EA status bar at the bottom-right corner of the EA window.

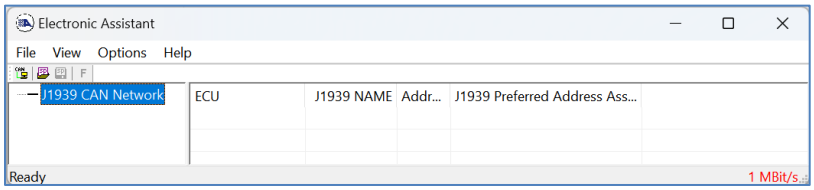



***Figure 5-4. CAN bus running at 1Mbit/s baud rate***

[1]The 500kbit/s baud rate was indicated in red before EA 5.17.140.0.

The baud rate is not selectable from EA for *Axiomatic Ethernet-CAN Converter*. The user can see and change the baud rate from the converter configuration website.

For the *Axiomatic Ethernet-CAN Converter*, the baud rate indicator in *CAN Interface Setup* dialog will be grayed. It will be also removed in the EA status bar at the bottom-right corner of the EA window.

### *5.3 General ECU Information Group*

All ECUs on the J1939 CAN network will display the *General ECU Information* group. The group includes *ECU J1939 NAME fields*, *ECU Address* and, if available, *ECU ID* and *Software ID*.

Some old Axiomatic ECUs have their *Identity Number* field in the *ECU J1939 NAME* calculated on the base of the ECU serial number. For those ECUs, the EA will perform a reverse calculation and show the 8-digit part of the ECU serial number in the description part of the *Identity Number* field.

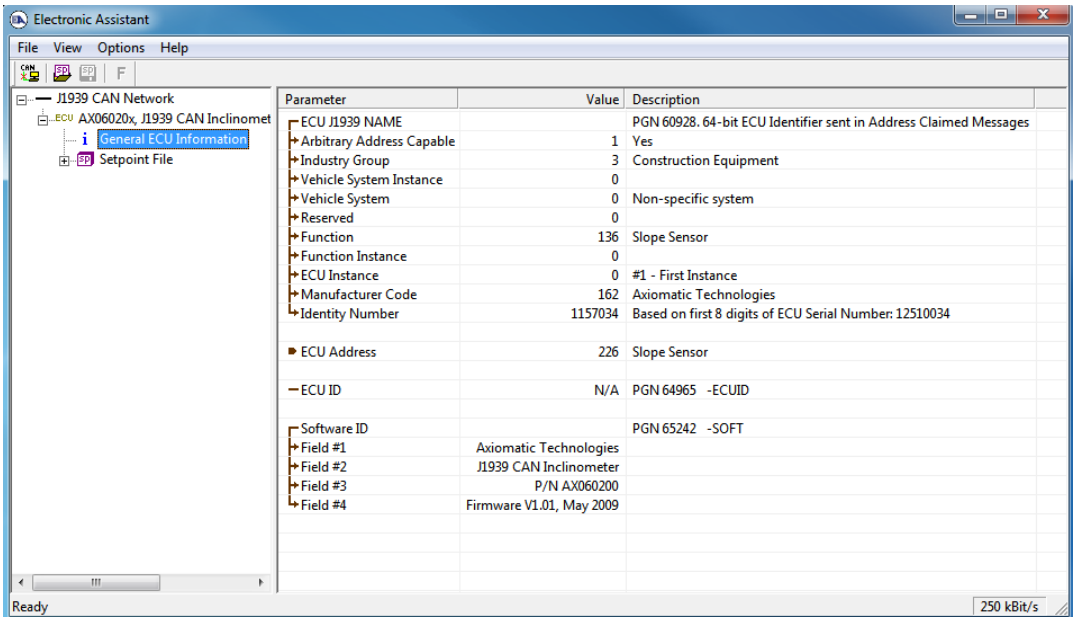



***Figure 5-5. General ECU Information***

New releases of Axiomatic ECUs do not use this type of calculations. The *ECU Part Number* and *ECU Serial Number* fields are now displayed independently in the *General ECU Information* group pane.

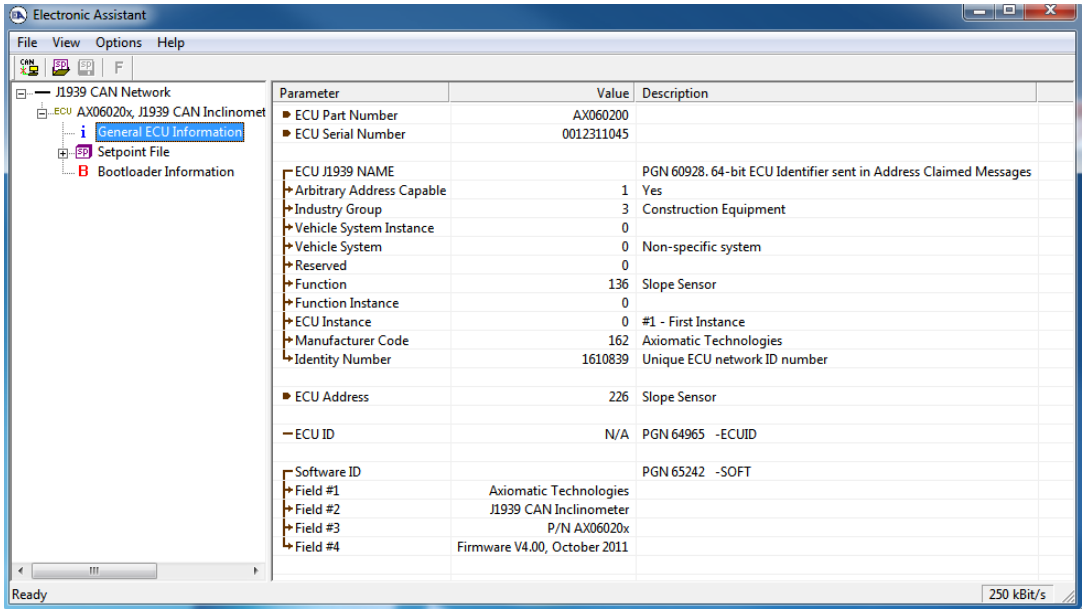



***Figure 5-6. General ECU Information (New)***

## 5.4 Reading Configuration Parameters

All ECU configuration parameters (setpoints) are located in the *Setpoint File* top-level group. This group contains one or several application-level setpoint groups.

Each setpoint group has its own unique name and contains a set of configuration parameters. Typically, a setpoint group will contain a set of configuration parameters controlling a certain piece of hardware (input or output) or a function (for example, *Conversion Function* or a *CAN Input Signal*).

When a setpoint group is selected, a list of all configuration parameters of the group and their values (as read from the ECU) is displayed in the right pane of EA.

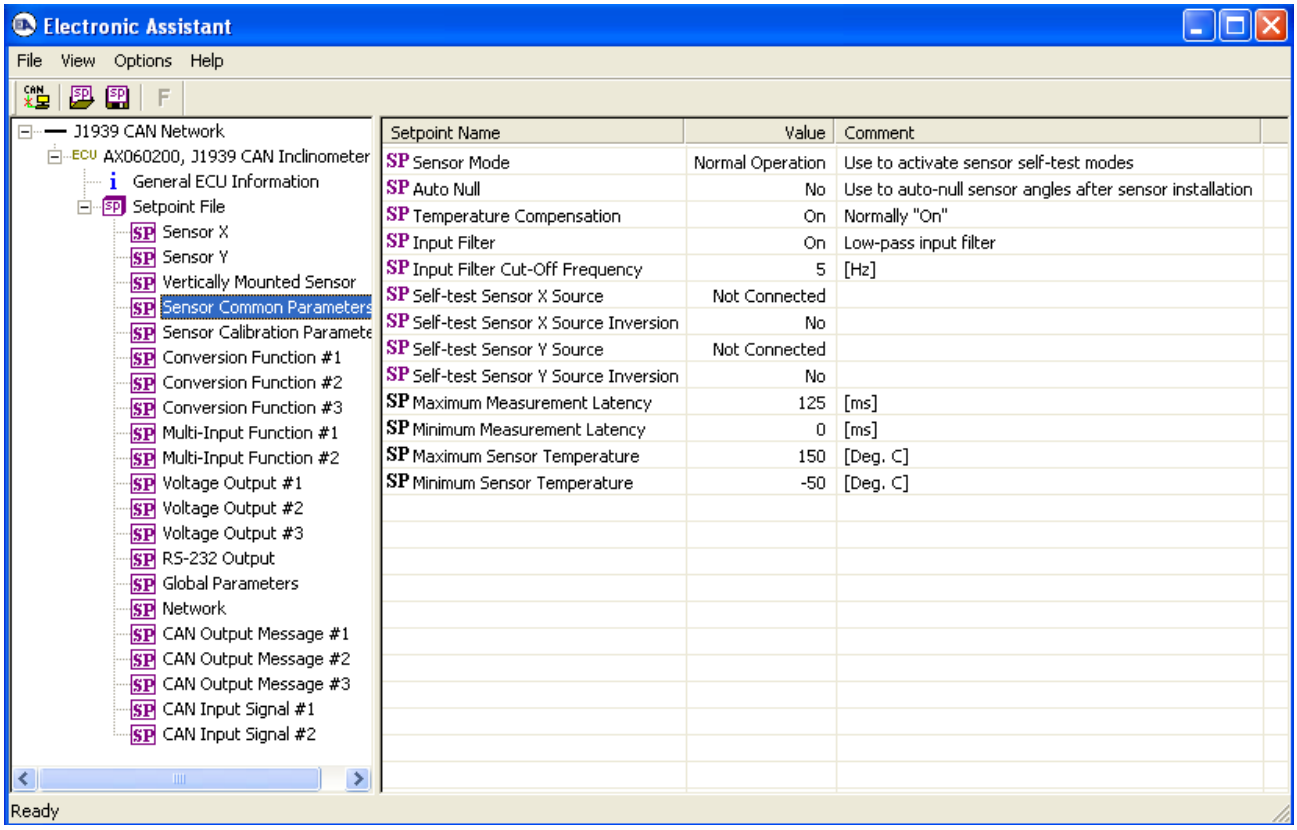



***Figure 5-7. Setpoint Group***

## 5.5 Editing Configuration Parameters

To change a configuration parameter, the user should double-click on it. The editing pop-up dialog window will appear. The user then can enter a new value or select it from the list.

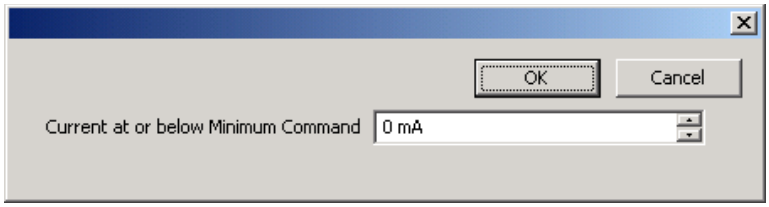



***Figure 5-8. Configuration Parameter Editing Dialog Windows (Example 1)***

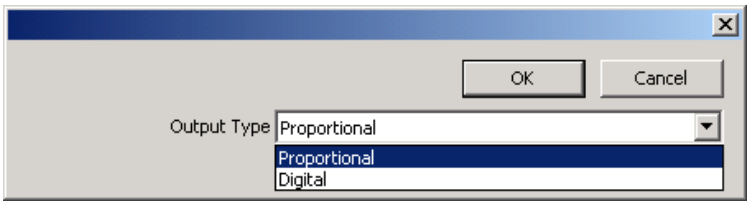



***Figure 5-9. Configuration Parameter Editing Dialog Windows (Example 2)***

Once the user selects OK to close the pop-up window, the EA will write the new value to the ECU.

If the entered value is outside of the allowable range for that configuration parameter, the EA will inform the user, and default back to the last valid value that was entered.

Then writing to the ECU memory takes some time, an hourglass will appear and an animated message in the left corner of the status bar will inform the user that the operation is running.

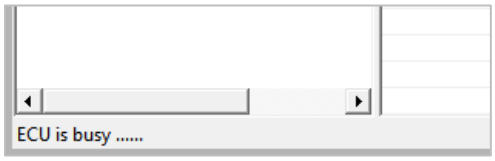



***Figure 5-10. ECU is Busy Writing a New Configuration Parameter***

The ECU will save the new configuration parameter in non-volatile memory and will immediately start using it.

The type of the editing dialog window will depend on the type of the configuration parameter and the ECU. For some configuration parameters, a password will be asked before the EA shows the editing dialog.

Configuration parameters with black icons SP are read-only and cannot be changed.

Configuration parameter reading and writing operations are implemented using the Memory Access Protocol (MAP), as defined in the J1939-71 standard. All non-standard configuration parameters (which are typically the majority of ECU configuration parameters, except the *ECU Instance Number* and the *ECU Address*) use proprietary MAP addresses.

## *5.6 Multiple ECU Instances*

The EA can configure up to 8 units of the same type on the CAN bus using the *ECU Instance Number* configuration parameter. This configuration parameter is typically a part of the *Miscellaneous, Network* or *J1939 Network* setpoint group in the *Setpoint File*.

The user should select the required ECU instance number from the list of available instance numbers in the *ECU Instance Number Setup* dialog window and then press *OK* button or double-click the selected instance number.

In the *Comment* column of the ECU instance number list, the user can see whether the instance is already taken by an ECU of the same type on the network. The current ECU instance will be marked as “<-- This ECU”.

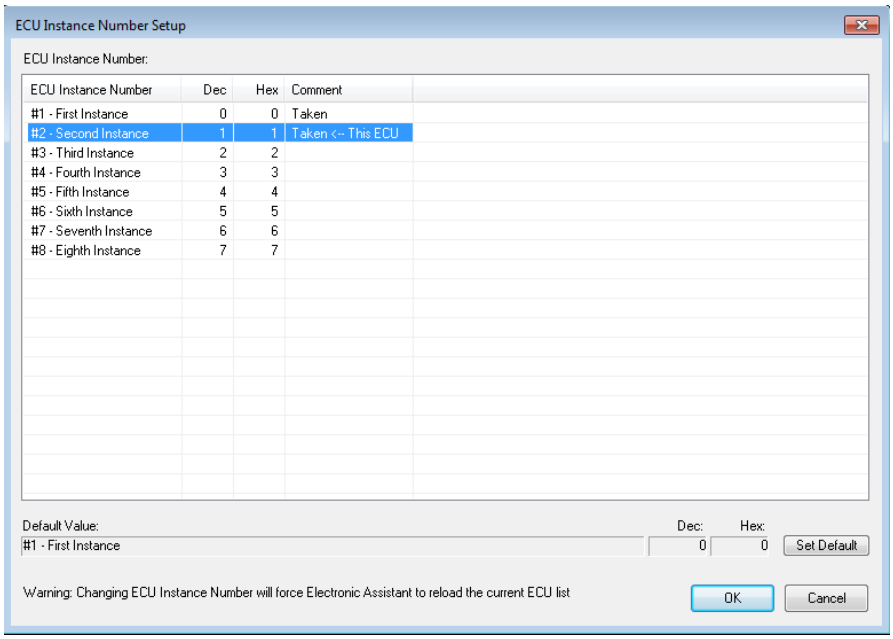



***Figure 5-11. ECU Instance Number Setup Dialog***

Changing the *ECU Instance Number* will force the EA to reload the current ECU list.

## *5.7 Changing ECU Address*

The user can change the ECU address, if necessary, using the *ECU Address* configuration parameter located normally together with the *ECU Instance Number* in the *Miscellaneous, Network* or *J1939 Network* setpoint group in the *Setpoint File*.

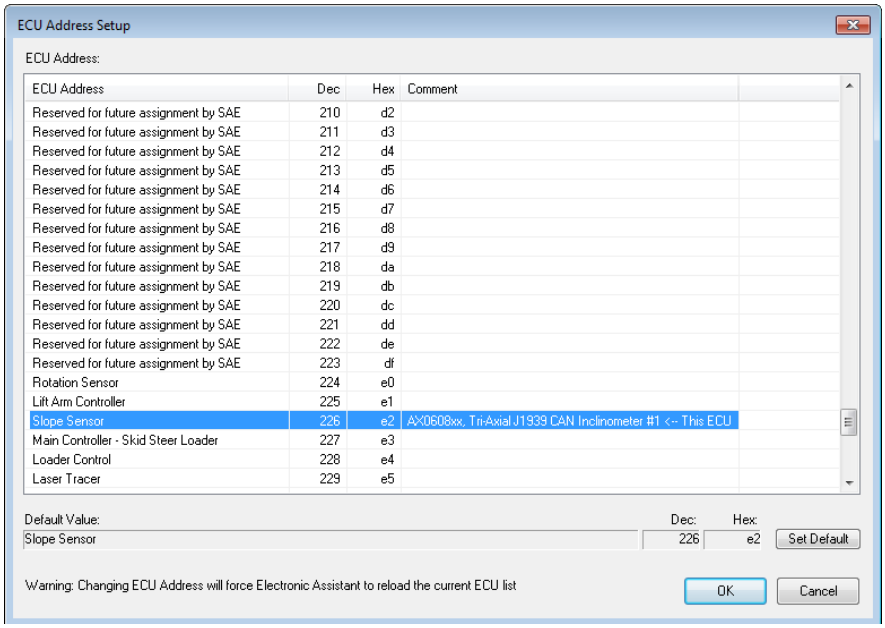



***Figure 5-12. ECU Address Setup Dialog***

Similar to the *ECU Instance Number*, the user should select the required *ECU Address* from the list of available *ECU Addresses* in the *ECU Address Setup* dialog window and then press *OK* button or double-click the selected ECU address.

In the *ECU Address* column of the list, the user can see the J1939 address assignment for a given address and in the *Comment* column – an ECU that currently occupies that address. The current ECU address will be marked as “<-- This ECU” in the *Comment* column.

Changing the *ECU Address* will force the EA to reload the current ECU list.

Selecting an already taken address is possible, but it will result in an address arbitration process that, depending on the ECU NAME field value, will either allow the ECU to occupy the new address or will move the ECU to a free address reserved for dynamic address assignments.

### *5.8 Saving Configuration Parameters in Setpoint File*

The user can save all configuration parameters of a selected ECU in a setpoint file on disk. Also, the configuration parameters can be flashed back to the ECU from a setpoint file.

To save configuration parameters, the user selects: *Save Setpoints* or *Save Setpoints As…* from the *File* menu and follows the prompt. Alternatively, the user can click on the *Save Setpoint File* toolbar icon .

The configuration parameters will be first read from the ECU and then written, together with the ECU identification information, to the selected setpoint file. A progress bar will show the state of the reading operation.

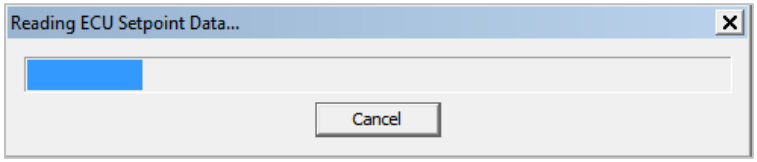



***Figure 5-13. Configuration Parameter Reading Progress Bar***

In case of errors, the user will be prompted to redo operation for the unread configuration parameters.

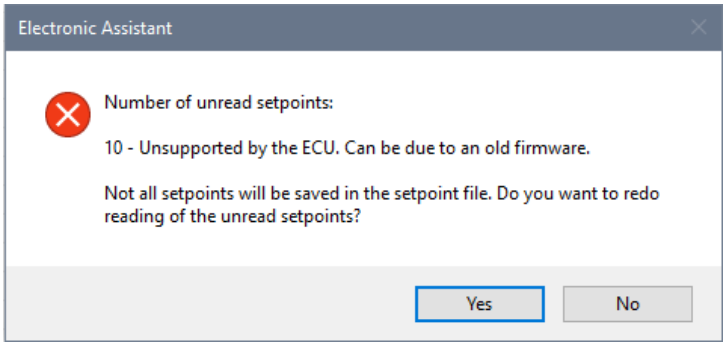



***Figure 5-14. Error During Reading of the Configuration Parameter***

After reading, the configuration parameters will be saved in the setpoint file on disk in XML format. The user will be prompted if erasing of the already existing setpoint file can occur during this operation.

A text file (with *.txt* extension) is also generated in the same directory as the XML file if *Generate Setpoint Text File* option is set in the main menu (*Options, Generate Setpoint Text File*). This file contains the same information as the setpoint XML file, but in a plain text format without XML tags.

In the past, when the setpoint XML files did not have a readable “pretty-print” format, some customers were using the text files together with the setpoint XML files. Now, this option is obsolete and kept only for the backward compatibility with the older EA versions.

## *5.9 Reading Configuration Parameters from Setpoint File*

The setpoint file with configuration parameters can be opened by clicking on the *Open Setpoint File* toolbar icon or from the *File* menu, by selecting the *Open Setpoint File…* item. The *Setpoint File Viewer* dialog window will open as shown below.

A setpoint file can be opened from disk even if the EA is not connected to the CAN bus and the *CAN port* is closed.

