USER MANUAL UMAX200102
Version V1

12-CHANNEL
STRAIN GAUGE CONTROLLER
With SAEJ1939®

USER MANUAL

P/N: AX200102

In Europe:
Axiomatic Technologies Oy
Höytämöntie 6
33880 LEMPÄÄLÄ - Finland
Tel. +358 103 375 750
Fax. +358 3 3595 660
www.axiomatic.fi

In North America:
Axiomatic Technologies Corporation
5915 Wallace Street
Mississauga, ON Canada L4Z 1Z8
Tel. 1 905 602 9270
Fax. 1 905 602 9279
www.axiomatic.com

ACCRONYMS

ACK	Positive Acknowledgement (from SAE J1939 standard)
EA	Electronic Assistant ®, p/n AX070502 (A Service Tool for Axiomatic ECUs)
ECU	Electronic Control Unit (from SAE J1939 standard)
NAK	Negative Acknowledgement (from SAE J1939 standard)
PDU1	A format for messages that are to be sent to a destination address, either specific or global (from SAE J1939 standard)
PDU2	A format used to send information that has been labeled using the Group Extension technique, and does not contain a destination address.
PGN	Parameter Group Number (from SAE J1939 standard)
PropA	Message that uses the Proprietary A PGN for peer-to-peer communication
PropB	Message that uses a Proprietary B PGN for broadcast communication
SPN	Suspect Parameter Number (from SAE J1939 standard)

TABLE OF CONTENTS

1. OVERVIEW OF CONTROLLER

1.1. Description of 12-Channel Strain Gauge Input Controller

This user manual describes the architecture and functionality of the 12-Channel Strain Gauge input controller.

The 12-Channel Strain Gauge Input Controller (12CH-SG) is a high resolution, high speed 12-channel acquisition controller with 2 available CAN ports. Each of the 12 inputs have a selectable reference voltage and selectable gain depending on the type of sensor being used. Each input can read up to +/-1.25V.

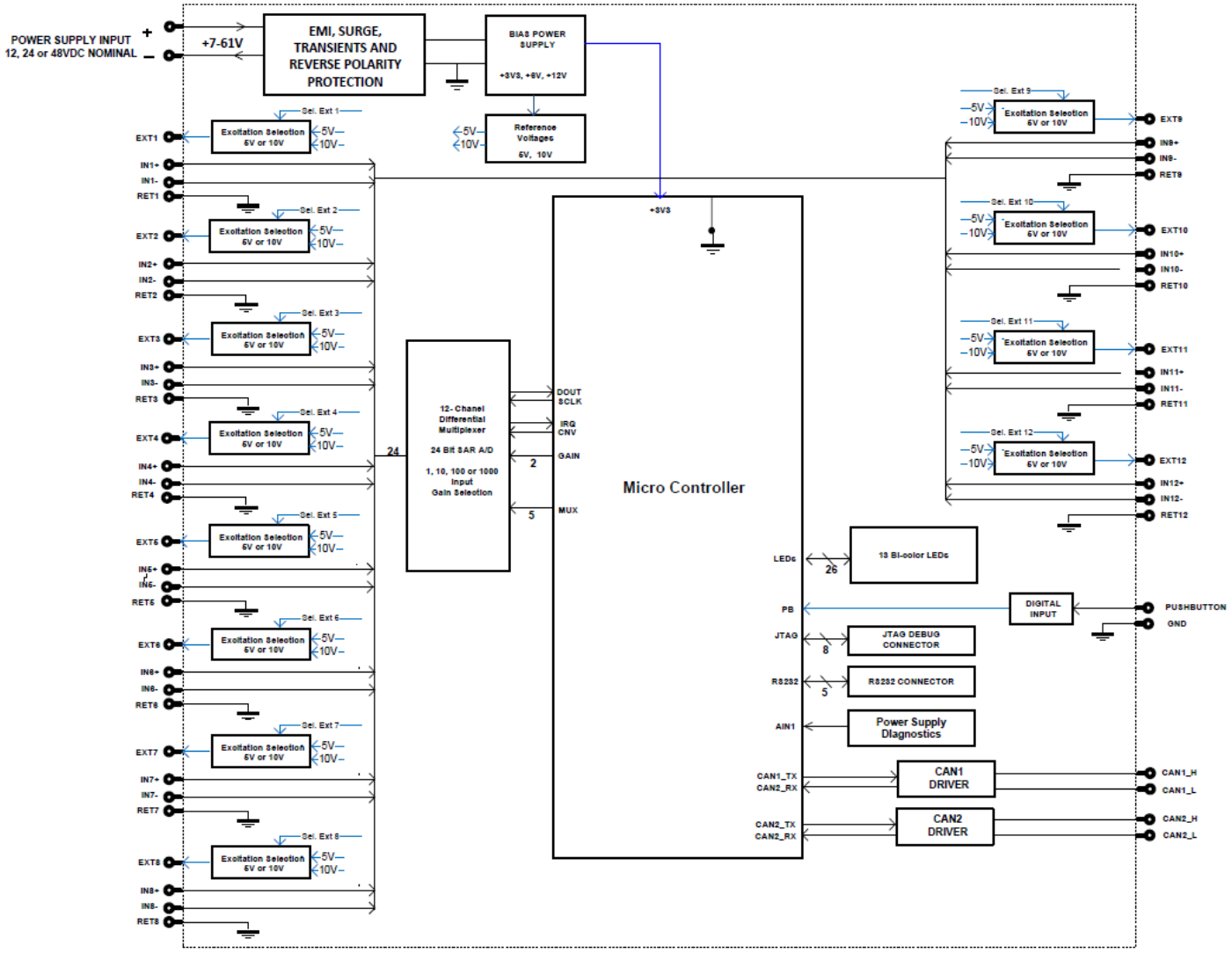


Figure 1 – Hardware Functional Block Diagram

The 12CH-SG controller also consists of an active-low digital input for the sole purpose of calibrating the 12 channels in the field.

All 12 channels are sampled within 1ms, available for transmission on a single or dual CAN port at 1MHz baud rate.

1.2. Tare/Calibration Operation

The Tare/Calibration digital input can be used to zero all input channels in the system after the controller has been installed.

The digital input available is for calibration-use only. It is an active-low input with an internal pull-up and thus the input can remain left disconnected externally, for example, via a momentary button.

In order to provide flexibility in calibrating all 12 channels, the digital input has different modes depending on the duration in which the input is engaged as well as the 'calibration state' the controller is in. Furthermore, to provide the user with feedback regarding in which 'calibration state' the controller is in, the LED assigned to each channel will be engaged or disengaged.

The 'calibration state' are as follows:

1. ***Calibration Idle*** *(not in calibration mode)*
2. ***Calibration Enter***
3. ***Calibration Bank 1*** *(Strain Gauge 1-4)*
4. ***Calibration Bank 2*** *(Strain Gauge 5-8)*
5. ***Calibration Band 3*** *(Strain Gauge 9-12)*
6. ***Calibration Save and Exit***

There are 4 configurable parameters/setpoints relating to the calibration function. These are:

- *Debounce Time;*
- *Long Press Time to Enter Calibration;*
- *Long Press Time to Engage Calibration Step;*
- *Time Delay Before Executing Engaged Step*

Calibration Idle is the default state of the controller and the controller is in operational mode. In order to enter calibration (***Calibration Enter*** state), the digital input needs to be pressed for time configured in setpoint *Long Press Time Enter Calibration.* At this point all LEDs will begin flashing green and after time in *Time Delay Before Executing Engaged Step* elapses, the calibration state becomes ***Calibration Bank 1****.* During this state, LEDs for strain gauge inputs 1-4 will be flashing green while the rest are off and they will remain flashing until the digital input has been pressed for duration configured in *Long Press Time to Engage Calibration Step*. Once this duration is met, the activated LEDs will become solid green for duration set in *Time Delay Before Executing Engaged Step* before performing the calibration for those inputs and increase the calibration state to ***Calibration Bank 2****.* ***Calibration Bank 2*** and ***Calibration Bank 3*** will follow the same behaviour as ***Calibration Bank 1*** with strain gauge inputs 5-8 and 8-12, respectively. When ***Calibration Bank 3*** has completed, all 12 LEDs will blink green and red to signify ***Calibration Save and Exit*** as the last calibration state. After the digital input is engaged for *Long Press Time to Engage Calibration Step,* the controller will gather all of the calibration data for all 12 channels and save to the flash.