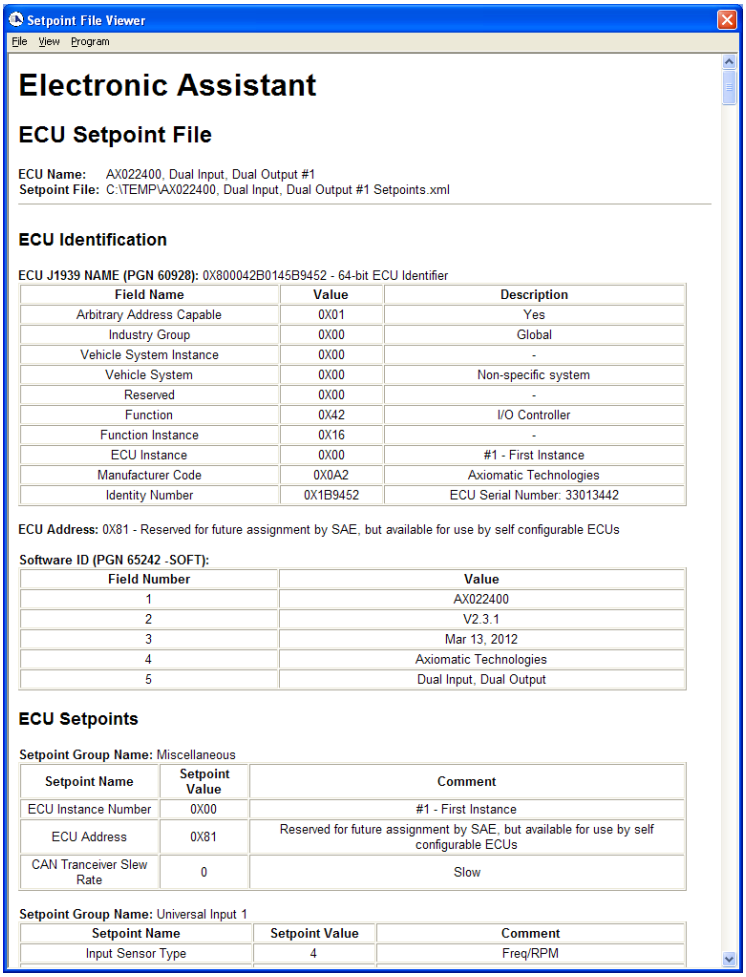



***Figure 5-15. Setpoint File***

### *5.10 Programming Configuration Parameters from Setpoint File*

To program configuration parameters from a setpoint file to a unit, the user should first select the unit from the list of ECUs on the CAN bus, click on the selected ECU *Setpoint File* group in the left pane and then open the required setpoint file from the disk.

Then the user can program the ECU with configuration parameters from the setpoint file in the *Setpoint File Viewer* dialog window by selecting the *Program Setpoints into ECU* item from the *Program* menu.

If the selected ECU has different identification information from the one in the setpoint file, the programming operation will not be available, and the *Program Setpoints into ECU* menu item will be grayed. This item will be also grayed if the user has not selected the *Setpoint File* group before opening the setpoint file.

The EA shows a progress bar while programming the unit with the new configuration parameters from the setpoint file. The programming time mostly depends on the number of configuration parameters with the new values that should be reprogrammed.

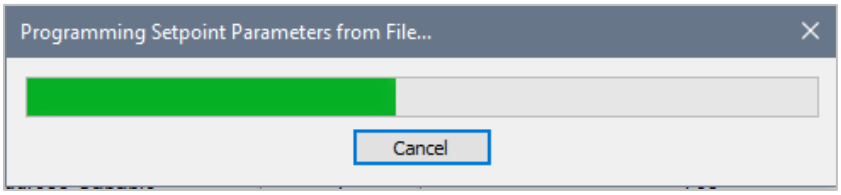



***Figure 5-16. Programming Progress Bar for Configuration Parameters***

Some of the configuration parameters are not programmable from the file. They include read-only and network configuration parameters, such as *ECU Instance* and *ECU Address*.

In some cases, other configuration parameters may not be programmable from the setpoint file but can be programmable on the individual basis from the setpoint group pane – please refer to the ECU's User Manual.

At the end of the programming process, the EA shows the result of the programming operation. If some of the configuration parameters have not been programmed, the user can try to program them again.

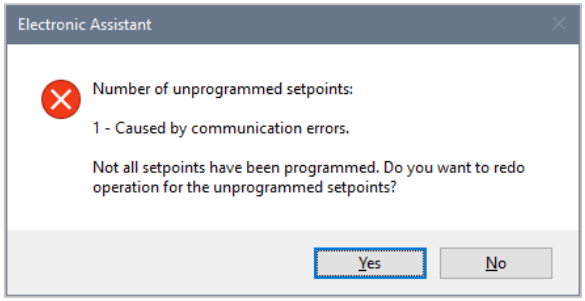



***Figure 5-17. Error During Programming of the Configuration Parameters***

If all configuration parameters have been programmed successfully, the following message will appear.

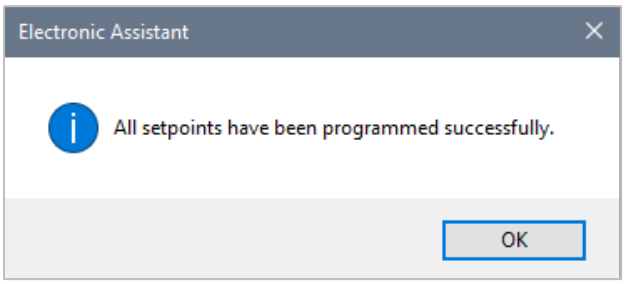



***Figure 5-18. Successful Programming of the Configuration Parameters***

## *5.11 Comparing ECU Configuration Parameters with Setpoint File*

The ECU configuration parameters can be compared with the setpoint file in the *Setpoint File Viewer* dialog window by selecting the *Compare Programmable Setpoints* item from the *Compare* menu. Only ECU programmable configuration parameters will be compared.

The user can double check the result of the programming operation using this command. This is extremely helpful when the EA is remotely connected to the ECU over the internet.

The configuration parameters are first read from the ECU the same way as in the Saving Configuration Parameters operation. The user can redo reading in case of errors. Then the ECU programmable configuration parameters are compared with the configuration parameters from the file. The result is displayed to the user.

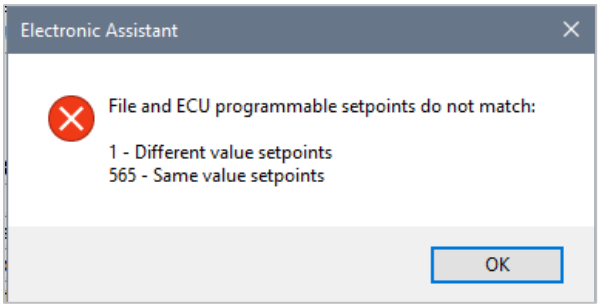



***Figure 5-19. ECU Configuration Parameters do not match the Setpoint File***

In case the configuration parameters are the same, the following message is displayed.

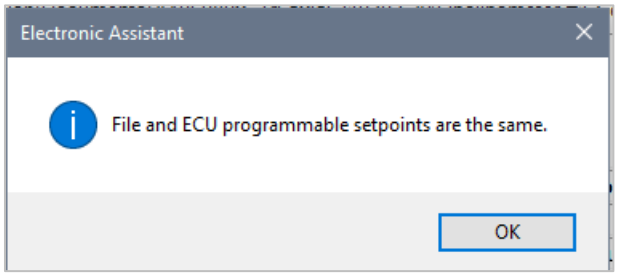



***Figure 5-20. ECU Configuration Parameters match the Setpoint File***

### *5.12 J1939 Bootloader*

Most Axiomatic controls come with the embedded J1939 Bootloader. This bootloader allows users to update application firmware in the field without disconnecting the units from the user's system.

The bootloader also provides users with extended information about the unit hardware, installed bootloader and application firmware. The J1939 Bootloader support was added in EA starting from V4.0.35.0.

When a unit has the bootloader support, the EA will show the *Bootloader Information* group in the ECU left pane below the *General ECU Information* and *Setpoint File* groups. When the *Bootloader Information* group is selected, it shows the information pane describing the unit hardware, bootloader, and application firmware.

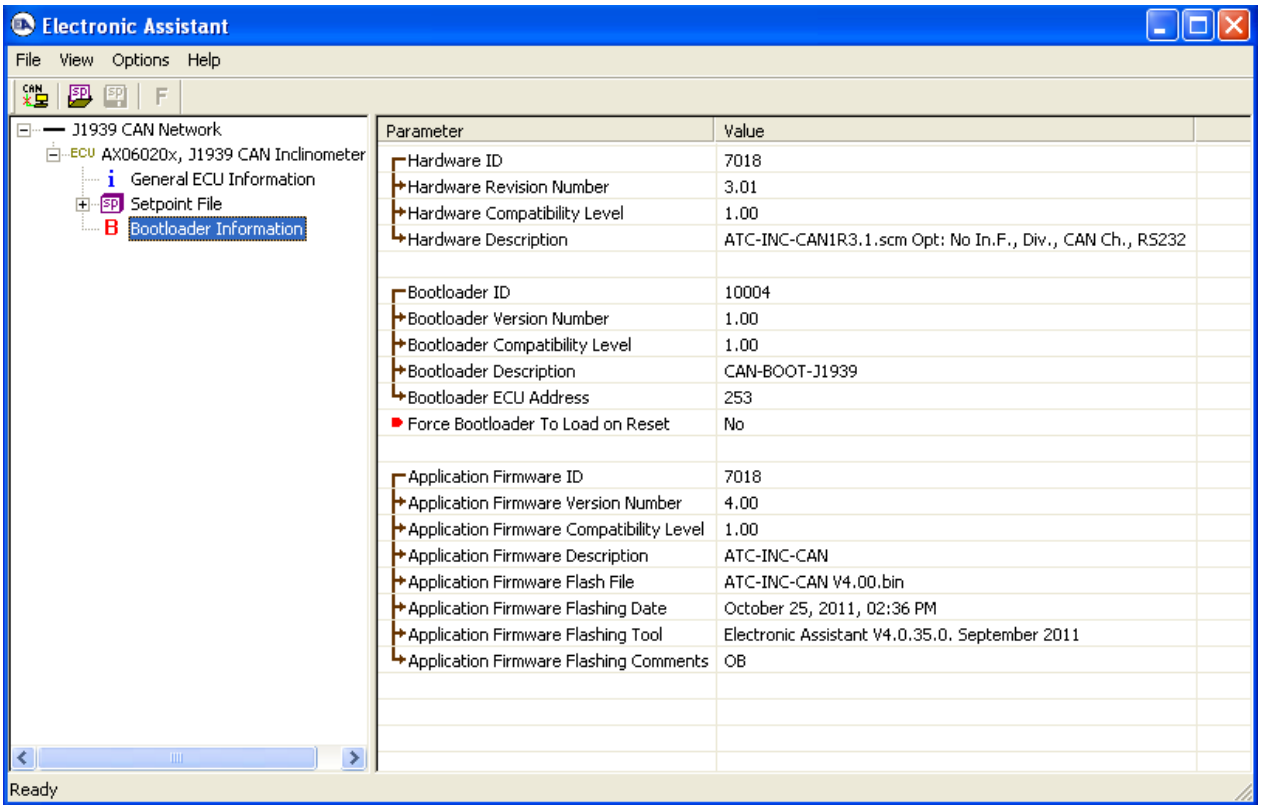



***Figure 5-21. Bootloader Information (ECU supports J1939 Bootloader)***

In the *Bootloader Information* group pane, the user can see a *Force Bootloader to Load on Reset* flag. The user can change this flag to *Yes* to activate the embedded bootloader.

After reset, the embedded bootloader will appear on the network as a regular ECU at the *Bootloader ECU Address*. The user should check this address first, before activating the bootloader, to ensure that there are no address conflicts since the *J1939 Bootloader* ECU is not capable to dynamically relocate its ECU address.

Upon reset, the user will see the following *Bootloader Information* group pane in the *J1939 Bootloader* ECU.

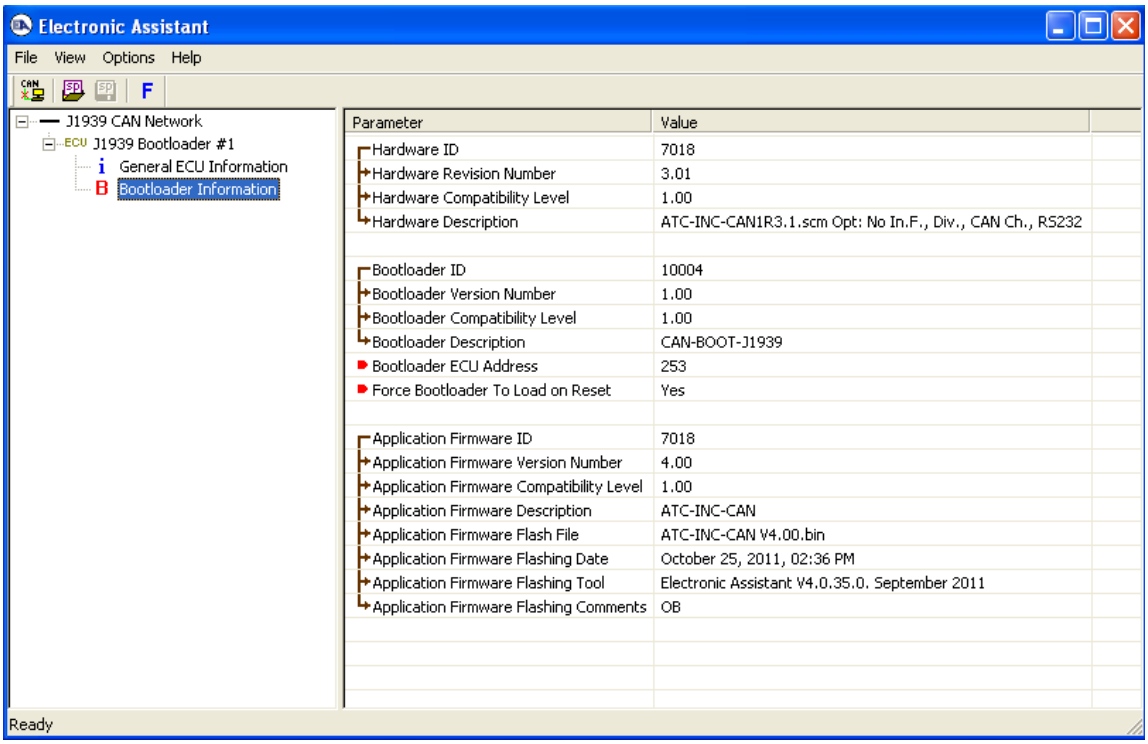



***Figure 5-22. Bootloader Information (Bootloader)***

This group pane shows the same information as the *Bootloader Information* group pane when the unit is running the application firmware. The only difference is that now, for extra flexibility, the user can change the *Bootloader ECU Address*. The *ECU Part Number* and *ECU Serial Number* in the *General ECU Information* group pane also remain the same.

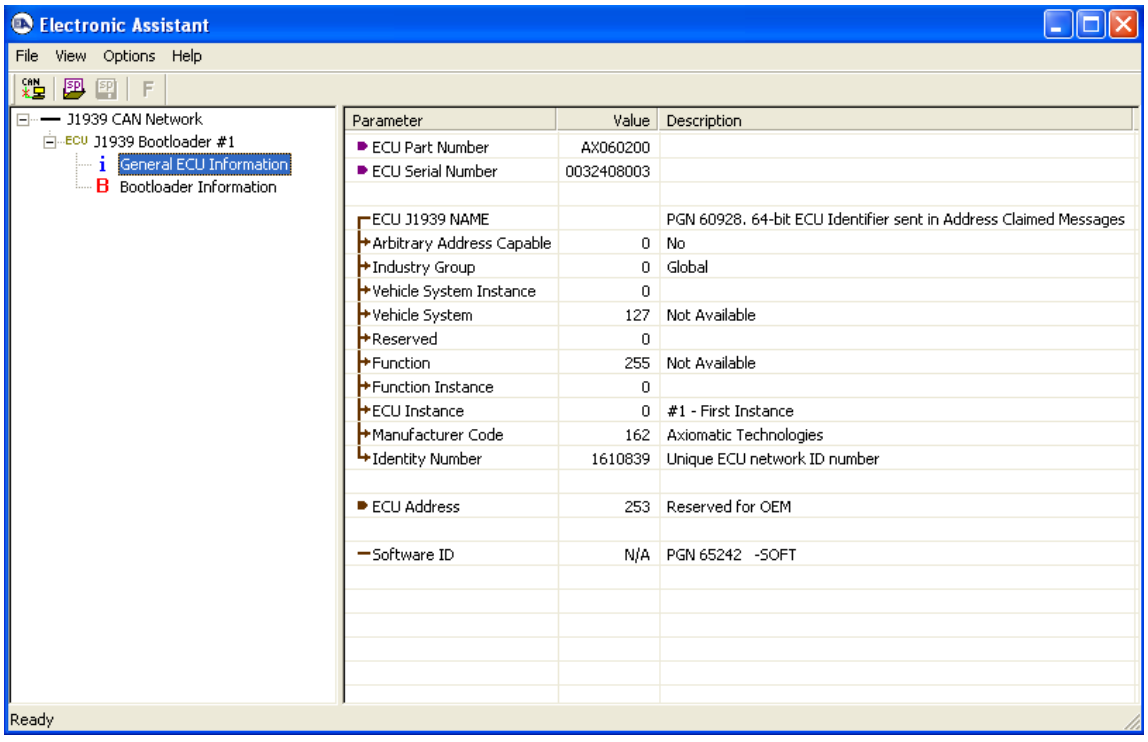



***Figure 5-23. General ECU Information (Bootloader)***

The user can now return back to the application firmware, by setting the *Force Bootloader to Load on Reset* flag back to *No* and resetting the ECU or flash a new application firmware into the unit.

### *5.13 Flashing New Application Firmware*

The user can flash the new application firmware if the unit has an embedded *J1939 Bootloader*. Units with the embedded bootloader will have the *Bootloader Information* group in the ECU left pane. Flashing the new firmware is performed when the embedded *J1939 Bootloader* controls the unit.

To flash the new application firmware, the user should first activate the *J1939 Bootloader* by setting the *Force Bootloader to Load on Reset* flag in the *Bootloader Information* group pane to *Yes*.

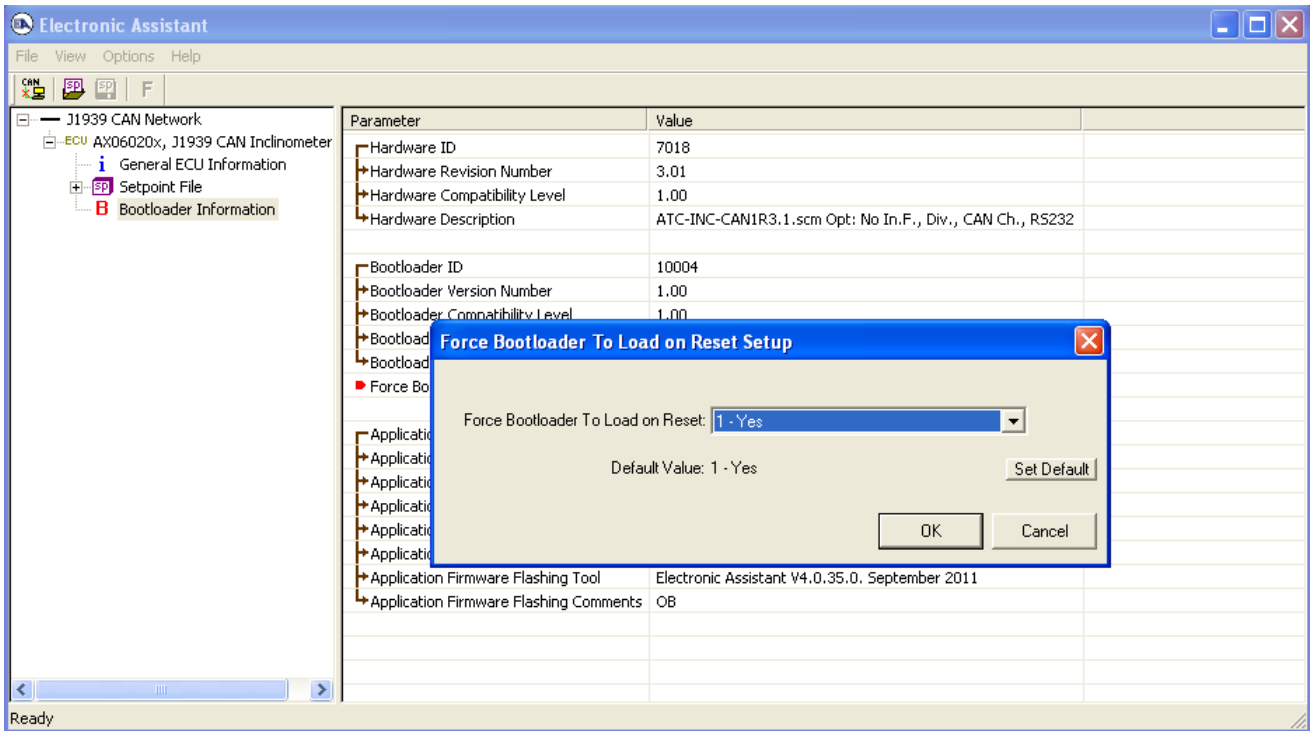



***Figure 5-24. Bootloader Activation***

This will activate the bootloader on the next ECU reset. The user can force the ECU to perform the reset without cycling the power by answering *Yes* to the next dialog prompt that will appear right after changing the *Force Bootloader to Load on Reset* flag.

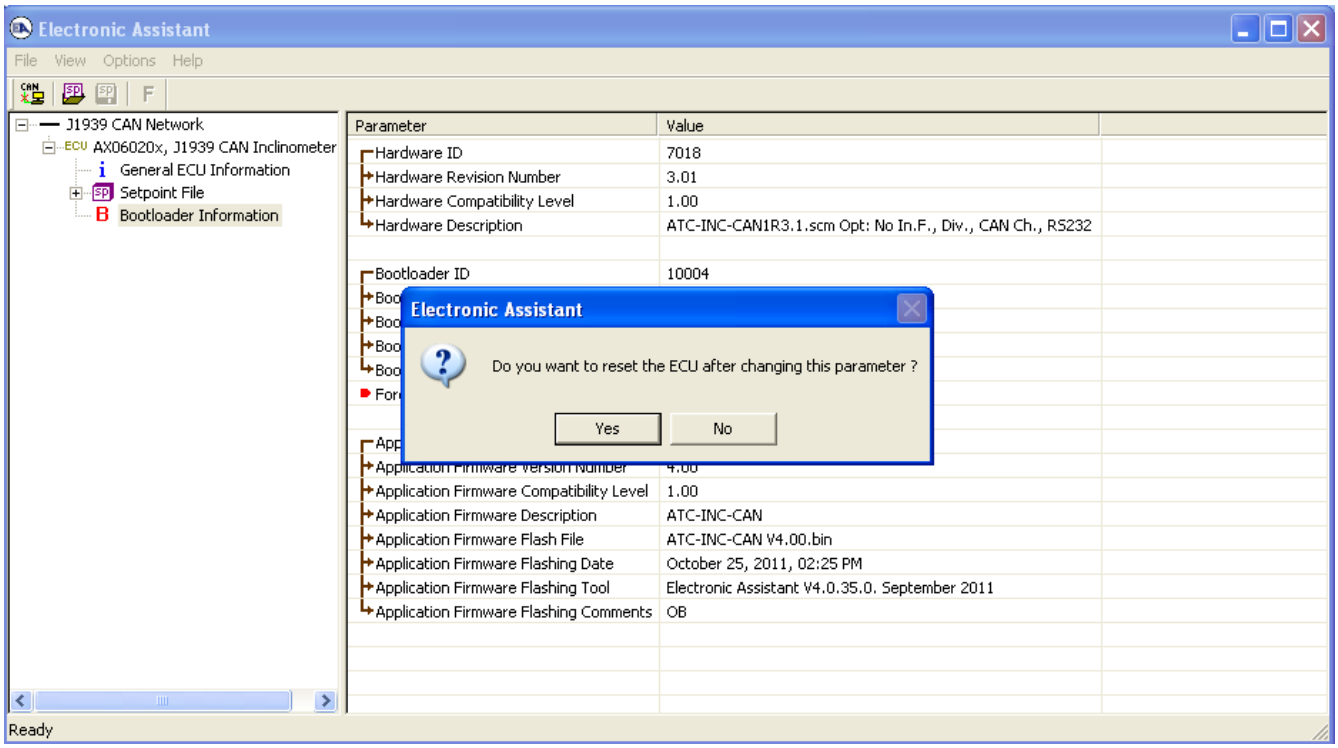



***Figure 5-25. Resetting the ECU***

After reset, the user will see a *J1939 Bootloader* ECU instead of the original ECU. This means that the embedded *J1939 Bootloader* controls the unit.

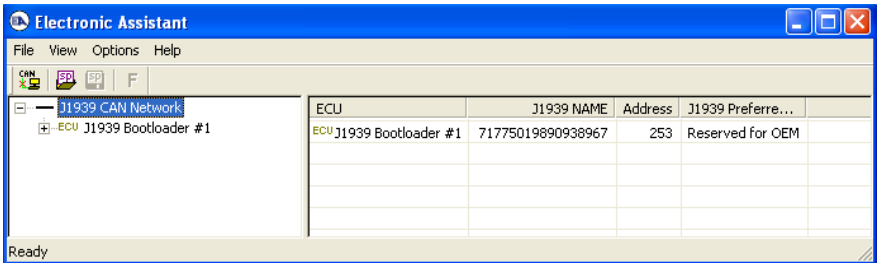



***Figure 5-26. J1939 Bootloader Controls the ECU***

Then, in the *J1939 Bootloader* ECU, the user should select *Bootloader Information* group from the left pane and open an application firmware flash file by clicking on the *Open Flash File* toolbar icon F or from the *File* menu selecting the *Open Flash File…* item. The *Open Application Firmware Flash File…* dialog window will appear.

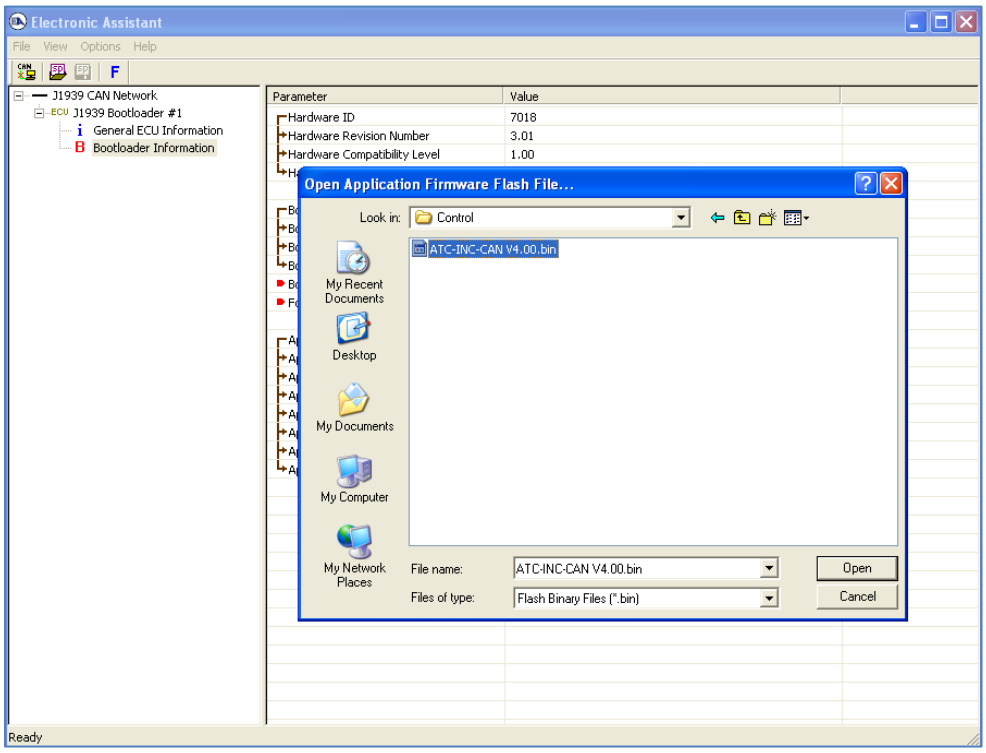



***Figure 5-27. Selecting the Application Firmware Flash File***

When the flash file is selected, the user will see the *Flash Application Firmware* dialog window. In this example, an old firmware is being re-flashed.

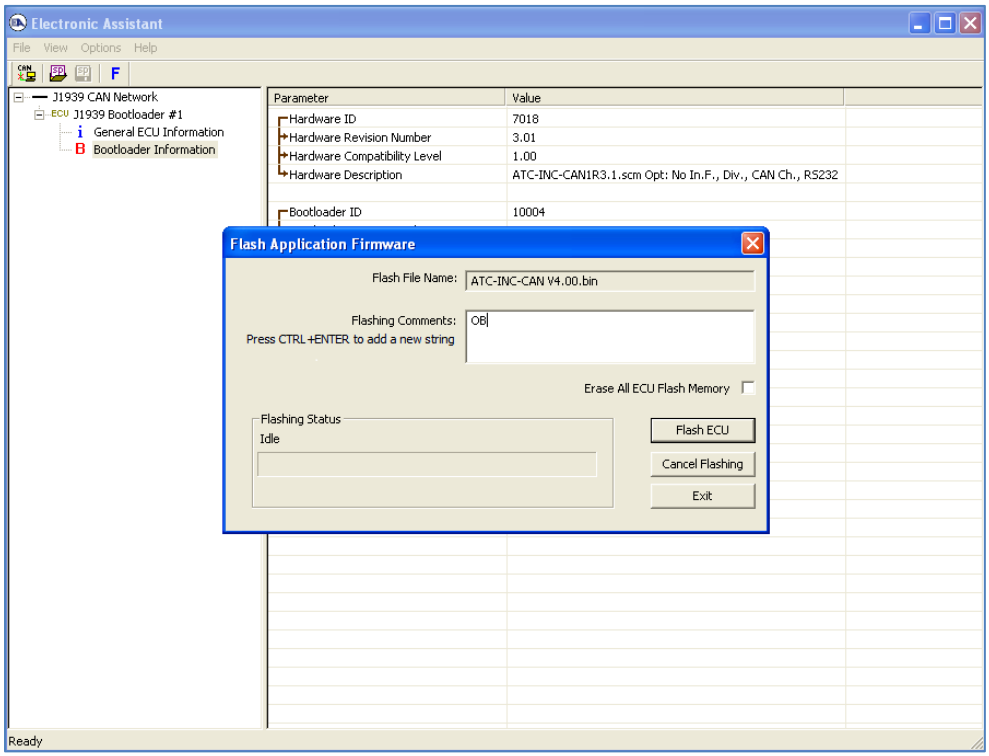



***Figure 5-28. Flash Application Firmware Dialog Window***

In this window, the user can add flashing comments. They will appear in the *Bootloader Information* group pane of the unit when flashing is successfully done. The user can also select here the *Erase All ECU Flash Memory* option to wipe off all configuration parameters and other settings left by the old application firmware.

To start the ECU flashing operation, the user should press the *Flash ECU* button. A warning message will appear telling the user that the operation will erase the old application firmware.

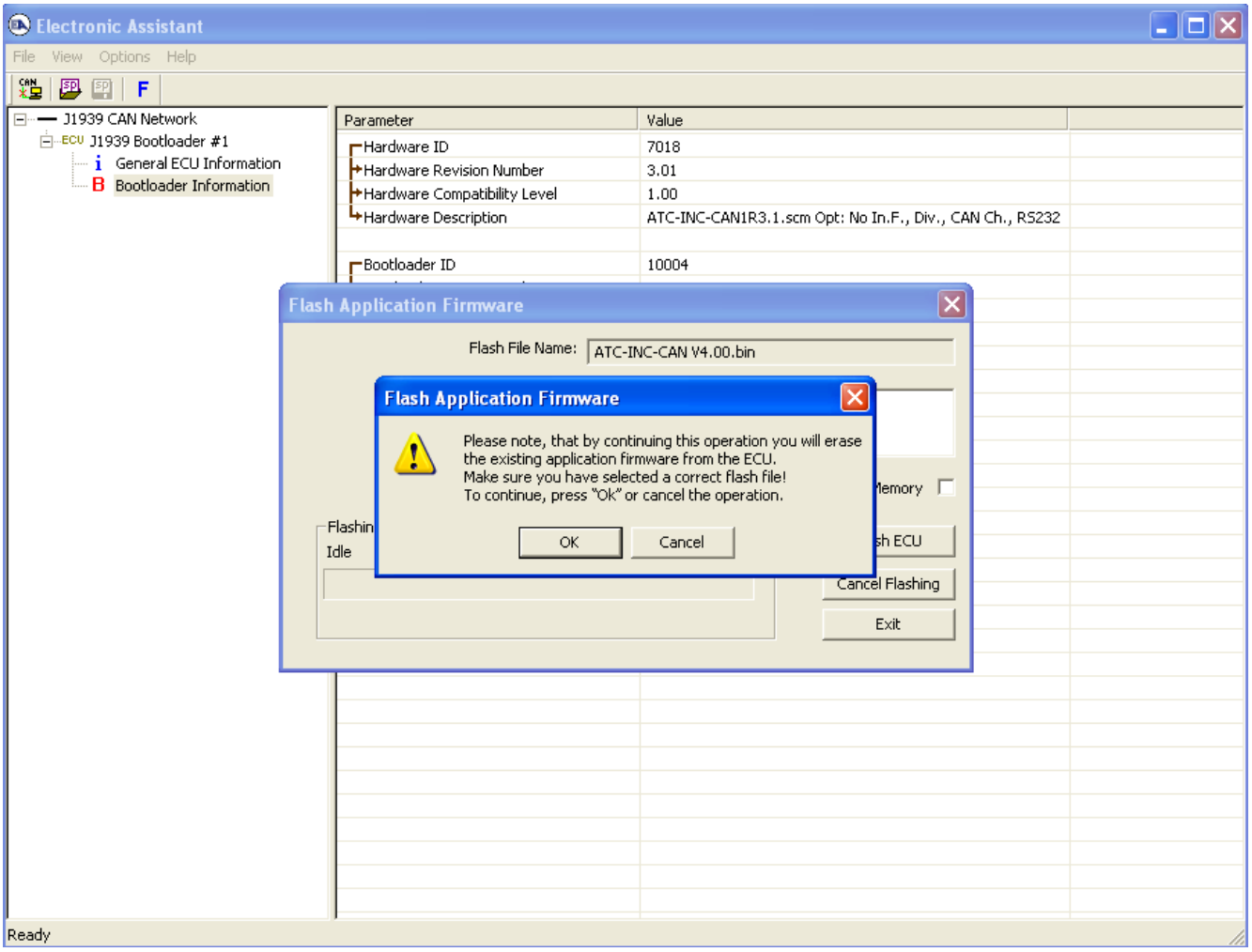



***Figure 5-29. Warning Message Before Firmware Flashing***

The flashing command is irreversible. Once started, it will destroy the old application firmware. It is important to have a correct version of the flash file for the particular unit before starting flashing.

If the flashing operation fails for any reason, the unit will remain in the active bootloader mode showing the *J1939 Bootloader* ECU in EA and flashing can be repeated.

When the flashing operation is started, a flashing status message and a progress bar will show the dynamics of the operation in the *Flashing Status* part of the dialog window. The *Flashing Comments* and *Erase All ECU Flash Memory* fields will be grayed to prevent the user from altering them when the flashing process is running.

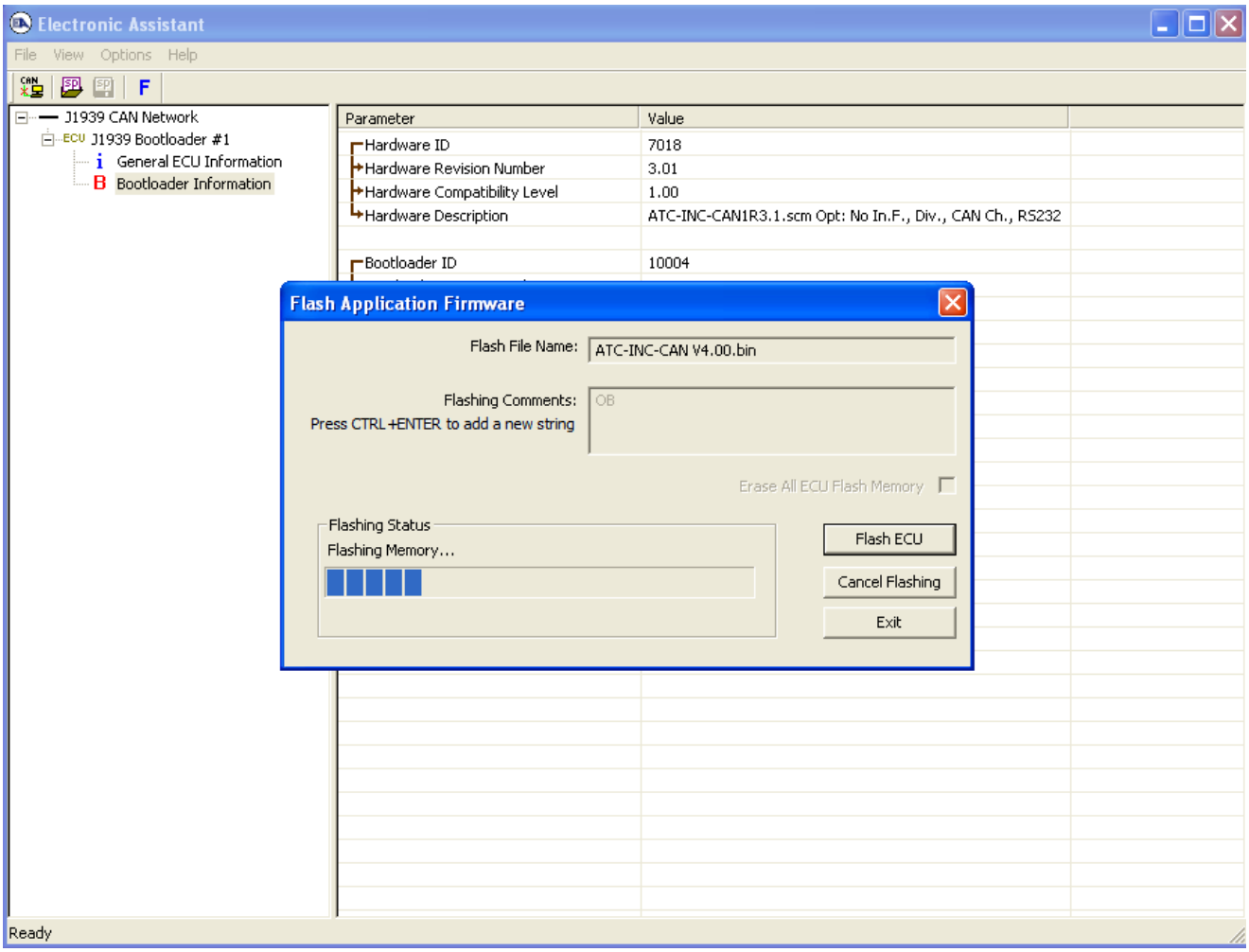



***Figure 5-30. Flashing Operation is Running***

When a flashing command takes more time than expected, an hourglass and “ECU is busy …” animated message will appear under the progress bar.

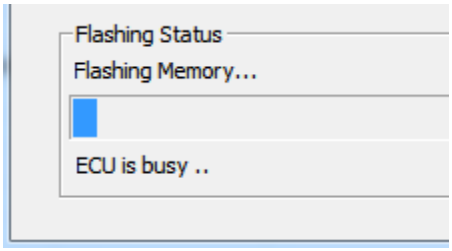



***Figure 5-31. ECU is Busy During Flashing Operation***

In case of an error during the flashing operation, it will be displayed under the progress bar as well.

At the end of flashing, the user will be prompted to reset the ECU as the final step of the flashing operation.

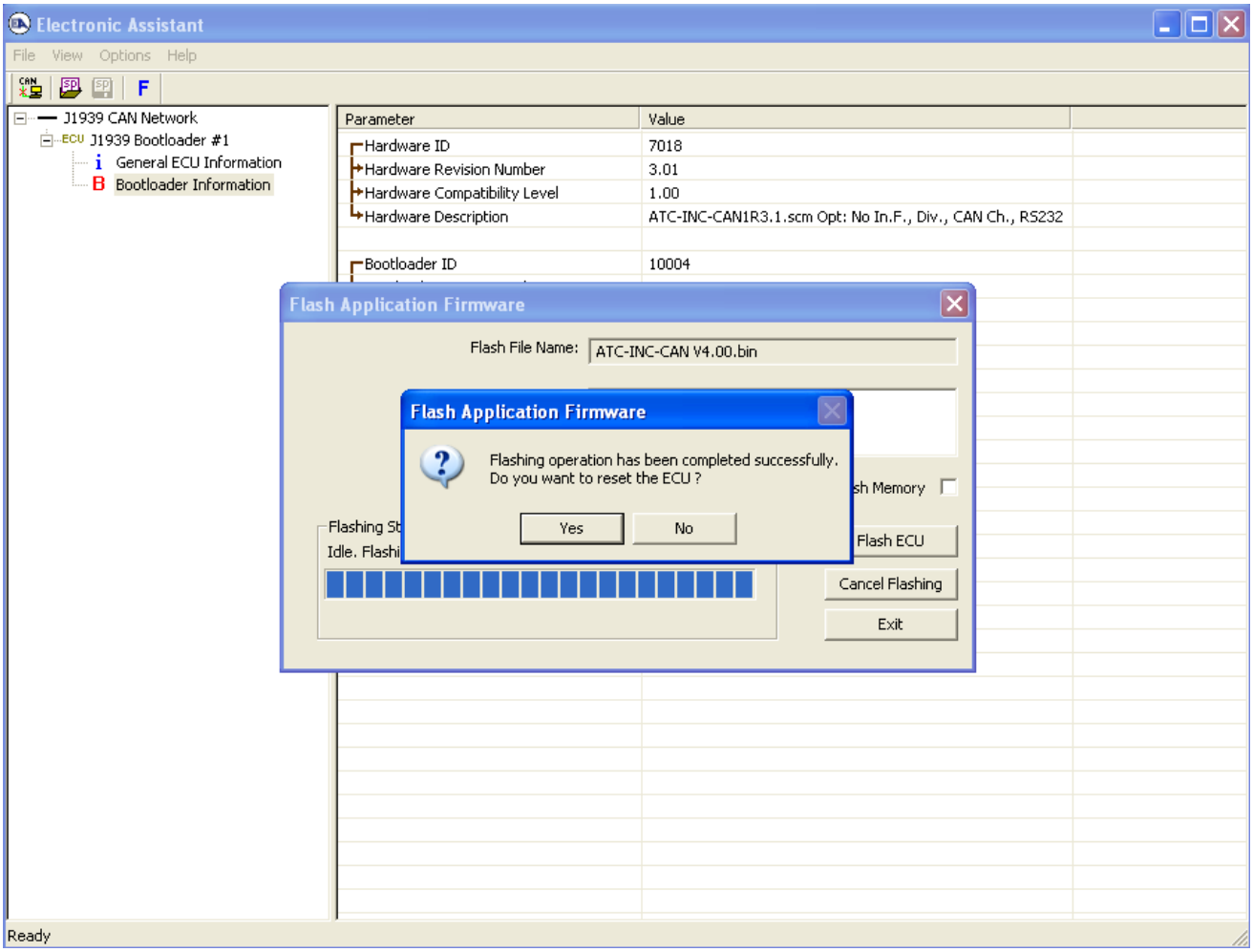



***Figure 5-32. Flashing Operation has been Completed Successfully***

Upon reset, the unit will be running the new application firmware.