At any one point during calibration in which the LEDs are blinking or are solid but *Time Delay Before Executing Engaged Step* has not yet elapsed, the user can quickly engage the input twice (double tap if using a momentary button) in order to go backwards in the calibration state/step. For example, if calibration of bank 1 had completed but required re-calibration, double tap on the digital input in order to go back until the LEDs in bank 1 are blinking. Also, if calibration needs to be cancelled, double tap again at ***Calibration Enter*** state.

When the calibration is cancelled, the previously stored calibration parameters are not altered.

Another important aspect to note is that during calibration, the CAN Transmission is changed to 1000ms repetition rate. This allows the user to clearly see the data being read by the controller prior to calibrating.

1.2.1. Debounce Time

The *Debounce Time* parameter is a useful parameter in cases where the digital input signal coming in to the controller is noisy. Figure 3 shows how the *Debounce Time* helps detect a correct input signal

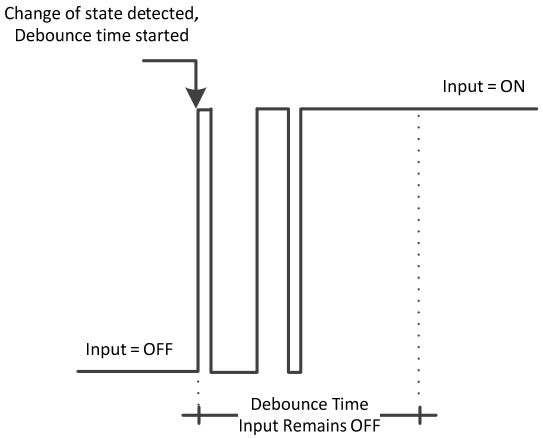


Figure 2 – Digital Input Debounce Time

1.3. Strain Gauge Input Function Block

The Strain Gauge Input function block consists of measuring the strain gauge inputs in raw 24-bit data and make it available for transmission on the CAN bus. Each strain gauge can have a selectable gain and selectable excitation voltage. Table 1 lists the available selectable excitation voltages while Table 2 lists the available gains for each strain gauge input.

Value	Meaning
0	*5V Excitation Voltage*
1	*10V Excitation Voltage*

Table 1 – Selectable Excitation Voltages

Value	Meaning
0	*Gain = 1*
1	*Gain = 10*
2	*Gain = 100*
3	*Gain = 1000*

Table 2 – Selectable Gains

1.4. Internal Function Block Control Sources

The 12-Channel Strain Gauge controller allows for internal function block sources to be selected from the list of the CAN transmit blocks supported by the controller. The complete list of control sources is shown in Table 3.

Value	Meaning
0	*Control Source Not Used (Ignored)*
1	*Strain Gauge Input 1 Measured*
2	*Strain Gauge Input 2 Measured*
3	*Strain Gauge Input 3 Measured*
4	*Strain Gauge Input 4 Measured*
5	*Strain Gauge Input 5 Measured*
6	*Strain Gauge Input 6 Measured*
7	*Strain Gauge Input 7 Measured*
8	*Strain Gauge Input 8 Measured*
9	*Strain Gauge Input 9 Measured*
10	*Strain Gauge Input 10 Measured*
11	*Strain Gauge Input 11 Measured*
12	*Strain Gauge Input 12 Measured*

Table 3 – Control Source Options

1.5. CAN Transmit Function Block

The CAN Transmit function block is used to send data from the strain gauge input block to the J1939 network.

Normally, to disable a transmit message, the **“Transmit Repetition Rate”** is set to zero. However, should message share its Parameter Group Number (PGN) with another message, this is not necessarily true. In the case where multiple messages share the same **“Transmit PGN”**, the repetition rate selected in the message with the LOWEST number will be used for ALL the messages that use that PGN.