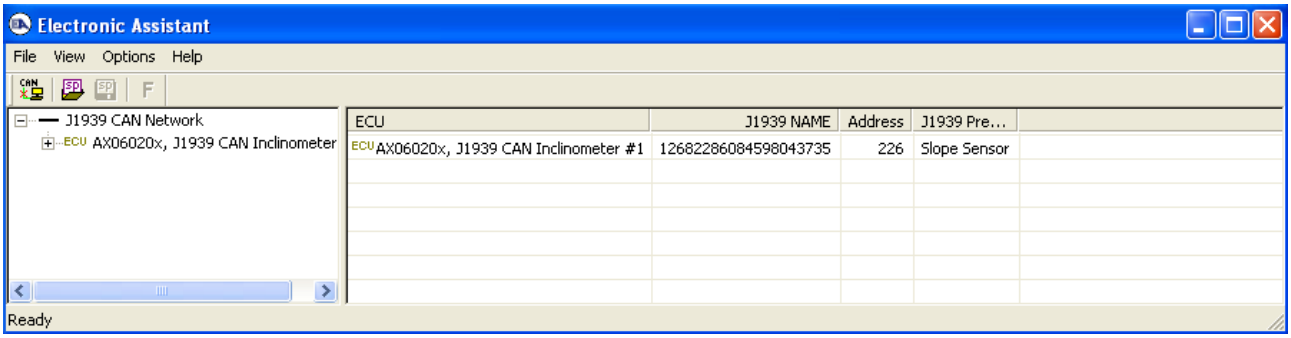



***Figure 5-33. Unit is Running the New Application Firmware***

# 6 APPENDIX A

## List of Supported Hardware Converters

| Manufacturer | P/N | Description | Hardware Interface | Remark |
|---|---|---|---|---|
| Axiomatic | AX070501 | Axiomatic USB-CAN Converter | Axiomatic USB-CAN Converter | Default converter. Needs a driver |
| | AX070505[1] | | | |
| | AX070506 | | | |
| | AX140900 | Axiomatic Ethernet-CAN Converter | Axiomatic Ethernet-CAN Converter | Does not need a driver |
| | AX140901 | Ethernet-CAN Converter | | |
| | AX141200 | Wi-Fi to CAN Converter | | |
| | AX140950[2], AX140970 | Dual CAN FD to Ethernet Converter | | |
| ESD | C.2064.02 | USB-CAN-Mini | ESD CAN-USB Converter | Needs a driver |

[1]AX070505 is phased out and replaced with AX070506.
[2]AX140950 is replaced with AX140970.

# 7 APPENDIX B

## List of Supported Axiomatic ECUs

The EA supports the following Axiomatic units:

| Axiomatic Part Number | Description |
|---|---|
| AX020200 | Dual Output Valve Controller with CAN |
| AX020400 | 12 Inputs, 12 Outputs Valve Controller |
| AX020410 | 12 Inputs, 12 Outputs Valve Controller |
| AX020420 | 12 Universal Inputs to 12 Proportional Outputs, J1939 Controller |
| AX020507 | Valve Controller, Quad with +5Vref, 50mA |
| AX020510 | Valve Controller, 6 Inputs, 5 Outputs |
| AX020512 | 6 Inputs, 5 Outputs Valve Controller |
| AX020520 | 6 Inputs, 5 Outputs Valve Controller |
| AX020530 | 7 Inputs, 5 Outputs Valve Controller |
| AX020600 | 4 Output CAN Controller |
| AX020800 | 8 Proportional 3A Outputs, 4 Universal Inputs, 2 CAN Ports Controller |
| AX021100 | 2.5A Connector Amplifier with CAN |
| AX021200 | Valve Controller, 9 Proportional Output |
| AX021210 | 10 Output Valve Controller |
| AX021210-01 | 10 Output Valve Controller (500kbit/s) |
| AX021210-02 | 10 Output Valve Controller (1 Mbit/s) |
| AX021210A | 10 Output CAN Controller |
| AX021213 | 10 Output Valve Controller, PCB Assembly |
| AX021300 | Valve Controller, 6 Digital Output |
| AX021400 | 12 Input, 14 Output Controller, Dual CAN SAE J1939, Ethernet |
| AX021600 | Universal Input, 2A Output |
| AX021610 | Single Input Single Valve Output Controller |
| AX021800 | Dual Valve Controller, 4 - Universal Inputs, 2 - 3A Outputs |
| AX021810 | Dual Valve Controller, 4 - Universal Inputs, 2 - 3A Outputs, Without Voltage References |
| AX021900 | Valve Controller, 8 Inputs, 5 Outputs |
| AX021910 | 8 Inputs, 5 Outputs CAN Controller |
| AX022000 | Dual Output CAN Controller, 1-Universal Input, 2 - 3A Outputs |
| AX022003 | Universal Input, Dual Valve Output CAN Controller |
| AX022200 | Single Valve Controller |
| AX022002 | CAN with Dual 3A Outputs, Top Connect |
| AX022020 | CAN with Dual 3A Outputs, Side Connect |
| AX022310 | CAN with Dual 2.5A Outputs, Plug-In |
| AX022400 | Dual Input, Dual Output, Top Connect |
| AX022410 | Dual Input, Dual Output, Side Connect |
| AX022420 | Four Inputs, Two Outputs Universal Valve Controller |
| AX022440 | Two Bipolar Inputs, Two Universal Inputs, Two Proportional Outputs Controller |
| AX022460 | Two Bipolar Inputs, Four Pulse Valve Outputs Controller |
| AX022800 | Positional Valve Driver |
| AX022950 | 7 Digital Inputs, 6 Digital Outputs, 4 LED Outputs Controller |
| AX023210 | Fan Drive Controller |

| Axiomatic Part Number | Description |
|---|---|
| AX023220 | 2 Input, Dual Valve Controller, High Temperature |
| AX023220-01 | 2 Input, Dual Valve Controller, High Temperature (500 kbit/s) |
| AX023220-02 | 2 Input, Dual Valve Controller, High Temperature (1 Mbit/s) |
| AX023240 | Quadrature Decoder Input, Dual Valve Controller, High Temperature, SAE J1939 |
| AX023264 | 1 Input, 1 Output, CAN Controller |
| AX023265 | 3 Input, 1 Output CAN Controller |
| AX023300 | 2 Inputs, 2 Outputs Valve Controller |
| AX023302 | A061D644, 2 Inputs, 2 Outputs Controller |
| AX024000 | Servo Controller |
| AX024010 | DIN Rail Servo Controller |
| AX024040 | Dual Servo Valve CAN Controller |
| AX028010 | 12 Universal Inputs, 12 Universal Outputs, CAN, Ethernet, Modbus Controller |
| AX028020 | 8 AIN, 4 DIN, 12 DOUT, 2 AOUT, 4 POUT, USB, CAN Controller |
| AX029000 | 10-Output Valve Ethernet Driver |
| AX030100 | 10 Analog Input |
| AX030120 | 10 Universal Signal Input CAN Controller |
| AX030120A | 10 Universal Input, CAN Controller |
| AX030120-01 | 10 Universal Signal Input CAN Controller (500 kbit/s) |
| AX030120-02 | 10 Universal Signal Input CAN Controller (1 Mbit/s) |
| AX030130 | 10 Universal Signal Input with 5V Reference Output |
| AX030130-01 | 10 Universal Signal Input with 5V Reference Output, 500kbit/s |
| AX030130-02 | 10 Universal Signal Input with 5V Reference Output, 1Mbit/s |
| AX030140 | 3 Encoder, 7 Signal Inputs Controller, CAN Isolated |
| AX030160 | 8 Digital Input to CAN Controller |
| AX030200 | 16 Analog IO |
| AX030210 | 12 Input, 8 Signal Output & 1 Relay Output Controller |
| AX030210-01 | 12 Input, 8 Signal Output & 1 Relay Output Controller, 500kbit/s |
| AX030210-02 | 12 Input, 8 Signal Output & 1 Relay Output Controller, 1Mbit/s |
| AX030300 | 18 Digital Input |
| AX030310 | 18 Digital Input to CAN Controller |
| AX030320 | 18 Digital Input to CAN Controller |
| AX030350 | RS-232 to CAN Converter with Two Digital Inputs |
| AX030355 | RS-232 to CAN Converter with Two Digital Inputs |
| AX030430 | 2 Universal Input, 2 Isolated Input, 4 Analog Output, Signal Converter, SAE J1939 |
| AX030440 | 4 Universal Inputs, 5V/8V Voltage Reference, CAN Controller |
| AX030450 | 4 Universal Inputs, 5V 8V Voltage Reference with Feedback, CAN Controller |
| AX030500 | 4 Analog Signal Output CAN Controller |
| AX030520 | 1 Analog Signal Output CAN Controller |
| AX030530 | 1 Analog Signal Input CAN Controller |
| AX030540 | CAN to 4 Analog Outputs Controller |
| AX030550 | Isolated Dual CAN to Sine or Square Output |
| AX030560 | CAN to 4 Analog Outputs Controller |
| AX030570 | 1 Resistive Output CAN Controller |
| AX030590 | CAN to 12 Analog Outputs Controller |
| AX030600 | 6 Universal Signal Input Controller, SAE J1939, Ethernet |
| AX030780 | 1 Digital Input, 2 HSLS Proportional Outputs 5.0A, 2 Analog Outputs, CAN Controller |

| Axiomatic Part Number | Description |
|---|---|
| AX030800 | 1 Input, 1 Output, Isolated Signal Converter |
| AX030810 | 16 Input, 13 Output, 3 CAN Controller |
| AX031200 | Multi-Function IO Module 48-pin |
| AX031200B | Multi-Function IO Module 48-pin |
| AX031300 | 10 LED Output Driver with CAN |
| AX031500 | Magnetic Pick-up Input with CAN |
| AX031510 | 4 Magnetic Pick-Up Inputs to CAN Controller |
| AX031600 | CAN to 2 LED Outputs Controller |
| AX031700 | Single Input Controller with CAN |
| AX031702 | Fuel Sensor Input to CAN Controller |
| AX031705 | Single Input Controller with CAN |
| AX031800 | Twelve Digital Inputs, Eight Discrete Outputs Controller |
| AX031800-01 | Twelve Digital Inputs, Eight Discrete Outputs Controller, 500kbit/s |
| AX031800-02 | Twelve Digital Inputs, Eight Discrete Outputs Controller, 1Mbit/s |
| AX031850 | Twelve Digital Inputs, Eight Discrete Outputs, Cinch Connector |
| AX031850-01 | Twelve Digital Inputs, Eight Discrete Outputs, Cinch Connector, 500kbit/s |
| AX031850-02 | Twelve Digital Inputs, Eight Discrete Outputs, Cinch Connector, 1Mbit/s |
| AX031855 | 10 Digital Inputs, 8 Discrete Outputs, 1 Analog Output Controller |
| AX031901 | Single Digital Input to Dual NC Relay Outputs |
| AX031950 | Bipolar Input, Relay Output and Analog Output with NFC |
| AX032000 | 18-Cell Battery Monitoring System |
| AX032050 | 16-Cell Battery Monitoring System |
| AX032100 | 2 Bipolar, 8 Universal Signal Input Controller, CAN, Ethernet, 2x5V Ref, DIN |
| AX032120 | 2 Bipolar, 8 Universal Signal Input Controller, CAN, 2x5V Ref, DIN |
| AX032160 | 6 Digital Input Controller with Dual CAN, SAE J1939 |
| AX032200 | 1 Digital Input, 2 Digital Outputs Controller |
| AX060201 | Inclinometer, SAE J1939, Two M12 Connectors, Both CAN |
| AX060201D | Inclinometer, SAE J1939, Two M12 Connectors, Both CAN, Sealing for Underwater Applications |
| AX060202 | Inclinometer, SAE J1939, Two M12 Connectors, CAN, 3 Analog Outputs |
| AX060203 | Inclinometer, SAE J1939, Two M12 Connectors, CAN, RS-232 |
| AX060400 | Inclinometer, SAE J1939, Single Deutsch DT15-4P Connector, Power and CAN |
| AX060401 | Inclinometer, SAE J1939, Single Deutsch DT15-4P Connector with CAN Termination |
| AX060700 | Tri-Axial J1939 CAN Inclinometer with Gyro. Two M12 Connectors, Both CAN |
| AX060700-01 | Tri-Axial J1939 CAN Inclinometer with Gyro. Two M12 Connectors, Both CAN, 500 kbit/s |
| AX060701 | Tri-Axial J1939 CAN Inclinometer with Gyro. Two M12 Connectors, CAN, 4 Analog Outputs |
| AX060702 | Tri-Axial J1939 CAN Inclinometer with Gyro. Two M12 Connectors, CAN, RS-232 |
| AX060800 | Tri-Axial J1939 CAN Inclinometer – Two M12 Connectors, Both CAN |
| AX060804 | Tri-Axial J1939 CAN Inclinometer – One M12 Connector |
| AX060806 | Tri-Axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector |
| AX060807 | Tri-Axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector with CAN Termination |
| AX060808 | Tri-Axial J1939 CAN Inclinometer – Vertical Mount, Two M12 Connectors, Both CAN |
| AX060810 | Tri-Axial J1939 CAN Inclinometer – One DT15-4P Connector |

| Axiomatic Part Number | Description |
|---|---|
| AX060811 | Tri-Axial J1939 CAN Inclinometer – One DT15-4P Connector, CAN Termination |
| AX060830 | Tri-Axial J1939 CAN Inclinometer – Two M12 Connectors, Both CAN |
| AX060838 | Tri-Axial J1939 CAN Inclinometer – Vertical Mount, Two M12 Connectors, Both CAN |
| AX060900 | Tri-Axial Gyro Inclinometer, SAE J1939 |
| AX060910 | Tri-Axial Gyro Inclinometer with Extended Dynamic Range, SAE J1939 |
| AX061000 | Tri-Axial J1939 CAN Inclinometer with Analog Outputs |
| AX062008 | Tri-Axial Inclinometer with Single-Axis Gyro, Vertical Mount, SAE J1939 |
| AX062018 | Tri-Axial Inclinometer with Single-Axis Gyro, Extended Dynamic Range, Vertical Mount, SAE J1939 |
| AX064000 | Laser Receiver |
| AX064020 | Laser Receiver Autoenet Controller |
| AXDIO128 | 12 Inputs 8 Outputs |
| AXDIO128-03 | 12 Digital Input, 8 Relay Output Controller |
| AXTC4 | Four Thermocouple Scanner |
| AXTC20 | Twenty Thermocouple Scanner |
| AXRTD8 | Eight RTD Scanner |
| AX080310 | 24V-24V DC-DC Converter with CAN |
| AX090000 | 12V Generic Battery Charger |
| AX090001 | 24V Generic Battery Charger |
| AX090003 | 24V Generic Battery Charger |
| AX090004 | 12V Generic Battery Charger |
| AX090300 | 5A Solar Charger for 12V Battery |
| AX090550 | 12VDC Battery Charger |
| AX090560 | 12/24VDC Battery Charger 15A |
| AX090600 | 24VDC to 14VDC 2A Battery Charger |
| AX090690 | Dual 12V Battery Charger |
| AX100000 | 150A Motor Controller with I-O (Brushed DC, 12V/24VDC) |
| AX100050 | 150A Motor Speed Controller (Brushed DC, 12V/24VDC) |
| AX100100 | Generic 25A DC Motor Controller |
| AX100200 | BLDC Motor Drive (12V/24VDC, 25A) |
| AX100240 | 50W BLDC Controller |
| AX100250 | BLDC Motor Drive (12V/24/48VDC, 40A) |
| AX100260 | 6A 100W BLDC Controller |
| AX100265 | 6A 100W BLDC Controller |
| AX100270 | BLDC and 2 DC Motor Controller |
| AX100280 | 100W 48V BLDC Controller |
| AX100286 | 600W 48V BLDC Controller |
| AX100310 | Universal 25A DC Motor Controller |
| AX100420 | 2 UIn, 1 HBridge, CAN Controller |
| AX100500 | 2 Universal Inputs, 4 HSLS Proportional Outputs, CAN Controller |
| AX100510 | 1 Universal Input, 9 HBridges, CAN Controller |
| AX100520 | 2 UIn, 1 HBridge, CAN Controller |
| AX100600 | 5A Motor Controller |
| AX100700 | 2A Stepper Motor Drive |
| AX100750 | Dual Stepper Motor Drive, 2A, CAN (SAE J1939), 2 AIN, 2 FIN, UOUT, Encoder |
| AX102000 | 35A Bidirectional DC Motor Controller |

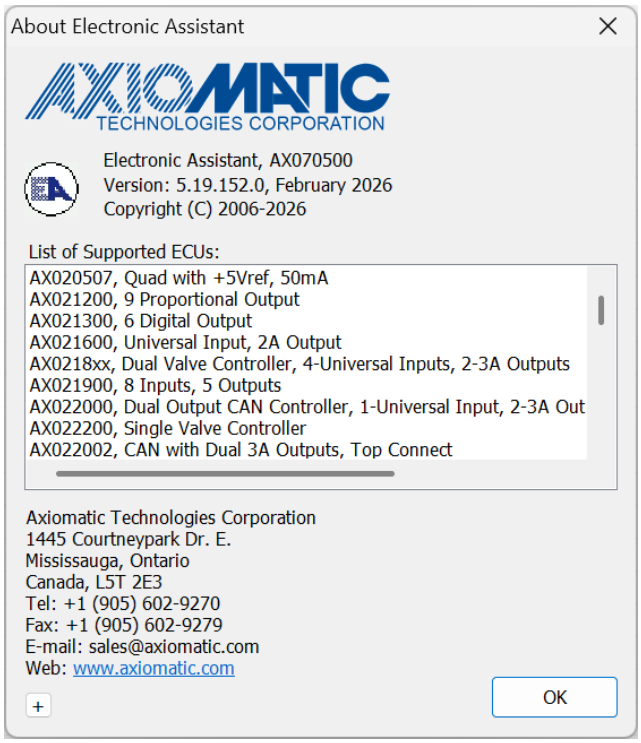
| Axiomatic Part Number | Description |
|---|---|
| AX102100 | 40A Bidirectional DC Motor Controller |
| AX103000 | 3 Universal Inputs, 2 HSLS Proportional Outputs, Safety CAN Controller |
| AX103000A | 3 Universal Inputs, 2 HSLS Proportional Outputs, 5A, Safety CAN Controller |
| AX104001 | Throttle Valve Controller |
| AX105000 | 150A Bi-directional DC Motor Controller |
| AX130410 | LVDT CAN-ENET Simulator |
| AX130500 | Dual Input, Dual Output Signal Controller |
| AX130510 | 2 Inputs, 2 Outputs Isolated Signal Converter |
| AX130510A | 2 Inputs, 2 Outputs Isolated Signal Converter |
| AX130520 | 2 Inputs, 2 Outputs Signal Converter |
| AX130522 | 2 Inputs, 2 Outputs Isolated Signal Converter |
| AX130540 | 2 Inputs, 2 Outputs Isolated Signal Converter |
| AX130550 | 4 AC Inputs to 4 Analog Outputs Controller |
| AX130601 | J1772 Compliant Wake on Charge Module |
| AX130700 | CAN to PWM Output Controller |
| AX130750 | CAN to 1 Relay and 2 Analog Outputs Converter |
| AX130750-01 | CAN to 1 Relay and 2 Analog Outputs Converter, 500kbit/s |
| AX130750-02 | CAN to 1 Relay and 2 Analog Outputs Converter, 1Mbit/s |
| AX130752 | CAN to 1 Relay and 2 Analog Outputs Converter |
| AX130760 | 1 Analog Output Controller with CAN, SAE J1939 |
| AX130770 | CAN to 1 Relay and 2 Analog Outputs Converter |
| AX130770-01 | CAN to 1 Relay and 2 Analog Outputs Converter, 500kbit/s |
| AX130770-02 | CAN to 1 Relay and 2 Analog Outputs Converter, 1Mbit/s |
| AX130780 | 1 Digital Input, 2 HSLS Proportional Outputs 2.5A, 2 Analog Outputs, CAN Controller |
| AX130790 | CAN to 1 Relay and 2 Analog Outputs Controller |
| AX140100 | J1939-J1939-ModbusRTU Converter |
| AX140100-100 | J1939-J1939-ModbusRTU Converter |
| AX140170 | Isolated J1939-J1939-ModbusRTU Converter |
| AX140200 | J1939-CANopen-ModbusRTU Converter |
| AX140201 | J1939, CANopen, J1587 Converter |
| AX140202 | J1939-CANopen-ModbusRTU |
| AX140320 | J1939-J1939-ModbusRTU Converter |
| AX140321 | J1939-CANopen-ModbusRTU Converter |
| AX140322 | J1939-J1939-J1587 Converter |
| AX140400 | J1939, J1939, J1587 Converter |
| AX140401 | J1939, J1939, J1587 Converter |
| AX140402 | J1939, CANopen, J1587 Converter |
| AX140403 | J1939, CANopen, J1587 Converter |
| AX140405 | J1939-CANopen-ModbusRTU |
| AX140406 | J1939, J1939, J1587 Converter |
| AX140510 | PLC to J1939 Protocol Converter |
| AX140600 | LIN - J1939 CAN Converter |
| AX140600-01 | LIN - J1939 CAN Converter (500kbit/s) |
| AX140600-03 | LIN - J1939 CAN Converter |
| AX140601 | LIN - J1939 CAN Converter |
| AX140602 | LIN - J1939 CAN Converter |

| Axiomatic Part Number | Description |
|---|---|
| AX140620 | LIN to CAN Controller, Laser Welded |
| AX140920 | BPS Master Module |
| AX141100 | CAN-Bluetooth Converter and Datalogger |
| AX141120 | 1 Universal Input, Dual CAN RTC Controller |
| AX141150 | CAN-Bluetooth Converter |
| AX141155 | CAN-Bluetooth Converter |
| AX141600 | 6 CAN Ethernet Gateway |
| AX141620 | 9 CAN to Ethernet Gateway |
| AX141810 | RS485-Ethernet-CAN Converter |
| AX141830 | RS485-Ethernet-CAN Converter |
| AX142100 | Protocol Converter |
| AX143020 | 6 Fibre Optic to PWM Receiver, SAE J1939 |
| AX143030 | Fiber Optic RTD Isolator to CAN Module, DIN Rail Mount |
| AX143040 | FO CAN Repeater |
| AX180010 | 7 Universal Inputs, 3 RTD, 2 Universal Outputs Controller |
| AX180300 | Eight Channel RTD Scanner |
| AX180400 | Laser Receiver |
| AX180800 | 20 Thermocouple, 2 RTD, 4 Inputs, 6 Relays Dual CAN Controller |
| AX181000 | 4 TC, 7 Analog, 3 Universal Inputs |
| AX184000 | 12 RTD, 4 Universal Inputs |
| AX184200 | 20 Pt1000 RTD Scanner |
| AX184210 | 20 Pt200 RTD Scanner |
| AX184300 | 2 RTD Input with 1 Universal Input CAN Controller |
| AX185000 | Twenty Channel Thermocouple Scanner |
| AX185000-01 | Twenty Channel Thermocouple Scanner, 500kbit/s |
| AX185000-02 | Twenty Channel Thermocouple Scanner, 1Mbit/s |
| AX185000-10 | Twenty Channel Thermocouple Scanner |
| AX185010 | 20 Thermocouples Scanner, CAN Controller |
| AX186000 | Six Channel Thermocouple Scanner |
| AX188000 | Two Channel Thermocouple Scanner |
| AX189000 | Thermocouple, 2 Universal Input Dual CAN Controller |
| AX200000 | 4 Channel Strain Gauge Controller |
| AX200100 | 12-Channel Strain Gauge with TARE Controller |
| AX200102 | 12-Channel Strain Gauge Controller |
| AX200300 | 4 Channel Strain Gauge, Open Wire Detection, CAN Controller |

Refer to each listed unit *Technical Datasheet* for a detailed description and ratings of the product.

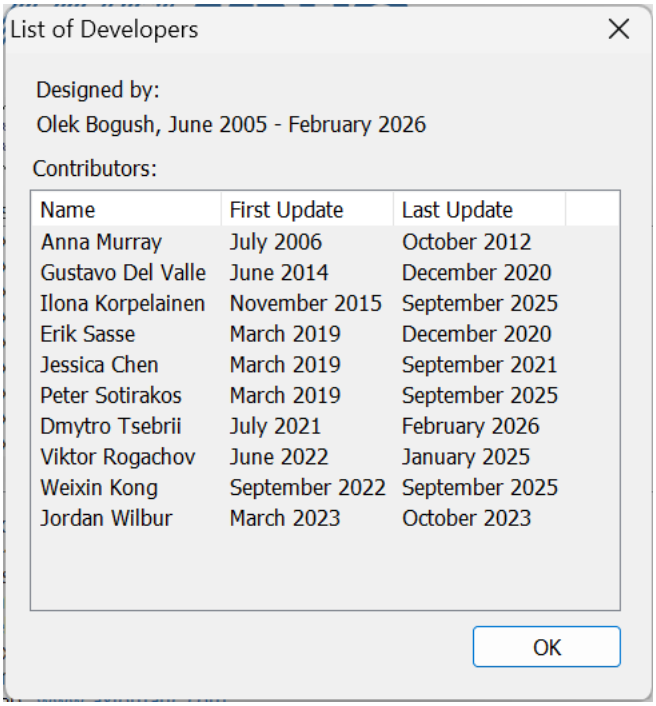
Refer to each listed unit *User Manual* for more information about each configuration parameter and how changing it will affect the performance of the unit.

The user can retrieve the list of supported units from the main menu by selecting: *Help, About Electronic Assistant…*




Remember that wild cards in the unit names may present not all the units from the specified range.

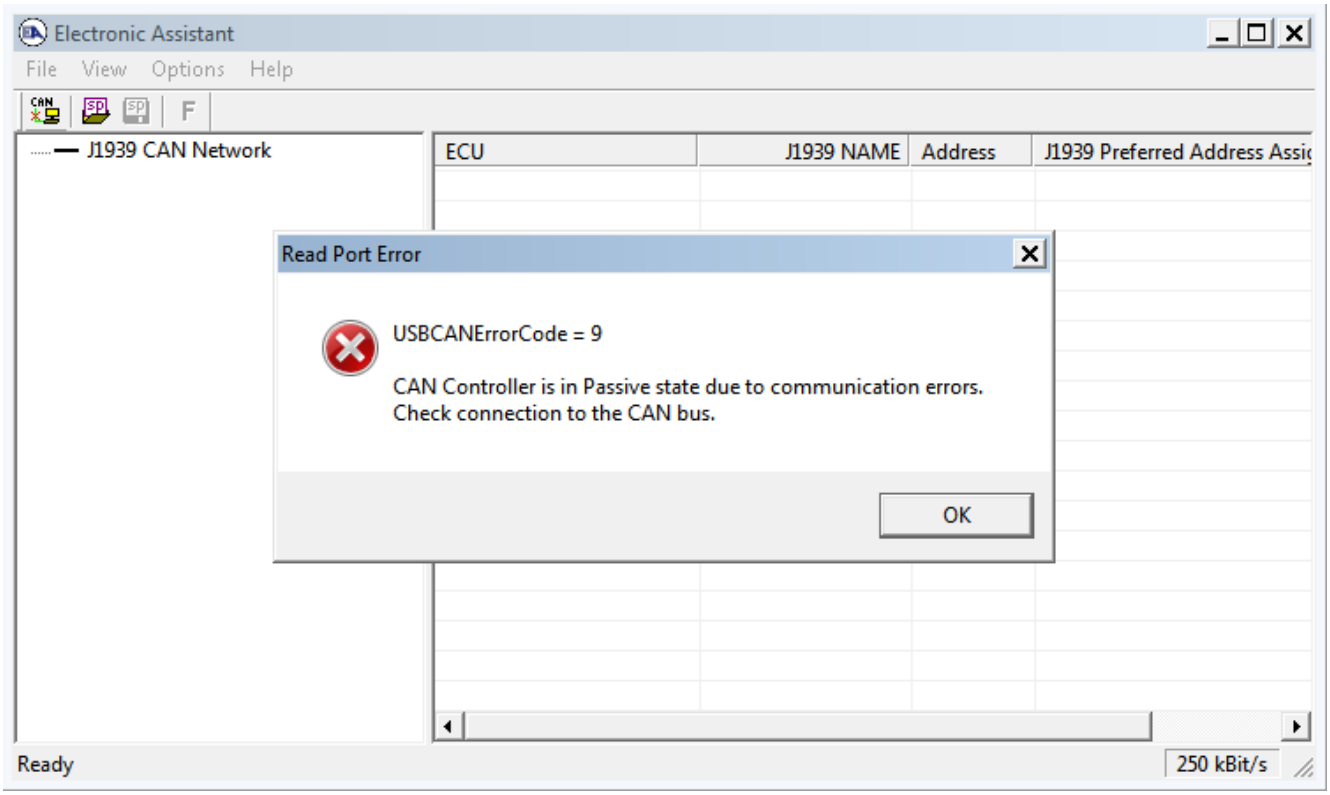
Pressing on the small “+” button in the low-left corner of the *About Electronic Assistant* dialog window will retrieve a list of EA software developers.



# 8 APPENDIX C

## Troubleshooting of the Electronic Assistant

The most common error usually reported by customers when the EA is used together with Axiomatic USB-CAN converters is the following.




The *CAN LED* in AX070501 or the *Status LED* in AX070506 USB-CAN converter lights up constantly red or is blinking intermittently red.

This error means that the CAN bus is not functioning properly. There are several common reasons why it can happen:

- The Axiomatic USB-CAN Converter is not connected to the CAN network.
- The customer ECU is not powered. Remember that power is not delivered over CAN bus.
- Wrong baud rate has been selected. This is valid only for EA versions 4.3.x.x or higher, which allow baud rate selection for the J1939 CAN bus. Please, check the baud rate indicator located on the right side of the status bar (bottom-right side of the EA window). The most commonly used J1939 standard baud rate is 250 kbit/s. All other baud rate values will be displayed in red color to draw the user's attention.
- There are no external 120 Ohm resistors connected to both ends of the CAN bus. Please, remember that according to J1939 standards (J1939/11 and J1939/15) the J1939 CAN bus should have a linear structure with 120Ohm terminating resistors on both ends and the length no more than 40 meters. ECUs are connected to the bus using cable stubs with the length no more than 1 or 3 meters depending on the standard.

If the user only connects the *Axiomatic USB-CAN Converter* to a stand-alone ECU with a short (1-3 m) CAN cable, it is still necessary to install at least one terminating 120 Ohm resistor to provide normal operation of the CAN transceivers.

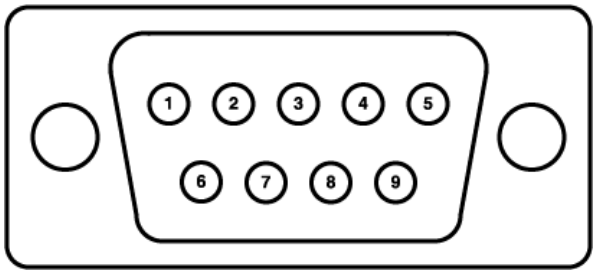
- *CAN High* and *CAN Low* wires on the USB-CAN Converter and the CAN bus are mismatched. It is also possible that a *CAN High* or *CAN Low* wire is wrongfully connected to the ground or to the plus battery terminal.
- Two different CAN networks are using the same physical media. It happens when, for example, J1939 ECU is connected to a bus with a CANopen or proprietary CAN ECU. Please, make sure that only J1939 ECUs are connected to the same CAN bus.
- Electrical noise on the bus. Make sure that the CAN bus does not go nearby powerful sources of EMI: DC motors, vehicle ignition wires, etc. If the shielded CAN cable is used, the shield should be connected at only **one** point in the center of the bus to the system (vehicle) ground in a place with the least electrical noise. The shield should also be connected to the shield terminal of the Axiomatic USB-CAN converter and to the appropriate shield terminals of the ECUs.

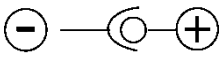
Please remember that after the normal bus operation is restored and the *CAN LED* in AX070501 or the *Status LED* in AX070506 has become green, the user may still receive error messages a couple of times before being able to open the CAN port without getting an error in the EA.

# 9 APPENDIX D

## Axiomatic USB-CAN Converter AX070501

USB-CAN Converter, p/n AX070501, Technical Specifications are presented below.

<table>
<tr><td>CAN Interface</td><td>Differential, Electrically Isolated, 1 Mbit/s</td></tr>
<tr><td>Connections</td><td>USB socket: USB 1.1 or 2.0 full speed (recommended)<br><br>CAN: 9-pole DSUB male (DB-9)<br><br> 

<table>
<tr><th>Pin #</th><th>Signal</th></tr>
<tr><td>7</td><td>CAN_H</td></tr>
<tr><td>2</td><td>CAN_L</td></tr>
<tr><td>3</td><td>CAN_GND</td></tr>
<tr><td>5</td><td>SHIELD</td></tr>
</table>
Figure 2.1. AX070501 DB-9 Pinout.<br><br>If a shielded cable is used, connect the cable shield wire to the SHIELD pin on the CAN connector. Connect CAN_GND pin to the CAN bus ground, if provided.<br><br>Optional External Power: 12VDC, 200 mA or higher, standard power plug, 2.5 mm diameter, positive polarity<br><br>  <br><br>Figure 2.2. AX070501 Power Supply Plug Pinout.</td></tr>
<tr><td>Supply Voltage</td><td>By default, the unit should be powered directly from the USB port (5V).<br><br>External power is only needed if the USB hub on the PC side is not able to provide up to 200 mA current to support the functionality of the converter OR if the user does NOT want to draw power from the USB port in a battery powered computer configuration (i.e. a laptop).</td></tr>
</table>

| | |
|---|---|
| **LED Indicators** | <table><tr><td>USB</td><td>Red/Green</td></tr><tr><td>CAN</td><td>Red/Green</td></tr><tr><td>Power</td><td>Red/Green</td></tr><tr><td>External Power</td><td>Green</td></tr></table><br>Refer to the front panel indicator description table for details. |
| **Microcontroller** | ST Micro ARM 7 family |
| **Dimensions** | ABS enclosure Rose & Bopla P/N EG1250F<br>4.92 x 2.64 x 2.01 inches (L x W x H excluding DB-9 connector)<br>125 x 67 x 51 mm |
| **Weight** | 0.4 lbs (0.18 kg) |
| **Operating Temperature** | -40…75 °C |
| **Environmental Protection Rating** | IP40 |

The USB-CAN Converter, p/n AX070501, has four LED indicators on the front panel. They allow the user to monitor USB and CAN port activities, errors, low-power conditions, etc.

The LED indicators display the internal state of the converter the following way.

| Indicator | Type | State | Description |
|---|---|---|---|
| USB | Bi-color Red/Green | Blank | The USB port is not enumerated, or the converter is in the Suspended Mode. |
| | | Constantly Green | The USB port is enumerated and ready to send/receive data. |
| | | Blinking Green | The USB port is sending/receiving data. |
| | | Constantly Red | The USB cable is detached from the hub or there are errors during USB transmission or reception. |
| | | Blinking Red | Errors during USB transmission/reception. |
| CAN | Bi-color Red/Green | Blank | The CAN port has not been initialized or the converter is in the Suspended Mode. |
| | | Constantly Green | The CAN port has been initialized with a specific baud rate and is ready to communicate. |
| | | Blinking Green | The CAN port is sending/receiving data. |
| | | Blinking Red or Constantly Red | Errors during sending/receiving data through the CAN port. |
| Power | Bi-color Red/Green | Blank | No power or the converter is in the Suspended Mode. |
| | | Constantly Green | The converter power is normal. |
| | | Constantly Red | The converter power is low. External power should be attached if the converter is powered from the USB bus. |
| External Power | Uni-color Green | Blank | The external power is disconnected. |
| | | Constantly Green | The external power is connected. |

To connect the converter to the USB port and the CAN network the following cables can be used.

<table>
<tr><th>Part Number</th><th>Cable Description</th></tr>
<tr><td>CBL-USB-AB-MM-1.5</td><td>Standard generic USB A to B Cable, 5 ft (1.5m)</td></tr>
<tr><td>CAB-AX070501</td><td>A temporarily CAN connection cable.<br><br>A cable with a female DB-9 connector and three loose CAN wires, 12 inches (30 cm) long. Wires have the following marking:<br><br>
<table>
<tr><td>Green (or Red)</td><td>CAN_L</td></tr>
<tr><td>Yellow (or White)</td><td>CAN_H</td></tr>
<tr><td>Black</td><td>CAN_GND</td></tr>
</table>
</td></tr>
</table>

CAB-AX070501 is provided for evaluation purposes only. The user is responsible for connecting the converter to the CAN network using a reliable wire harness with electrical parameters defined by the network.

## 10 VERSION HISTORY

| UM Version | Date | Author | Modifications |
|---|---|---|---|
| 5.19.156 | August 4, 2026 | Ilona Korpelainen, Dmytro Tsebrii, Viktor Rogachov, Jordan Wilbur | Adder support for:<br>• AX030355, RS-232 to CAN Converter with Two Digital Inputs.<br>• AX184210, 20 Pt200 RTD Scanner.<br>• AX143040, FO CAN Repeater.<br>• AX030810, 16 Input, 13 Output, 3 CAN Controller.<br>• AX080310, 24V-24V DC-DC Converter with CAN.<br>Updated support for:<br>• AX103000A, 3 Universal Inputs, 2 HSLS Proportional Outputs, 5A, Safety CAN Controller.<br>• AX100500, 2 Universal Inputs, 4 HSLS Proportional Outputs, CAN.<br>• AX100510, 1 Universal Input, 9 HBridges, CAN Controller.<br>• AX100520, 2 UIn, 1 HBridge, CAN Controller. |
| 5.19.155 | June 2, 2026 | Weixin Kong, Viktor Rogachov | Adder support for:<br>• AX030780, 1 Digital Input, 2 HSLS Proportional Outputs 5.0A, 2 Analog Outputs, CAN Controller.<br>Updated support for:<br>• AX030560, CAN to 4 Analog Outputs Controller.<br>• AX130780, 1 Digital Input, 2 HSLS Proportional Outputs 2.5A, 2 Analog Outputs, CAN Controller.<br>• AX028020, 8 AIN, 4 DIN, 12 DOUT, 2 AOUT, 4 POUT, USB, CAN Controller.<br>• AX100510, 1 Universal Input, 9 HBridges, CAN Controller.<br>• AX130410, LVDT CAN-ENET Simulator. |
| 5.19.154 | April 1, 2026 | Viktor Rogachov, Peter Sotirakos | Adder support for:<br>• AX100520, 2 UIn, 1 HBridge, CAN Controller.<br>• AX130790, CAN to 1 Relay and 2 Analog Outputs Controller.<br>• AX143030, Fiber Optic RTD Isolator to CAN Module, DIN Rail Mount.<br>Updated support for:<br>• AX020800, 8 Proportional 3A Outputs, 4 Universal Inputs, 2 CAN Ports Controller.<br>• AX021400, 12 Input, 14 Output Controller, Dual CAN SAE J1939, Ethernet.<br>• AX030120A, 10 Universal Input, CAN Controller.<br>• AX030430, 2 Universal Input, 2 Isolated Input, 4 Analog Output, Signal Converter, SAE J1939. |
| 5.19.153 | March 5, 2026 | Viktor Rogachov, Dmytro Tsebrii | Added support for:<br>• AX023265, 3 Input, 1 Output CAN Controller.<br>• AX064020, Laser Receiver Autoenet Controller.<br>• AX130410, LVDT CAN-ENET Simulator.<br>• AX185010, 20 Thermocouples Scanner, CAN Controller. |

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| | | | Updated support for:<br>• AX020800, 8 Proportional 3A Outputs, 4 Universal Inputs, 2 CAN Ports Controller.<br>• AX023264, 1 Input, 1 Output, CAN Controller.<br>• AX028020, 8 AIN, 4 DIN, 12 DOUT, 2 AOUT, 4 POUT, USB, CAN Controller.<br>• AX024040, Dual Servo Valve CAN Controller.<br>• AX032200, 1 Digital Input, 2 Digital Outputs Controller.<br>• AX100500, 2 Universal Inputs, 4 HSLS Proportional Outputs, CAN Controller.<br>• AX100510, 1 Universal Input, 9 HBridges, CAN Controller.<br>• AX141620, 9 CAN to Ethernet Gateway. |
| 5.19.152 | February 3, 2026 | Dmytro Tsebrii, Olek Bogush | Added support for:<br>• AX031510, 4 Magnetic Pick-Up Inputs to CAN Controller.<br>Updated support for:<br>• AX030440, 4 Universal Inputs, 5V/8V Voltage Reference, CAN Controller.<br>• AX030140, 3 Encoder, 7 Signal Inputs Controller, CAN Isolated.<br>• AX020420, 12 Universal Inputs to 12 Proportional Outputs, J1939 Controller.<br>Updated Axiomatic logo. Updated Axiomatic address on the front page. |
| 5.18.151 | November 4, 2025 | Dmytro Tsebrii | Added support for:<br>• AX031300, 10 LED Output Driver with CAN. |
| 5.18.150 | September 12, 2025 | Weixin Kong, Peter Sotirakos, Dmytro Tsebrii, Ilona Korpelainen | Added support for:<br>• AX130780, 1 Digital Input, 2 HSLS Proportional Outputs 2.5A, 2 Analog Outputs, CAN Controller.<br>• AX021400, 12 Input, 14 Output Controller, Dual CAN SAE J1939, Ethernet.<br>• AX140620, LIN to CAN Controller, Laser Welded.<br>Updated support for:<br>• AX020200, Dual Output Valve Controller with CAN.<br>• AX021210A, 10 Output CAN Controller.<br>• AX030540, CAN to 4 Analog Outputs Controller.<br>• AX030590, CAN to 12 Analog Outputs Controller.<br>• AX031200B, Multi-Function IO Module 48-pin.<br>• AX031950, Bipolar Input, Relay Output and Analog Output with NFC.<br>• AX130510A, 2 Inputs, 2 Outputs Isolated Signal Converter.<br>• AX184300, 2 RTD Input with 1 Universal Input CAN Controller.<br>• AX200102, 12-Channel Strain Gauge Controller.<br>• AX030430, 2 Universal Input, 2 Isolated Input, 4 Analog Output, Signal Converter, SAE J1939. |