By default, all messages are sent on Proprietary B PGNs as broadcast messages. If all of the data is not necessary, disable the entire message by setting the lowest channel using that PGN to zero. If some of the data is not necessary, simply change the PGN of the superfluous channel(s) to an unused value in the Proprietary B range.

Since the defaults are PropB messages, the **“Transmit Message Priority”** is always initialized to 6 (low priority) and the **“Destination Address (for PDU1)”** setpoint is not used. This setpoint is only valid when a PDU1 PGN has been select, and it can be set either to the Global Address (0xFF) for broadcasts, or sent to a specific address as setup by the user.

The **“Transmit Data Size”**, **“Transmit Data Index in Array (LSB)”**, **“Transmit Bit Index in Byte (LSB)”**, **“Transmit Resolution”** and **“Transmit Offset”** can all be use to map the data to any SPN supported by the J1939 standard.

The 12CH-SG supports up to 12 unique CAN Transmit Messages, all of which can be programmed to send any available data to the CAN network. By default, 2 channels share the same PGN; the default list is shown in Table 4 below.

CAN Transmit #	Default Transmit Data	(PGN)
1	Strain Gauge Input 1	(0xFF00)
2	Strain Gauge Input 2	(0xFF00)
3	Strain Gauge Input 3	(0xFF01)
4	Strain Gauge Input 4	(0xFF01)
5	Strain Gauge Input 5	(0xFF02)
6	Strain Gauge Input 6	(0xFF02)
7	Strain Gauge Input 7	(0xFF03)
8	Strain Gauge Input 8	(0xFF03)
9	Strain Gauge Input 9	(0xFF04)
10	Strain Gauge Input 10	(0xFF04)
11	Strain Gauge Input 11	(0xFF05)
12	Strain Gauge Input 12	(0xFF05)

Table 4 – Default CAN Transmit Messages

1.5.1. Data Extraction from CAN Transmits

Each strain gauge transmitted on the CAN bus is the 24-bit raw data on a 4-byte data with MSB on the first byte.

Bipolar data is transmitted on the CAN with the data 0x800000 being the 0 threshold value. Anything above this is positive and anything below this value is negative. The value can be calculated as follows:

$$V = ((RawData - 0x800000)/0x800000)*2.5$$

2. OVERVIEW OF J1939 FEATURES

The software was designed to provide flexibility to the user with respect to messages sent to and from the ECU by providing:

- Configurable ECU Instance in the NAME (to allow multiple ECUs on the same network)
- Configurable Transmit PGN and SPN Parameters

2.1. Introduction to Supported Messages

The ECU is compliant with the standard SAE J1939, and supports the following PGNs

From J1939-21 - Data Link Layer

- Request 59904 ($00EA00)
- Acknowledgment 59392 ($00E800)
- Transport Protocol – Connection Management 60416 ($00EC00)
- Transport Protocol – Data Transfer Message 60160 ($00EB00)

Note: Any Proprietary B PGN in the range 65280 to 65535 ($00FF00 to $00FFFF) can be selected

From J1939-81 - Network Management

- Address Claimed/Cannot Claim 60928 ($00EE00)
- Commanded Address 65240 ($00FED8)

From J1939-71 – Vehicle Application Layer

- Software Identification 65242 ($00FEDA)

None of the application layer PGNs are supported as part of the default configurations, but they can be selected as desired for either transmit or received function blocks.
Setpoints are accessed using standard Memory Access Protocol (MAP) with proprietary addresses. The Electronic Assistant ® (EA) allows for quick and easy configuration of the unit over the CAN network.

2.2. NAME, Address and Software ID

2.2.1. J1939 NAME

The 12CH-SG ECU has the following defaults for the J1939 NAME. The user should refer to the SAE J1939/81 standard for more information on these parameters and their ranges.