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| | | | • AX200300, 4 Channel Strain Gauge, Open Wire Detection, CAN Controller.<br>• AX031855, 10 Digital Inputs, 8 Discrete Outputs, 1 Analog Output Controller.<br>• AX020530, 7 Inputs, 5 Outputs Valve Controller.<br>• AX102100, 40A Bidirectional DC Motor Controller.<br>• AX140320, J1939-J1939-ModbusRTU Converter.<br>• AX140321, J1939-CANopen-ModbusRTU Converter.<br>• AX140322, J1939-J1939-J1587 Converter. |
| 5.18.149 | July 2, 2025 | Peter Sotirakos | Updated support for:<br>• AX031700, Single Input Controller with CAN.<br>• AX030120A, 10 Universal Input, CAN Controller. |
| 5.18.148 | June 3, 2025 | Dmytro Tsebrii, Peter Sotirakos, Weixin Kong | Added support for:<br>• AX103000A, 3 Universal Inputs, 2 HSLS Proportional Outputs, 5A, Safety CAN Controller.<br>• AX030590, CAN to 12 Analog Outputs Controller.<br>• AX031600, CAN to 2 LED Outputs Controller.<br>• AX130510A, 2 Inputs, 2 Outputs Isolated Signal Converter.<br>Updated support for:<br>• AX020420, 12 Universal Inputs to 12 Proportional Outputs, J1939 Controller.<br>• AX103000, 3 Universal Inputs, 2 HSLS Proportional Outputs, Safety CAN Controller.<br>• AX030430, 2 Universal Input, 2 Isolated Input, 4 Analog Output, Signal Converter, SAE J1939<br>• AX031855, 10 Digital Input, 8 Discrete Output, 1 Analog Output Controller.<br>• AX030800, 1 Input, 1 Output, Isolated Signal Converter.<br>• AX200300, 4 Channel Strain Gauge, Open Wire Detection, CAN Controller.<br>• AX030120A, 10 Universal Input, CAN Controller.<br>• AX030540, CAN to 4 Analog Outputs Controller.<br>• AX031950, Bipolar Input, Relay Output and Analog Output with NFC.<br>• AX032160, 6 Digital Input Controller with Dual CAN, SAE J1939. |
| 5.18.147 | March 3, 2025 | Peter Sotirakos | Added support for:<br>• AX030430, 2 Universal Input, 2 Isolated Input, 4 Analog Output, Signal Converter, SAE J1939.<br>• AX031855, 10 Digital Inputs, 8 Discrete Outputs, 1 Analog Output Controller.<br>Updated support for:<br>• AX030800, 1 Input, 1 Output, Isolated Signal Converter.<br>• AX031700, Single Input Controller with CAN.<br>• AX030120A, 10 Universal Input, CAN Controller. |

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| 5.18.146 | January 10, 2025 | Viktor Rogachov, Olek Bogush | Added support for:<br>• AX100510, 1 Universal Input, 9 HBridges, CAN Controller.<br>• AX020800, 8 Proportional 3A Outputs, 4 Universal Inputs, 2 CAN Ports Controller.<br>• AX024040, Dual Servo Valve CAN Controller.<br>Updated support for:<br>• AX100420, 2 UIn, 1 HBridge, CAN Controller.<br>• AX100500, 2 Universal Inputs, 4 HSLS Proportional Outputs, CAN Controller.<br>• AX023264, 1 Input, 1 Output, CAN Controller.<br>• AX180010, 7 Universal Inputs, 3 RTD, 2 Universal Outputs Controller.<br>• AX028020, 8 AIN, 4 DIN, 12 DOUT, 2 AOUT, 4 POUT, USB, CAN Controller.<br>Added protection from entering illegal PGNs in PGN dialog controls. The user will see a warning message if PGN is reserved. |
| 5.18.145 | December 5, 2024 | Weixin Kong, Ilona Korpelainen, Dmytro Tsebrii | Added support for:<br>• AX141155, CAN-Bluetooth Converter.<br>• AX184300, 2 RTD Input with 1 Universal Input CAN Controller.<br>• AX141600, 6 CAN Ethernet Gateway.<br>Updated support for:<br>• AX140321, J1939-CANopen-ModbusRTU Converter.<br>• AX021210A, 10 Output CAN Controller.<br>• AX020600, 4 Output CAN Controller.<br>• AX031950, Bipolar Input, Relay Output and Analog Output with NFC.<br>• AX130760, 1 Analog Output Controller with CAN, SAE J1939.<br>• AX032160, 6 Digital Input Controller with Dual CAN, SAE J1939. |
| 5.18.144 | August 6, 2024 | Viktor Rogachov, Peter Sotirakos, Weixin Kong, Olek Bogush | Added support for:<br>• AX028020, 8 AIN, 4 DIN, 12 DOUT, 2 AOUT, 4 POUT, USB, CAN Controller.<br>• AX141620, 9 CAN to Ethernet Gateway.<br>• AX030800, 1 Input, 1 Output, Isolated Signal Converter.<br>• AX100500, 2 Universal Inputs, 4 HSLS Proportional Outputs, CAN Controller. Originally released in V5.18.144 as AX100510. AX100510 was changed to AX100500 in V5.18.146.<br>• AX100420, 2 UIn, 1 HBridge, CAN Controller.<br>• AX023264, 1 Input, 1 Output, CAN Controller.<br>Updated support for:<br>• AX031850, Twelve Digital Inputs, Eight Discrete Outputs, Cinch Connector. |

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| | | | • AX031800, Twelve Digital Inputs, Eight Discrete Outputs Controller.<br>• AX021210A, 10 Output CAN Controller.<br>• AX032120, CAN to 4 Analog Outputs Controller.<br>• AX032160, 6 Digital Input Controller with Dual CAN, SAE J1939.<br>Added a list of EA software developers to the *About Electronic Assistant* dialog. |
| 5.17.143 | May 6, 2024 | Peter Sotirakos, Ilona Korpelainen, Olek Bogush | Added support for:<br>• AX030120A, 10 Universal Input, CAN Controller.<br>• AX064000, Laser Receiver.<br>• AX180300, Eight Channel RTD Scanner.<br>Updated support for:<br>• AX200300, 4 Channel Strain Gauge, Open Wire Detection, CAN Controller.<br>Updated *Software Installation*, *USB-CAN Drivers* subsection. |
| 5.17.142 | March 4, 2024 | Dmytro Tsebrii | Added support for:<br>• AX020420, 12 Universal Inputs to 12 Proportional Outputs, J1939 Controller.<br>Updated support for:<br>• AX029000, 10-Output Valve Ethernet Driver. |
| 5.17.141A | February 21, 2024 | Olek Bogush | Updated *USB-CAN Converters, Electronic Assistant Kits*, and *Software Installation* sections. Updated *Appendix A*. |
| 5.17.141 | February 2, 2024 | Ilona Korpelainen, Viktor Rogachov | Updated support for:<br>• AX100250, BLDC Motor Drive (12V/24/48VDC, 40A).<br>• AX140510, PLC to J1939 Protocol Converter.<br>• AX100750, Dual Stepper Motor Drive, 2A, CAN (SAE J1939), 2 AIN, 2 FIN, UOUT, Encoder. |
| 5.17.140 | January 8, 2024 | Weixin Kong, Dmytro Tsebrii, Olek Bogush | Added support for:<br>• AX020600, 4 Output CAN Controller.<br>• AX021210A, 10 Output CAN Controller.<br>• AX032160, 6 Digital Input Controller with Dual CAN, SAE J1939.<br>Updated support for:<br>• AX130760, 1 Analog Output Controller with CAN, SAE J1939.<br>• AX028010, 12 Universal Inputs, 12 Universal Outputs, CAN, Ethernet, Modbus Controller.<br>• AX180800, 20 Thermocouple, 2 RTD, 4 Inputs, 6 Relays Dual CAN Controller.<br>Added support for 125 kbit/s baud rate. Changed colour of the 500kbit/s baud rate from red to blue in the EA status bar. |
| 5.16.139 | December 6, 2023 | Ilona Korpelainen, Olek Bogush | Updated support for:<br>• AX024000, Servo Controller.<br>In the user manual, replaced Axiomatic USB-CAN converter p/n AX070505 with AX070506. Replaced the Axiomatic USB-CAN converter kit p/n AX070505K with AX070506K. |

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| 5.16.138 | October 4, 2023 | Weixin Kong, Jordan Wilbur, Olek Bogush | Added support for:<br>• AX130760, 1 Analog Output Controller with CAN, SAE J1939.<br>• AX030450, 4 Universal Inputs, 5V 8V Voltage Reference with Feedback, CAN Controller.<br>In the user manual:<br>• Added AX41200, Wi-Fi to CAN Converter, in *Appendix A*.<br>• Performed minor corrections in descriptions of: AX030200, AX031200, AX031200B, AXDIO128, AX100000. |
| 5.16.137 | August 1, 2023 | Dmytro Tsebrii, Ilona Korpelainen, Weixin Kong, Peter Sotirakos, Olek Bogush | Added support for:<br>• AX103000, 3 Universal Inputs, 2 HSLS Proportional Outputs, Safety CAN Controller.<br>• AX028010, 12 Universal Inputs, 12 Universal Outputs, CAN, Ethernet, Modbus Controller.<br>Updated support for:<br>• AX185000-10, Twenty Channel Thermocouple Scanner.<br>• AX031950, Bipolar Input, Relay Output and Analog Output with NFC;<br>• AX200300, 4 Channel Strain Gauge, Open Wire Detection, CAN Controller;<br>• AX030440, 4 Universal Inputs 5V/8V Voltage Reference, CAN Controller;<br>• AX130750, CAN to 1 Relay and 2 Analog Outputs Converter;<br>• AX130750-01, CAN to 1 Relay and 2 Analog Outputs Converter, 500kbit/s;<br>• AX130750-02, CAN to 1 Relay and 2 Analog Outputs Converter, 1Mbit/s;<br>• AX130770, CAN to 1 Relay and 2 Analog Outputs Converter;<br>• AX130770-01, CAN to 1 Relay and 2 Analog Outputs Converter, 500kbit/s;<br>• AX130770-02, CAN to 1 Relay and 2 Analog Outputs Converter, 1Mbit/s.<br>• AX021910, 8 Inputs, 5 Outputs CAN Controller.<br>Updated ACRONYMS section. |
| 5.16.136 | June 7, 2023 | Ilona Korpelainen, Weixin Kong, Dmytro Tsebrii | Added support for:<br>• AX030350, RS-232 to CAN Converter with Two Digital Inputs.<br>• AX184200, 20 Pt1000 RTD Scanner.<br>• AX185000-10, Twenty Channel Thermocouple Scanner.<br>Updated support for:<br>• AX020530, 7 Inputs, 5 Outputs Valve Controller.<br>• AX130510, 2 Inputs, 2 Outputs Isolated Signal Converter.<br>• AX020200, Dual Output Valve Controller with CAN. |

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| | | | • AX022420, Four Inputs, Two Outputs Universal Valve Controller.<br>• AX130752, CAN to 1 Relay and 2 Analog Outputs Converter. |
| 5.16.135 | March 7, 2023 | Jordan Wilbur, Olek Bogush | Added support for:<br>• AX090690, Dual 12V Battery Charger.<br>• AX143020, 6 Fibre Optic to PWM Receiver, SAE J1939.<br>Updated Axiomatic business address in *About Electronic Assistant* dialog window.<br>In the user manual, updated the title page with Canadian business address. Removed fax number from Finnish business address. |
| 5.16.134 | February 2, 2023 | Dmytro Tsebrii, Peter Sotirakos | Added support for:<br>• AX031200B, Multi-Function IO Module 48-pin.<br>Updated support for:<br>• AX200300, 4 Channel Strain Gauge, Open Wire Detection, CAN Controller.<br>• AX031200, Multi-Function IO Module 48-pin. |
| 5.16.133 | January 4, 2023 | Olek Bogush | Added support for *Axiomatic Ethernet-CAN Converters* with internal routing to the selected CAN channel. Updated CAN Interface Setup dialog window. In the user manual, updated *Connecting to J1939 CAN* subsection, *Appendix A List of Supported Hardware Converters.* |
| 5.15.133 | December 6, 2022 | Weixin Kong, Dmytro Tsebrii | Added support for:<br>• AX030560, CAN to 4 Analog Outputs Controller.<br>• AX021910, 8 Inputs, 5 Outputs CAN Controller.<br>• AX130752, CAN to 1 Relay and 2 Analog Outputs Converter.<br>Updated support for:<br>• AX200102, 12-Channel Strain Gauge Controller. |
| 5.15.132 | October 3, 2022 | Ilona Korpelainen, Dmytro Tsebrii, Peter Sotirakos | Added support for:<br>• AX032120, 2 Bipolar, 8 Universal Signal Input Controller, CAN, 2x5V Ref, DIN.<br>Updated support for:<br>• AX130510, 2 Inputs, 2 Outputs Isolated Signal Converter.<br>• AX200300, 4 Channel Strain Gauge, Open Wire Detection, CAN Controller. |
| 5.15.131 | September 2, 2022 | Ilona Korpelainen, Weixin Kong, Viktor Rogachov | Added support for:<br>• AX020512, 6 Inputs, 5 Outputs Valve Controller.<br>• AX140170, Isolated J1939-J1939-ModbusRTU Converter.<br>• AX140320, J1939-J1939-ModbusRTU Converter.<br>• AX140321, J1939-CANopen-ModbusRTU Converter.<br>• AX140322, J1939-J1939-J1587 Converter.<br>• AX030570, 1 Resistive Output CAN Controller.<br>• AX100750, Dual Stepper Motor Drive, 2A, CAN (SAE J1939), 2 AIN, 2 FIN, UOUT, Encoder. |

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| | | | Updated support for:<br>• AX020400, 12 Inputs, 12 Outputs Valve Controller.<br>• AX140400, J1939, J1939, J1587 Converter. |
| 5.15.130 | July 4, 2022 | Dmytro Tsebrii, Viktor Rogachov | Added support for:<br>• AX180010, 7 Universal Inputs, 3 RTD, 2 Universal Outputs Controller.<br>Updated support for:<br>• AX032200, 1 Digital Input, 2 Digital Outputs Controller.<br>• AX189000, Thermocouple, 2 Universal Input Dual CAN Controller.<br>• AX031200, Multi-Function IO Module 48-pin.<br>• AX030440, 4 Universal Inputs, 5V/8V Voltage Reference, CAN Controller. |
| 5.15.129 | June 3, 2022 | Viktor Rogachov, Olek Bogush | Added support for:<br>• AX032200, 1 Digital Input, 2 Digital Outputs Controller.<br>Updated support for:<br>• AX029000, 10-Output Valve Ethernet Driver.<br>Updated *Driver Installation* section with information on how to disable HVCI. |
| 5.15.128 | May 5, 2022 | Dmytro Tsebrii, Olek Bogush | Updated support for:<br>• AX030440, 4 Universal Inputs, 5V/8V Voltage Reference, CAN Controller.<br>In User Manual, added Axiomatic USB-CAN converter p/n AX070505 and converter kit, p/n AX070505K. Updated USB-CAN converter references throughout the document. Moved AX070501 technical description to Appendix D. |
| 5.15.127 | April 4, 2022 | Dmytro Tsebrii, Ilona Korpelainen, Olek Bogush | Updated support for:<br>• AX030440, 4 Universal Inputs, 5V/8V Voltage Reference, CAN Controller.<br>Updated AX030120 and AX030130 ECU names. New names are used throughout this manual.<br>Removed support for Windows 2000. |
| 5.15.126 | March 3, 2022 | Ilona Korpelainen, Peter Sotirakos | Added support for:<br>• AX020530, 7 Inputs, 5 Outputs Valve Controller.<br>Updated support for:<br>• AX030120, 10 Universal Signal Input CAN Controller.<br>• AX030120-01, 10 Universal Signal Input CAN Controller (500kbit/s).<br>• AX030120-02, 10 Universal Signal Input CAN Controller (1Mbit/s).<br>• AX130540, 2 Inputs, 2 Outputs Isolated Signal Converter.<br>• AX189000, Thermocouple, 2 Universal Input Dual CAN Controller. |
| 5.15.125 | February 3, 2022 | Dmytro Tsebrii | Added support for:<br>• AX180800, 20 Thermocouple, 2 RTD, 4 Inputs, 6 Relays Dual CAN Controller.<br>Updated support for: |

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| | | | • AX023210, Fan Drive Controller;<br>• AX130750, CAN to 1 Relay and 2 Analog Outputs Converter.<br>• AX130750-01, CAN to 1 Relay and 2 Analog Outputs Converter, 500kbit/s.<br>• AX130750-02, CAN to 1 Relay and 2 Analog Outputs Converter, 1Mbit/s.<br>• AX130770, CAN to 1 Relay and 2 Analog Outputs Converter.<br>• AX130770-01, CAN to 1 Relay and 2 Analog Outputs Converter, 500kbit/s.<br>• AX130770-02, CAN to 1 Relay and 2 Analog Outputs Converter, 1Mbit/s.<br>• AX100310, Universal 25A DC Motor Controller.<br>• AX180800, 20 Thermocouple, 2 RTD, 4 Inputs, 6 Relays Dual CAN Controller.<br>Updated support for customer specific controllers.<br>Updated ECU NAME field assignments. |
| 5.15.124 | January 10, 2022 | Ilona Korpelainen, Olek Bogush | Added support for:<br>• AX100286, 600W 48V BLDC Controller.<br>Updated AX032100 name to: “AX032100, 2 Bipolar, 8 Universal Signal Input Controller, CAN, Ethernet, 2x5V Ref, DIN”. |
| 5.15.123 | December 1, 2021 | Dmytro Tsebrii | Updated support for:<br>• AX130750, CAN to 1 Relay and 2 Analog Outputs Converter.<br>• AX130750-01, CAN to 1 Relay and 2 Analog Outputs Converter, 500kbit/s.<br>• AX130750-02, CAN to 1 Relay and 2 Analog Outputs Converter, 1Mbit/s.<br>• AX130770, CAN to 1 Relay and 2 Analog Outputs Converter.<br>• AX130770-01, CAN to 1 Relay and 2 Analog Outputs Converter, 500kbit/s.<br>• AX130770-02, CAN to 1 Relay and 2 Analog Outputs Converter, 1Mbit/s. |
| 5.15.122 | November 1, 2021 | Ilona Korpelainen, Dmytro Tsebrii | Added support for:<br>• AX023240, Quadrature Decoder Input, Dual Valve Controller, High Temperature, SAE J1939;<br>Updated support for:<br>• AX023300, 2 Inputs, 2 Outputs Valve Controller.<br>• AX130520, 2 Inputs, 2 Outputs Signal Converter.<br>• AX030440, 4 Universal Inputs, 5V/8V Voltage Reference, CAN Controller. |
| 5.15.121 | October 1, 2021 | Dmytro Tsebrii | Updated support for:<br>• AX030440, 4 Universal Inputs, 5V/8V Voltage Reference, CAN Controller. |

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| | | | • AX030140, 3 Encoder, 7 Signal Inputs Controller, CAN Isolated.<br>• AX130550, 4 AC Inputs to 4 Analog Outputs Controller.<br>Added support for a customer specific controller. |
| 5.15.120 | September 3, 2021 | Dmytro Tsebrii, Ilona Korpelainen, Peter Sotirakos, Jessica Chen | Added support for:<br>• AX102100, 40A Bidirectional DC Motor Controller.<br>• AX141810, RS485-Ethernet-CAN Converter.<br>• AX141830, RS485-Ethernet-CAN Converter.<br>• AX030440, 4 Universal Inputs, 5V/8V Voltage Reference, CAN Controller.<br>• AX200300, 4 Channel Strain Gauge, Open Wire Detection, CAN Controller.<br>• AX189000, Thermocouple, 2 Universal Input Dual CAN Controller.<br>Updated support for:<br>• AX100260, 6A 100W BLDC Controller.<br>• AX100270, BLDC and 2 DC Motor Controller.<br>• AX130510, 2 Inputs, 2 Outputs Isolated Signal Converter.<br>• AX181000, 4 TC, 7 Analog, 3 Universal Inputs.<br>• AX141120, 1 Universal Input, Dual CAN RTC Controller. |
| 5.15.119 | August 3, 2021 | Dmytro Tsebrii | Added support for:<br>• AX141120, 1 Universal Input Dual CAN RTC Controller.<br>Updated support for:<br>• AX031500, Magnetic Pick-up Input with CAN;<br>• AX100310, Universal 25A DC Motor Controller. |
| 5.15.118 | June 5, 2021 | Jessica Chen, Dmytro Tsebrii Olek Bogush | Added support for:<br>• AX030540, CAN to 4 Analog Outputs Controller;<br>• AX130550, 4 AC Inputs to 4 Analog Outputs Controller.<br>Updated License Agreement. |
| 5.15.117A | June 1, 2021 | Olek Bogush | Removed registered trademark symbol ® from Electronic Assistant throughout the document. |
| 5.15.117 | March 2, 2021 | Ilona Korpelainen, Peter Sotirakos, Olek Bogush | Added support for:<br>• AX100280, 100W 48V BLDC Controller;<br>• AX140510, PLC to J1939 Protocol Converter;<br>• AX142100, Protocol Converter;<br>• AX022950, 7 Digital Inputs, 6 Digital Outputs, 4 LED Outputs Controller.<br>Updated support for:<br>• AX023300, 2 Inputs, 2 Outputs Valve Controller;<br>• AX023302, A061D644, 2 Inputs, 2 Outputs Controller;<br>• AX100260, 6A 100W BLDC Controller;<br>• AX104001, Throttle Valve Controller;<br>• AX105000, 150A Bi-directional DC Motor Controller;<br>• AX140400, J1939, J1939, J1587 Converter; |