Arbitrary Address Capable	Yes
Industry Group	0, Global
Vehicle System Instance	0
Vehicle System	0, Non-specific system
Function	126, Axiomatic IO Controller
Function Instance	9, Axiomatic AX200102, 12-Channel Strain Gauge
ECU Instance	**0, First Instance**
Manufacture Code	162, Axiomatic Technologies Corporation
Identity Number	Variable, uniquely assigned during factory programming for each ECU

The ECU Instance is a configurable setpoint associated with the NAME. Changing this value will allow multiple ECUs of this type to be distinguishable by other ECUs (including the Electronic Assistant ®) when they are all connected on the same network.

2.2.2. ECU Address

The default value of this setpoint is 128 (0x80), which is the preferred starting address for self-configurable ECUs as set by the SAE in J1939 tables B3 to B7. The EA will allow the selection of any address between 0 to 253, and ***it is the user's responsibility to select an address that complies with the standard***. The user must also be aware that since the unit is arbitrary address capable, if another ECU with a higher priority NAME contends for the selected address, the 12CH-SG will continue select the next highest address until it find one that it can claim. See J1939/81 for more details about address claiming.

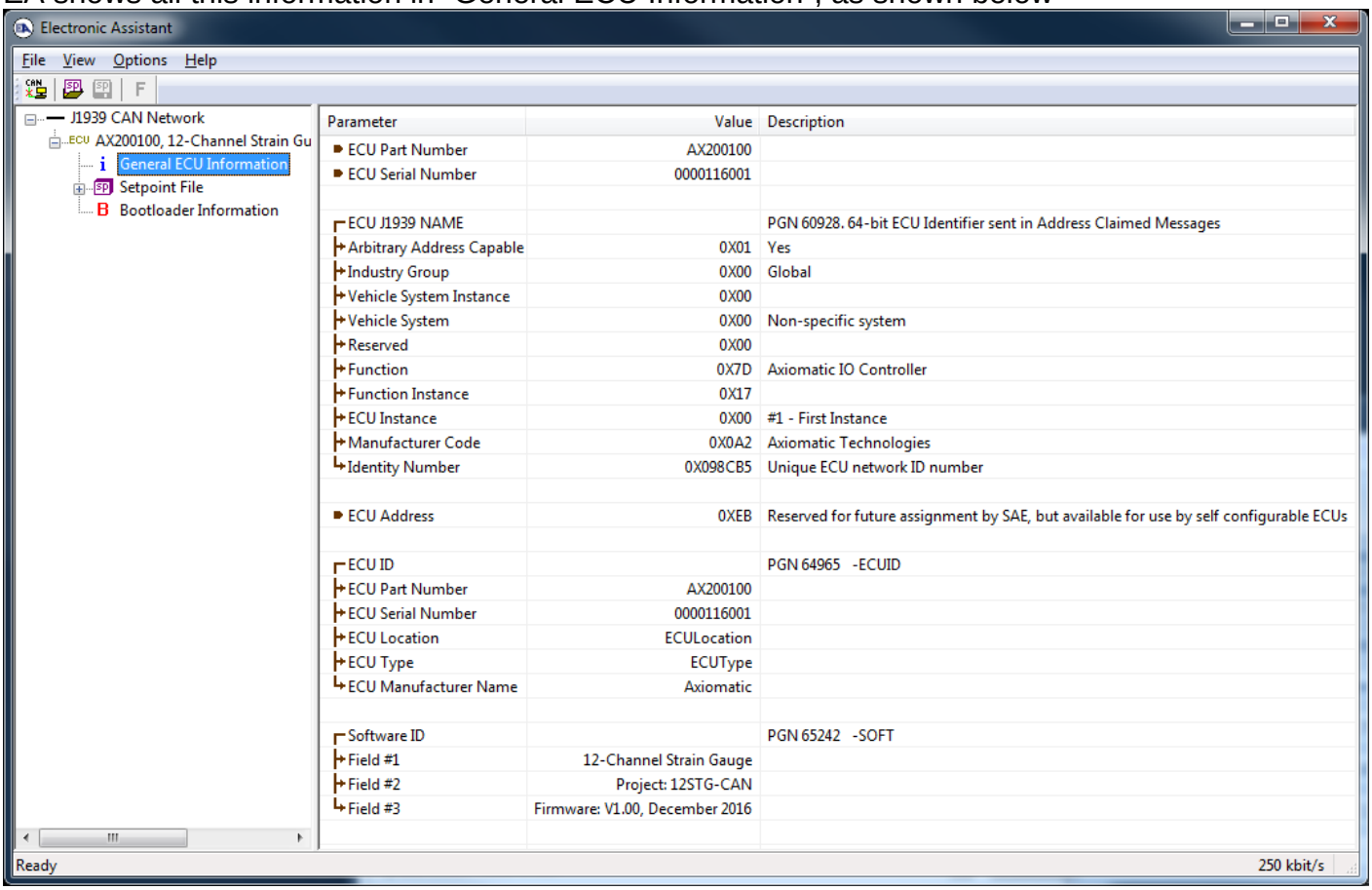