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| | | | • AX184000, 12 RTD, 4 Universal Inputs;<br>• AX186000, Six Channel Thermocouple Scanner.<br>Removed support for AX140501, PLC to J1939 Protocol Converter. It was replaced with AX140510.<br>Updated AX032100 name to “2 Bipolar, 8 Universal Signal Input Controller, CAN (SAE J1939), Ethernet (Modbus TCP/IP), Two +5V Ref, DIN”. |
| 5.15.116 | February 1, 2021 | Ilona Korpelainen | Added support for:<br>• AX022460, Two Bipolar Inputs, Four Pulse Valve Outputs Controller;<br>• AX100240, 50W BLDC Controller;<br>• AX130522, 2 Inputs, 2 Outputs Isolated Signal Converter;<br>• AX188000, Two Channel Thermocouple Scanner.<br>Updated support for:<br>• AX104001, Throttle Valve Controller;<br>• AX130520, 2 Inputs, 2 Outputs Signal Converter;<br>• AX130540, 2 Inputs, 2 Outputs Isolated Signal Converter;<br>• AX140100, J1939-J1939-ModbusRTU Converter;<br>• AX140200, J1939-CANopen-ModbusRTU Converter;<br>• AX140400, J1939, J1939, J1587 Converter. |
| 5.15.115 | December 16, 2020 | Gustavo Del Valle, Peter Sotirakos, Erik Sasse | Added support for:<br>• AX030140, 3 Encoder, 7 Signal Inputs Controller, CAN Isolated;<br>• AX100310, Universal 25A DC Motor Controller;<br>• AX030550, Isolated Dual CAN to Sine or Square Output;<br>• AX029000, 10-Output Valve Ethernet Driver.<br>Updated support for customer specific inclinometers. |
| 5.15.114 | November 2, 2020 | Jessica Chen | Added support for:<br>• AX030600, 6 Universal Signal Input Controller, SAE J1939, Ethernet. |
| 5.15.113 | June 17, 2020 | Olek Bogush | Added support for:<br>• AX032100, 2 Bipolar, 8 Universal Signal Input Controller, SAE J1939, Ethernet. |
| 5.15.112 | June 1, 2020 | Gustavo Del Valle | Updated support for:<br>• AX031705, Single Input Controller with CAN.<br>Added and updated support for customer specific inclinometers. |
| 5.15.111 | April 1, 2020 | Ilona Korpelainen | Updated support for:<br>• AX024000, Servo Controller;<br>• AX024010, DIN Rail Servo Controller. |
| 5.15.110 | March 17, 2020 | Ilona Korpelainen | Added support for:<br>• AX105000, 150A Bi-directional DC Motor Controller;<br>• AX186000, Six Channel Thermocouple Scanner. |
| 5.15.109 | February 3, 2020 | Jessica Chen, | Added support for:<br>• AX090550, 12VDC Battery Charger; |

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| | | Ilona Korpelainen, Peter Sotirakos | • AX090560, 12/24VDC Battery Charger 15A.<br>Updated support for:<br>• AX130510, 2 Inputs, 2 Outputs Isolated Signal Converter;<br>• AX130520, 2 Inputs, 2 Outputs Signal Converter;<br>• AX130540, 2 Inputs, 2 Outputs Isolated Signal Converter;<br>• AX130700, CAN to PWM Output Controller;<br>• AX130750, CAN to 1 Relay and 2 Analog Outputs Converter;<br>• AX130750-01, CAN to 1 Relay and 2 Analog Outputs Converter, 500kbit/s;<br>• AX130750-02, CAN to 1 Relay and 2 Analog Outputs Converter, 1Mbit/s;<br>• AX130770, CAN to 1 Relay and 2 Analog Outputs Converter;<br>• AX130770-01, CAN to 1 Relay and 2 Analog Outputs Converter, 500kbit/s;<br>• AX130770-02, CAN to 1 Relay and 2 Analog Outputs Converter, 1Mbit/s. |
| 5.15.108 | December 13, 2019 | Olek Bogush | Updated support for:<br>• AX061000, Tri-Axial J1939 CAN Inclinometer with Analog Outputs;<br>• AX140600-03, LIN - J1939 CAN Converter.<br>Added 667 kbit/s baud rate support. Updated *Connecting to J1939 CAN* subsection. |
| 5.14.107 | November 1, 2019 | Ilona Korpelainen | Updated support for:<br>• AX102000, 35A Bidirectional DC Motor Controller;<br>• AX184000, 12 RTD, 4 Universal Inputs. |
| 5.14.106 | October 3, 2019 | Gustavo Del Valle, Jessica Chen, Ilona Korpelainen, Erik Sasse | Added support for:<br>• AX031705, Single Input Controller with CAN;<br>• AX031950, Bipolar Input, Relay Output and Analog Output with NFC;<br>• AX130750, CAN to 1 Relay and 2 Analog Outputs Converter;<br>• AX130750-01, CAN to 1 Relay and 2 Analog Outputs Converter, 500kbit/s;<br>• AX130750-02, CAN to 1 Relay and 2 Analog Outputs Converter, 1Mbit/s;<br>• AX130770, CAN to 1 Relay and 2 Analog Outputs Converter;<br>• AX130770-01, CAN to 1 Relay and 2 Analog Outputs Converter, 500kbit/s;<br>• AX130770-02, CAN to 1 Relay and 2 Analog Outputs Converter, 1Mbit/s;<br>• AX030130, 10 Universal Signal Input with 5V Reference Output; |

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| | | | • AX030130-01, 10 Universal Signal Input with 5V Reference Output, 500kbit/s;<br>• AX030130-02, 10 Universal Signal Input with 5V Reference Output, 1Mbit/s;<br>• AX185000, Twenty Channel Thermocouple Scanner;<br>• AX185000-01, Twenty Channel Thermocouple Scanner, 500kbit/s;<br>• AX185000-02, Twenty Channel Thermocouple Scanner, 1Mbit/s;<br>• AX031850, Twelve Digital Inputs, Eight Discrete Outputs, Cinch Connector;<br>• AX031850-01, Twelve Digital Inputs, Eight Discrete Outputs, Cinch Connector, 500kbit/s;<br>• AX031850-02, Twelve Digital Inputs, Eight Discrete Outputs, Cinch Connector, 1Mbit/s;<br>• AX031800-01, Twelve Digital Inputs, Eight Discrete Outputs Controller, 500kbit/s;<br>• AX031800-02, Twelve Digital Inputs, Eight Discrete Outputs Controller, 1Mbit/s;<br>Updated support for:<br>• AX020200, Dual Output Valve Controller with CAN;<br>• AX031800, Twelve Digital Inputs, Eight Discrete Outputs Controller;<br>• AX020510, Valve Controller, 6 Inputs, 5 Outputs;<br>• AX031200, Multi-Function IO Module 48-pin;<br>• AX030310, 18 Digital Input to CAN Controller.<br>Updated EA names for AX030210, AX100270, AX102000, AX140920, AX141100, AX141150. |
| 5.14.105 | August 6, 2019 | Olek Bogush | Updated support for:<br>• AX060800, AX060830, Tri-Axial J1939 CAN Inclinometer – Two M12 Connectors, Both CAN;<br>• AX060806, AX060810, Tri-Axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector;<br>• AX060807, AX060811, Tri-Axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector with CAN Termination;<br>• AX061000, Tri-Axial J1939 CAN Inclinometer with Analog Outputs;<br>• AX060900, Tri-Axial Gyro Inclinometer, SAE J1939;<br>• AX060910, Tri-Axial Gyro Inclinometer with Extended Dynamic Range, SAE J1939;<br>• AX062008, Tri-Axial Inclinometer with Single-Axis Gyro, Vertical Mount, SAE J1939;<br>• AX062018, Tri-Axial Inclinometer with Single-Axis Gyro, Extended Dynamic Range, Vertical Mount, SAE J1939;<br>• AX060700, Tri-Axial J1939 CAN Inclinometer with Gyro. Two M12 Connectors, Both CAN; |

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| | | | • AX060701, Tri-Axial J1939 CAN Inclinometer with Gyro. Two M12 Connectors, CAN, 4 Analog Outputs;<br>• AX060702, Tri-Axial J1939 CAN Inclinometer with Gyro. Two M12 Connectors, CAN, RS-232. |
| 5.14.104 | July 2, 2019 | Ilona Korpelainen | Added support for:<br>• AX0224400, Two Bipolar Inputs, Two Universal Inputs, Two Proportional Outputs Controller;<br>Updated support for:<br>• AX030310, 18 Digital Input to CAN Controller;<br>• AX140100, J1939-J1939-ModbusRTU Converter;<br>• AX140200, J1939-CANopen-ModbusRTU Converter;<br>• AX140400, J1939, J1939, J1587 Converter. |
| 5.14.103 | June 18, 2019 | Olek Bogush | Updated *Using the Electronic Assistant* section. Updated *Multiple ECU Instances* subsection. Added *Changing ECU Address* subsections.<br>Updated figures in *USB-CAN Converter* section. |
| 5.13.103 | June 3, 2019 | Olek Bogush | Updated support for:<br>• AX060800, AX060830, Tri-Axial J1939 CAN Inclinometer – Two M12 Connectors, Both CAN;<br>• AX060806, AX060810, Tri-Axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector;<br>• AX060807, AX060811, Tri-Axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector with CAN Termination;<br>• AX061000, Tri-Axial J1939 CAN Inclinometer with Analog Outputs;<br>• AX060900, Tri-Axial Gyro Inclinometer, SAE J1939;<br>• AX060910, Tri-Axial Gyro Inclinometer with Extended Dynamic Range, SAE J1939;<br>• AX062008, Tri-Axial Inclinometer with Single-Axis Gyro, Vertical Mount, SAE J1939;<br>• AX062018, Tri-Axial Inclinometer with Single-Axis Gyro, Extended Dynamic Range, Vertical Mount, SAE J1939;<br>• AX060700, Tri-Axial J1939 CAN Inclinometer with Gyro. Two M12 Connectors, Both CAN;<br>• AX060700-01, Tri-Axial J1939 CAN Inclinometer with Gyro. Two M12 Connectors, Both CAN, 500 kbit/s;<br>• AX060701, Tri-Axial J1939 CAN Inclinometer with Gyro. Two M12 Connectors, CAN, 4 Analog Outputs;<br>• AX060702, Tri-Axial J1939 CAN Inclinometer with Gyro. Two M12 Connectors, CAN, RS-232.<br>Clarified the UM version number rules in *Version History*. |
| 5.13.102 | March 7, 2019 | Erik Sasse, Jessica Chen, Peter Sotirakos, | Added support for:<br>• AX031800, Twelve Digital Inputs, Eight Discrete Outputs Controller;<br>• AX021100, 2.5A Connector Amplifier with CAN;<br>• AX032000, 18-Cell Battery Monitoring System;<br>• AX032050, 16-Cell Battery Monitoring System; |

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| | | Gustavo Del Valle, Ilona Korpelainen | • AX200100, 12-Channel Strain Gauge with TARE Controller;<br>• AX200102, 12-Channel Strain Gauge Controller;<br>Updated support for:<br>• AX031901, Single Digital Input to Dual NC Relay Outputs;<br>• AX200000, 4 Channel Strain Gauge Controller;<br>• AX023300, 2 Inputs, 2 Outputs Valve Controller;<br>• AX024010, DIN Rail Servo Controller;<br>• AX140100, J1939-J1939-ModbusRTU Converter; |
| 5.13.101 | February 1, 2019 | Ilona Korpelainen | Added support for:<br>• AX023302, A061D644, 2 Inputs, 2 Outputs Controller.<br>Updated support for:<br>• AX020410, 12 Inputs, 12 Outputs Valve Controller;<br>• AX030120, 10 Universal Signal Input CAN Controller;<br>• AX030210, 12IN-8SOUT-1RLYOUT (12 Input, 8 Signal Output & 1 Relay Output Controller);<br>• AX100260, 6A 100W BLDC Controller;<br>• AX130510, 2 Inputs, 2 Outputs Isolated Signal Converter;<br>• AX140100, J1939-J1939-ModbusRTU Converter;<br>• AX180400, Laser Receiver. |
| 5.13.100 | January 8, 2019 | Olek Bogush | Updated support for:<br>• AX060800, AX060830, Tri-Axial J1939 CAN Inclinometer – Two M12 Connectors, Both CAN;<br>• AX060808, AX060838, Tri-Axial J1939 CAN Inclinometer – Vertical Mount, Two M12 Connectors, Both CAN;<br>• AX060806, AX060810, Tri-Axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector;<br>• AX060807, AX060811, Tri-Axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector with CAN Termination;<br>• AX061000, Tri-Axial J1939 CAN Inclinometer with Analog Outputs;<br>• AX060900, Tri-Axial Gyro Inclinometer, SAE J1939;<br>• AX060910, Tri-Axial Gyro Inclinometer with Extended Dynamic Range, SAE J1939;<br>• AX062008, Tri-Axial Inclinometer with Single-Axis Gyro, Vertical Mount, SAE J1939;<br>• AX062018, Tri-Axial Inclinometer with Single-Axis Gyro, Extended Dynamic Range, Vertical Mount, SAE J1939. |
| 5.13.99 | December 6, 2018 | Olek Bogush | Added support for:<br>• AX062008, Tri-Axial Inclinometer with Single-Axis Gyro, Vertical Mount, SAE J1939;<br>• AX062018, Tri-Axial Inclinometer with Single-Axis Gyro, Extended Dynamic Range, Vertical Mount, SAE J1939.<br>Corrected support for: |

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| | | | • AX060800, AX060830, Tri-Axial J1939 CAN Inclinometer – Two M12 Connectors, Both CAN;<br>• AX060806, AX060810, Tri-Axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector;<br>• AX060807, AX060811, Tri-Axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector with CAN Termination;<br>In *USB-CAN Converter* section, added *Connecting USB-CAN Converter to CAN Bus, Connecting USB-CAN Converter to CAN Device on the Bench,* and *Technical Specifications* subsections. In *Technical Specifications* subsection added *Operating Temperature*, CAN_GND and SHIELD pin description. |
| 5.13.98 | October 2, 2018 | Ilona Korpelainen, Gustavo Del Valle, Olek Bogush | Added support for:<br>• AX022420, Four Inputs, Two Outputs Universal Valve Controller;<br>• AX030210, 12IN-8SOUT-1RLYOUT;<br>• AX180400, Laser Receiver.<br>• AX060910, Tri-Axial Gyro Inclinometer with Extended Dynamic Range;<br>Added support for customer specific inclinometers.<br>Updated support for:<br>• AX031700, Single Input Controller with CAN;<br>• AX200000, 4 Channel Strain Gauge Controller;<br>• AX020400, 12 Inputs, 12 Outputs Valve Controller;<br>• AX020410, 12 Inputs, 12 Outputs Valve Controller;<br>• AX020510, Valve Controller, 6 Inputs, 5 Outputs;<br>• AX024010, DIN Rail Servo Controller;<br>• AX030120, 10 Universal Signal Input CAN Controller;<br>• AX130540, 2 Inputs, 2 Outputs Isolated Signal Converter;<br>• AX184000, 12 RTD, 4 Universal Inputs.<br>Corrected support for:<br>• AX061000, Tri-Axial J1939 CAN Inclinometer with Analog Outputs. |
| 5.13.97 | June 8, 2018 | Ilona Korpelainen, Gustavo Del Valle, Olek Bogush | Added support for:<br>• AX130540, 2 Inputs, 2 Outputs Isolated Signal Converter;<br>• AX020520, 6 Inputs, 5 Outputs Valve Controller;<br>• AX141150, CAN-BT-APPL (CAN-Bluetooth Converter);<br>• AX140920, MMS-ENET-BPS (BPS Master Module);<br>• AX061000, Tri-Axial J1939 CAN Inclinometer with Analog Outputs.<br>Updated support for:<br>• AX023300, 2 Inputs, 2 Outputs Valve Controller;<br>• AX022003, Universal Input, Dual Valve Output CAN Controller;<br>• AX200000, 4 Channel Strain Gauge Controller; |

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| | | | • AX031500, Magnetic Pick-up Input with CAN;<br>• AX031700, Single Input Controller with CAN;<br>• AXDIO128-03, 12 Digital Input, 8 Relay Output Controller;<br>• AX020510, Valve Controller, 6 Inputs, 5 Outputs;<br>• AX102000, BI-35A-DC-MC (35A Bidirectional DC Motor Controller);<br>• AX104001, Throttle Valve Controller;<br>• AX140200, J1939-CANopen-ModbusRTU Converter.<br>In the User Manual:<br>• Updated color code for CAB-AX070501;<br>• Updated Finnish office phone number on the front page. |
| 5.13.96 | March 5, 2018 | Ilona Korpelainen, Gustavo Del Valle, Olek Bogush | Added support for:<br>• AX090600, 24VDC to 14VDC 2A Battery Charger;<br>• AX031901, Single Digital Input to Dual NC Relay Outputs;<br>• AX023300, 2 Inputs, 2 Outputs Valve Controller;<br>• AX100270, BLDC-2DCM-AXIO (BLDC and 2 DC Motor Controller).<br>Updated support for:<br>• AX021610, Single Input Single Valve Output Controller;<br>• AX030120, 10 Universal Signal Input CAN Controller;<br>• AX102000, BI-35A-DC-MC (35A Bidirectional DC Motor Controller);<br>• AX140100, J1939-J1939-ModbusRTU Converter;<br>• AX184000, 12 RTD, 4 Universal Inputs. |
| 5.13.95 | February 1, 2018 | Olek Bogush | Added Electronic Assistant Kit, P/N: AX070502 – AX070501 USB-CAN Converter, 2 Cables, Installation Instructions.<br>Added support for:<br>• AX060900, Tri-Axial Gyro Inclinometer, SAE J1939. |
| 5.13.94 | December 29, 2017 | Ilona Korpelainen | Added support for:<br>• AX102000, BI-35A-DC-MC (35A Bidirectional DC Motor Controller).<br>Updated support for:<br>• AX130520, 2 Inputs, 2 Outputs Signal Converter. |
| 5.13.93 | October 2, 2017 | Ilona Korpelainen | Added support for:<br>• AX030320, 18 Digital Input to CAN Controller;<br>• AX140100-100, J1939-J1939-ModbusRTU Converter.<br>Updated support for:<br>• AX020410, 12 Inputs, 12 Outputs Valve Controller;<br>• AX030120, 10 Universal Signal Input CAN Controller. |
| 5.13.92 | August 1, 2017 | Olek Bogush, Ilona Korpelainen | Removed support for *Electronic Assistant installation CD, AX070502IN*. Updated Software Installation section.<br>Updated support for:<br>• AX030310, 18 Digital Input to CAN Controller. |

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| 5.13.91 | July 5, 2017 | Ilona Korpelainen | Updated support for:<br>• AX024010, DIN Rail Servo Controller;<br>• AX020510, Valve Controller, 6 Inputs, 5 Outputs;<br>• AX031200, Multi-Function IO Module 48-pin. |
| 5.13.90 | June 2, 2017 | Olek Bogush, Ilona Korpelainen | Added support for:<br>• AX020410, 12 Inputs, 12 Outputs Valve Controller;<br>• AX184000, 12 RTD, 4 Universal Inputs.<br>Updated support for:<br>• AX060800, Tri-axial J1939 CAN Inclinometer – Two M12 Connectors, Both CAN;<br>• AX060804, Tri-axial J1939 CAN Inclinometer – One M12 Connector, CAN;<br>• AX060806, Tri-axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector;<br>• AX060807, Tri-axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector with CAN Termination;<br>• AX020510, Valve Controller, 6 Inputs, 5 Outputs;<br>• AX021210, AX021210-01, AX021210-02, 10 Output Valve Controller;<br>• AXTC20, Twenty Thermocouple Scanner;<br>• AXRTD8, Eight RTD Scanner.<br>Added to the list of supported Axiomatic ECUs:<br>• AX060808, Tri-axial J1939 CAN Inclinometer – Vertical Mount, Two M12 Connectors, Both CAN;<br>• AX060830, Tri-axial J1939 CAN Inclinometer – Two M12 Connectors, Both CAN;<br>• AX060838, Tri-axial J1939 CAN Inclinometer – Vertical Mount, Two M12 Connectors, Both CAN;<br>• AX060810, Tri-axial J1939 CAN Inclinometer – One DT15-4P Connector;<br>• AX060811, Tri-axial J1939 CAN Inclinometer – One DT15-4P Connector, CAN Termination. |
| 5.13.89 | May 2, 2017 | Ilona Korpelainen, Olek Bogush | Added support for:<br>• AX130520, 2 Inputs, 2 Outputs Signal Converter;<br>• AX024010, DIN Rail Servo Controller.<br>Updated support for:<br>• AX020510, Valve Controller, 6 Inputs, 5 Outputs;<br>• AX030120, 10 Universal Signal Input CAN Controller;<br>• AX130700, CAN to PWM Output Controller;<br>• AX140200, J1939-CANopen-ModbusRTU Converter.<br>Updated List of Supported Axiomatic ECUs. |
| 5.13.88 | March 1, 2017 | Olek Bogush, Ilona Korpelainen | Added support for:<br>• AX140600-03, LIN - J1939 CAN Converter.<br>Updated support for:<br>• AX100260, 6A 100W BLDC Controller;<br>• AX021210, 10 Output Valve Controller; |

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| | | | • AX130510, 2 Inputs, 2 Outputs Isolated Signal Converter;<br>• AX020400, 12 Inputs, 12 Outputs Valve Controller.<br>Added to the list of supported Axiomatic ECUs:<br>• AX140600-01, LIN - J1939 CAN Converter (500kbit/s);<br>• AX060700-01, Tri-axial J1939 CAN Inclinometer with Gyro. Two M12 Connectors, Both CAN (500kbit/s);<br>• AX060806, Tri-axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector;<br>• AX060807, Tri-axial J1939 CAN Inclinometer – One Deutsch DT15-4P Connector with CAN Termination. |
| 5.13.87 | February 1, 2017 | Ilona Korpelainen | Updated support for:<br>• AX100260, 6A 100W BLDC Controller;<br>• AX140100, J1939-J1939-ModbusRTU Converter;<br>• AX104001, Throttle Valve Controller;<br>• AX030310, 18 Digital Input to CAN Controller. |
| 5.13.86 | January 3, 2017 | Gustavo Del Valle | Updated support for:<br>• AX031700, Single Input Controller with CAN;<br>• AX100100, Generic 25A DC Motor Controller.<br>Added support for:<br>• AX031500, Magnetic Pick-up Input with CAN. |
| 5.13.85 | December 5, 2016 | Ilona Korpelainen | Updated support for:<br>• AX140100, J1939-J1939-ModbusRTU Converter;<br>• AX024000, Servo Controller;<br>• AX020510, Valve Controller, 6 Inputs, 5 Outputs.<br>Added support for:<br>• AX030160, 8 Digital Input to CAN Controller;<br>• AX100260, 6A 100W BLDC Controller;<br>• AX100265, 6A 100W BLDC Controller;<br>• AX141100, CAN-Bluetooth (CAN-Bluetooth Converter and Datalogger);<br>• AX104001, Throttle Valve Controller;<br>• AX020400, 12 Inputs, 12 Outputs Valve Controller. |
| 5.13.84 | October 3, 2016 | Olek Bogush | Updated reading and programming setpoint file operations. Added operation for comparing ECU configuration parameters with setpoint file. Changed menu item *Flash setpoints into selected ECU* to *Program Setpoints into ECU* in setpoint file viewer menu. Changed the name of the programming progress bar window from *Flashing Setpoint Parameters from File…* to *Programming Setpoint Parameters from File*.<br>Updated support for the following families:<br>• AX06070x, Tri-axial J1939 CAN Inclinometers with Gyro;<br>• AX06080x, Tri-axial J1939 CAN Inclinometers. |
| 5.12.84 | September 7, 2016 | Ilona Korpelainen | Updated support for:<br>• AX140200, J1939-CANopen-ModbusRTU Converter;<br>• AX024000, Servo Controller; |

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| | | | • AX030120, 10 Universal Signal Input CAN Controller. |
| 5.12.83 | August 2, 2016 | Gustavo Del Valle, Olek Bogush | Updated support for:<br>• AX021610, Single Input Single Valve Output Controller;<br>• AX022000, Dual Output CAN Controller, 1-Universal Input, 2 - 3A Outputs;<br>• AX020510, Valve Controller, 6 Inputs, 5 Outputs.<br>Changed kBit/s to kbit/s. |
| 5.11.83 | June 10, 2016 | Olek Bogush, Gustavo Del Valle, Ilona Korpelainen | Clarified *APPENDIX A.*<br>Added support for:<br>• AX031702, Fuel Sensor Input to CAN Controller;<br>• AX031700, Single Input Controller with CAN.<br>Updated support for:<br>• AXDIO128-03, 12 Digital Input, 8 Relay Output Controller;<br>• AX021610, Single Input Single Valve Output Controller;<br>• AX023220, 2 Input 2 Output High Temperature Controller. |
| 5.11.82 | May 5, 2016 | Olek Bogush, Ilona Korpelainen | Added support for:<br>• *Axiomatic Ethernet-CAN Converter*.<br>Updated: *4.4.1 Electronic Assistant Hardware Support, 5.1 Hardware Requirements, 5.2 Connecting to J1939 CAN*, *APPENDIX A.* Updated and clarified other parts of the User Manual.<br>Added description of the *Virtual ECU* and *Decimal Format* option in *5.2 Connecting to J1939 CAN*.<br>Added support for:<br>• AX024000, Servo Controller. |
| 4.11.81 | April 4, 2016 | Olek Bogush | Added support for:<br>• AX060800, Tri-axial J1939 CAN Inclinometer – Two M12 Connectors, Both CAN;<br>• AX060804, Tri-axial J1939 CAN Inclinometer – One M12 Connector, CAN. |
| 4.11.80 | January 4, 2016 | Olek Bogush, Gustavo Del Valle | Updated *Flash Application Firmware* dialog window in Fig. 10-1 and Fig. 10-2.<br>Added spaces to separate multi-line comments in *Application Firmware Flashing Comments* field in the *Bootloader Information* screen.<br>Added support for:<br>• AX021610, Single Input Single Valve Output Controller;<br>• AX020200, Dual Output Valve Controller with CAN.<br>Updated support for:<br>• AX200000, 4 Channel Strain Gauge Controller. |
| 4.10.79 | November 3, 2015 | Ilona Korpelainen | Updated support for:<br>• AX130510, 2 Inputs, 2 Outputs Isolated Signal Converter. Corrected its name.<br>• AX140200, J1939-CANopen-ModbusRTU Converter;<br>• AX140100, J1939-J1939-ModbusRTU Converter;<br>• AX140400, J1939, J1939, J1587 Converter; |

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| | | | • AX130700, CAN to PWM Output Controller. |
| 4.10.78 | September 2, 2015 | Gustavo Del Valle, Olek Bogush | Added support for:<br>• AXDIO128-03, 12 Digital Input, 8 Relay Output Controller;<br>• AX022003, Universal Input, Dual Valve Output CAN Controller.<br>Updated support for:<br>• AX140200, J1939-CANopen-ModbusRTU Converter;<br>• AX181000, 4 TC, 7 Analog, 3 Universal Inputs;<br>• AX140100, J1939-J1939-ModbusRTU Converter;<br>• AX031200, Multi-Function IO Module 48-pin.<br>Updated the *List of Supported Axiomatic ECUs* table in *Appendix B* of the user manual. |
| 4.10.77 | July 9, 2015 | Olek Bogush, Gustavo Del Valle | Added user prompt if saving a setpoint file can erase an already existing file.<br>Clarified the list of supported ECUs dialog in *Appendix B* of the user manual.<br>Updated support for:<br>• AX020510, Valve Controller, 6 Inputs, 5 Outputs;<br>• AX140100, J1939-J1939-ModbusRTU Converter;<br>• AX140400, J1939, J1939, J1587 Converter;<br>• AX030120, 10 Universal Signal Input CAN Controller;<br>• AX031200, Multi-Function IO Module 48-pin.<br>Added support for:<br>• AX023220, 2 Input 2 Output High Temperature Controller;<br>• AX200000, 4 Channel Strain Gauge Controller;<br>• AX130510, 2 Inputs, 2 Outputs Isolated Signal Converter;<br>• AX130700, CAN to PWM Output Controller. |
| 4.9.76A | June 8, 2015 | Olek Bogush | Corrected *Version History* table format. |
| 4.9.76 | February 4, 2015 | Gustavo Del Valle, Olek Bogush | Updated support for:<br>• AX140200, J1939-CANopen-ModbusRTU Converter;<br>• AX021900, Valve Controller, 8 Inputs, 5 Outputs;<br>• AX140600, LIN - J1939 CAN Converter;<br>• AX140601, LIN - J1939 CAN Converter;<br>Added support for:<br>• AX140602, LIN - J1939 CAN Converter.<br>Added support for a customer-specific ECU. |
| 4.9.75 | January 5, 2015 | Gustavo Del Valle, Olek Bogush | Added support for:<br>• AX030310, 18 Digital Input to CAN Controller.<br>Updated the *File Location* sub-section in the *Software Installation* section to match the new Axiomatic website design. |
| 4.9.74 | November 24, 2014 | Gustavo Del Valle, | Changed *Software Installation*. *System Requirements* section. |

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| | | Olek Bogush | Updated UM version history rules in the *Version History* section.<br>Added support for:<br>• AX02121x, 10 Output Valve Controller;<br>• AX06070x, Tri-axial J1939 CAN Inclinometer with Gyro. |
| 4.9.73 | September 2, 2014 | Gustavo Del Valle, Olek Bogush | Added support for customer specific ECUs.<br>Changed names of AX06020x and AX06040x inclinometers and some customer specific ECUs. |
| 4.9.70 | August 6, 2014 | Gustavo Del Valle, Olek Bogush | Added support for customer specific ECUs.<br>Added support for:<br>• AX020510, 6 Inputs, 5 Outputs Valve Controller.<br>Updated support for:<br>• AX031200, Multi-Function IO Module 48-pin;<br>• AX03012x, 10 Analog Input (added support for 500 kbit/s baud rate);<br>• AX030520, 1 Analog Signal Output CAN Controller. |
| 4.9.67 | May 28, 2014 | Olek Bogush, Gustavo Del Valle | Added support for customer specific ECUs. |
| 4.9.65 | April 15, 2014 | Olek Bogush | Added *Generate Setpoint Text File* option to the *Options* main menu.<br>Reviewed: *Overview* section, *Software Installation* sections. In *Using the Electronic Assistant* section, added *Hardware Requirements* sub-section, updated *Connecting to the J1939 Bus* subsection. Added the baud rate change password. Updated *Saving Setpoints* sub-section.<br>Updated *Troubleshooting of the Electronic Assistant* section. |
| 4.8.65 | April 7, 2014 | Gustavo Del Valle, Olek Bogush | Added support for:<br>• AX0232x0, Fan Drive Controller. Supported AX023210 part number.<br>Added a progress bar for *Save Setpoints*, *Save Setpoints As*… operations.<br>Added an .xml file extension if no extension for a setpoint file is specified during a setpoint saving operation. |
| 4.7.64 | April 3, 2014 | Gustavo Del Valle | Added support for a customer-specific ECU. |
| 4.7.63 | April 2, 2014 | Olek Bogush | Added support for:<br>• AX140600, LIN - J1939 CAN Converter. |
| 4.7.62 | March 12, 2014 | Olek Bogush | Added support for:<br>• AX140601, LIN - J1939 CAN Converter. |
| 4.7.61 | January 31, 2014 | Olek Bogush, Gustavo Del Valle | Added an hourglass together with the “ECU is busy…” animated message, Fig 4-23, during ECU flashing operation.<br>Added support for:<br>• AX031200, Multi-Function IO Module 48-pin. |

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|---|---|---|---|
| 4.6.60 | December 27, 2013 | Olek Bogush | Added an hourglass together with the “ECU is busy…” animated message, Fig 4-10, when writing setpoints.<br>Added support for a customer-specific PMSM Motor Drive. |
| 4.5.59 | November 8, 2013 | Gustavo Del Valle | Added support for:<br>• AX030120, 10 Universal Signal Input CAN Controller;<br>• AX140406, J1939, J1939, J1587 Converter. |
| 4.5.57 | October 11, 2013 | Gustavo Del Valle | Added support for:<br>• AX140405, J1939-CANopen-ModbusRTU Converter;<br>• AX140202, J1939-CANopen-ModbusRTU Converter. |
| 4.5.55 | September 3, 2013 | Gustavo Del Valle | Added support for:<br>• AX140402, J1939, CANopen, J1587 Converter;<br>• AX140403, J1939, CANopen, J1587 Converter. |
| 4.5.53 | August 23, 2013 | Gustavo Del Valle | Added support for:<br>• AX181000, 4 TC, 7 Analog, 3 Universal Inputs;<br>• AX140501, PLC to J1939 Protocol Converter.<br>• AX140201, J1939, CANopen, J1587 Converter.<br>Updated Acronyms section (OB). |
| 4.5.50 | July 16, 2013 | Olek Bogush | Added support for a customer-specific BLDC Motor Control.<br>Changed AX022310 from AX022310, CAN with Dual 3A, to AX022310, CAN with Dual 2.5A Outputs, Plug-In. |
| 4.5.49 | June 11, 2013 | Olek Bogush | Added support for:<br>• AX140400, J1939, J1939, J1587 Converter;<br>• AX140401, J1939, J1939, J1587 Converter.<br>Removed Acronym column from the *List of Supported Axiomatic ECUs* in *Appendix B*. |
| 4.5.47 | May 27, 2013 | Olek Bogush | Added support for a customer-specific DIO module. |
| 4.5.46 | April 19, 2013 | Olek Bogush | Added ECUID (PGN 64965) field in the General ECU Information group.<br>Added support for a customer-specific ECU. |
| 4.4.45 | April 11, 2013 | Olek Bogush | Added support for a customer-specific Eight Channel RTD Scanner. |
| 4.4.44 | March 25, 2013 | Olek Bogush | Added support for:<br>• AX140200, J1939-CANopen-ModbusRTU Converter;<br>• AX130601, J1772 Compliant Wake on Charge Module.<br>Significantly changed support for:<br>• AX140100, J1939-J1939-ModbusRTU Converter, named previously: CAN to RS-485 Converter.<br>Added pretty-print text formatting to .xml setpoint files eliminating the need for text files with the same information. |
| 4.4.42 | December 12, 2012 | Olek Bogush | Added support for 1MBit/s baud rate. Referred to 500 kbit/s baud rate as one defined by J1939/14. |
| 4.3.42 | October 2, 2012 | Anna Murray | Added support for:<br>• AX140100, CAN to RS-485 Converter |
| 4.3.41 | September 10, 2012 | Olek Bogush | Added support for multiple baud rates to EA. Updated UM with this feature. |
| 4.2.41 | August 29, 2012 | Anna Murray | Updated version number of UM to match the latest release of EA. Revised the wire colors on CAB-AX070501. |

| UM Version | Date | Author | Modifications |
|---|---|---|---|
| 4.2.40 | July 4, 2012 | Anna Murray | Changed part number AX06020x to J1939 CAN Inclinometer with Additional Outputs.<br>Added new part number AX06040x and called it J1939 CAN Inclinometer. |
| 4.2.39 | June 7, 2012 | Anna Murray | Changed part number AX022410 to AX022020, CAN with Dual 3A Outputs, Side Connect.<br>Added support for:<br>• AX022410, Dual Input, Dual Output, Side Connect.<br>Updated support for:<br>• AX022400 to Dual Input, Dual Output, Top Connect. |
| 4.2.38 | April 20, 2012 | Anna Murray | Added support for controllers:<br>• AX022002, CAN with Dual 3A Outputs, Top Connect;<br>• AX022310, CAN with Dual 3A Outputs, Plug-In;<br>• AX022410, CAN with Dual 3A Outputs, Side Connect. |
| 4.2.37 | April 13, 2012 | Anna Murray | Added explanation of .txt file that is now created in parallel with the .xml file when setpoints are saved. |
| 4.1.37 | March 23, 2012 | Olek Bogush | Added support for:<br>• AX022800, Positional Valve Driver. |
| 4.1.36 | February 9, 2012 | Anna Murray | Added support for:<br>• AX130500, Dual Input, Dual Output Signal Controller.<br>Updated References section. Updated footer on the cover page. |
| 4.1.35 | October 27, 2011 | Olek Bogush | In the *J1939 Bootloader* section renamed application software to application firmware. *Flashing New Application Firmware* subsection was rewritten. Figure numbering format was changed. |
| 4.0.35 | September 29, 2011 | Olek Bogush | UM was fully rewritten and reformatted. Most sections were updated.<br>Added support for the *J1939 Bootloader*. |
| 3.0.35 | May 6, 2011 | Anna Murray | Added support for:<br>• AX022400, Dual Input, Dual Output Valve Driver.<br>• Updated References section. |
| 3.0.34 | Dec 10, 2010 | Olek Bogush | Added support for:<br>• AX100600, 5A Motor Controller.<br>Updated References section. |
| 3.0.33 | May 26, 2010 | Anna Murray | Added support for:<br>• AX100700, 2A Stepper Motor Drive. |
| 3.0.32 | May 18, 2010 | Olek Bogush | Added support for:<br>• AX021810, 4IN-2OUT Control without voltage references.<br>Changed footnotes to reflect the product P/N. |
| 3.0.31 | Jan 5, 2010 | Olek Bogush | Added support for:<br>• AX030530, 1 Analog Signal Input CAN Controller. |
| 3.0.30 | Dec 22, 2009 | Olek Bogush | Added support for:<br>• AX022200, Single Valve Controller. |
| 3.0.29 | Oct 19, 2009 | Olek Bogush | Added support for:<br>• AX030520, 1 Analog Signal Output CAN Controller. |

| UM Version | Date | Author | Modifications |
|---|---|---|---|
| 3.0.28.0 | Aug 6, 2009 | Anna Murray | Added support for:<br>• AX100000, 150A Motor Controller with I-O.<br>Updated Appendix B so that descriptions match what is in EA. |
| 3.0.27.0 | Aug 5, 2009 | Olek Bogush | Added support for:<br>• AX030500, 4 Analog Signal Output CAN Controller. |
| 3.0.26.0 | May 27, 2009 | Anna Murray | Removed all references to EA behavior with regard to previous installation automatic removal.<br>Added support for:<br>• AX021900, 8 Input, 5 Output. |
| 3.0.25b | May 13, 2009 | Anna Murray | Updated UM to reflect the fact the EA will no longer require manual uninstallation when a newer version is loaded. From EA 3.0.25.2. |
| 3.0.25 | April 9, 2009 | Anna Murray | Added support for:<br>• AX090300, 5A Solar Charger. |
| 3.0.24 | March 23, 2009 | Olek Bogush | Added support for:<br>• AX060200 J1939 CAN Inclinometer. |
| 3.0.23 | February 2, 2009 | Olek Bogush | Added support for:<br>• AX022000 1IN-2OUT Control. |
| 3.0.20 | September 12, 2008 | Olek Bogush | Added support for:<br>• AX021800 4IN-2OUT Control.<br>Removal of the old version of EA was suppressed during installation. |
| 3.0.19 | July 25, 2008 | Olek Bogush | Added support for:<br>• AX100100, Motor Control. |
| 3.0.16 | May 21, 2008 | Anna Murray | Added support for:<br>• AX030300, 18 Digital Input and AX100050, 150A Motor Speed Controller.<br>Removed references to AX100000 and AX100100 Motor Controllers. |
| 3.0.15 | April 3, 2008 | Anna Murray | Added support for:<br>• AXTC20, Twenty Thermocouple Scanner. |
| 3.0.13 | Feb. 8, 2008 | Olek Bogush | Added support for:<br>• AX021600, Single Channel CAN Controller, Universal Input, 2A Output. |
| 3.0.12 | Jan. 30, 2008 | A. Wilkins | Marketing Review – Added TM, EA Logo and name change to Electronic Assistant. |
| 2.0.12 | September 11, 2007 | Olek Bogush | Added support for:<br>• AX09000x, 10A Battery Charger ECU. |
| 2.0.11 | August 31, 2007 | A. Wilkins<br>Olek Bogush | The software was renamed to *Axiomatic Electronic Assistant*.<br>Reviewed the user manual. Changed the European office address.<br>Added the *USB-CAN Converter* paragraph. |
| 1.4.11 | May 23, 2007 | Olek Bogush | Added Support for *Software ID* (PGN 65242).<br>*General NAME* Information pane was replaced with *General ECU Information* pane, which includes *ECU Name*, *Address,* and *Software ID*. |

| UM Version | Date | Author | Modifications |
|---|---|---|---|
| | | | Improved presentation of the *ECU Setpoint* files. |
| 1.3.11 | May 3, 2007 | Olek Bogush | Added *User Manual Help* menu item, which is activated by pressing F1.<br>Installation package was changed the way that it now automatically removes an old EA version during installation. *Version History* chapter was changed to reflect this feature. |
| 1.2.11 | April 24, 2007 | Olek Bogush | Added support for:<br>• AX100200, BLDC Motor Drive (12V/24VDC, 25A). |
| 1.2.10 | March 13, 2007 | Olek Bogush | Added ECU UTC-BLDC-DRV Support.<br>Added new *ECU Instance Setup Dialog* in multiple instances of the same ECU on Bus.<br>Added some changes to *Writing a Setpoint File Group*.<br>Added changes in *Saving and Flashing a Setpoint File*. |
| 1.2.9 | January 22, 2007 | Anna Murray | Added ECU TC4 support. |
| 1.2.8 | December 18, 2006 | Anna Murray | Added ECU AX100100 support. |
| 1.2.7 | November 21, 2006 | Anna Murray | Added system requirements to the user manual.<br>New module supported; EA updated for initial release.<br>Better screen capture of network ECUs |
| 1.2.6 | November 3, 2006 | Anna Murray | Initial Draft of the user manual. |

A correct user manual (UM) should be used for each EA version number. Three most significant (leftmost) numbers of the EA version number determine the valid UM version for that EA. The least significant (rightmost) number of the EA version number is used for small updates in EA, which do not affect the UM contents. For example, EA V4.1.35.0 and EA V4.1.35.1 use the same UM V4.1.35.

If the UM contents have to be changed for the same EA version, a letter is added to the UM version number. For example, if the UM V3.0.35 requires updates due to some discrepancies or for any other reason, the new UM version will be 3.0.35A (or 3.0.35a), then 3.0.35B (or 3.0.35b), etc. The letters are not case sensitive, but capital letters are preferred.

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