2.2.3. Software Identifier

PGN 65242	Software Identification		- SOFT
Transmission Repetition Rate:	On request		
Data Length:	Variable		
Extended Data Page:	0		
Data Page:	0		
PDU Format:	254		
PDU Specific:	218 PGN Supporting Information:		
Default Priority:	6		
Parameter Group Number:	65242 (0xFEDA)		
Start Position	Length	Parameter Name	SPN
1	1 Byte	Number of software identification fields	965
2-n	Variable	Software identification(s), Delimiter (ASCII “*”)	234

For the 12CH-SG ECU, Byte 1 is set to 5, and the identification fields are as follows

(Part Number)*(Version)*(Date)*(Owner)*(Description)

EA shows all this information in “General ECU Information”, as shown below



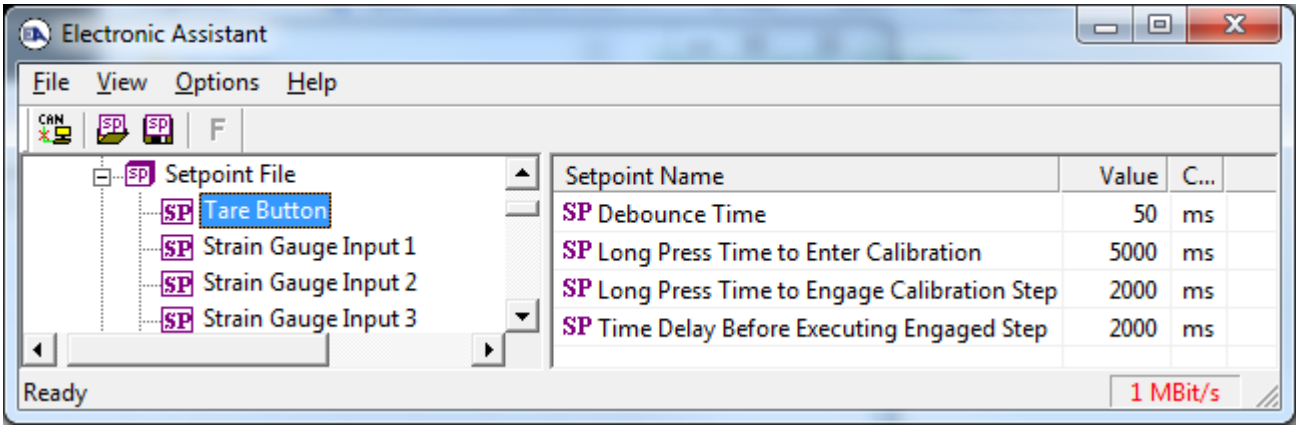
Note: The information provided in the Software ID is available for any J1939 service tool which supports the PGN -SOFT.

3. ECU SETPOINTS ACCESSED WITH ELECTRONIC ASSISTANT

Many setpoints have been referenced throughout this manual. This section describes in detail each setpoint, their defaults and ranges. For more information on how each setpoint is used by the 12CH-SG, refer to the relevant section of the user manual.

3.1. Tare Button Setpoints

The Tare/Calibration Input function block is defined in Section 1.2. Please refer to that section for detailed information on how these setpoints are used.

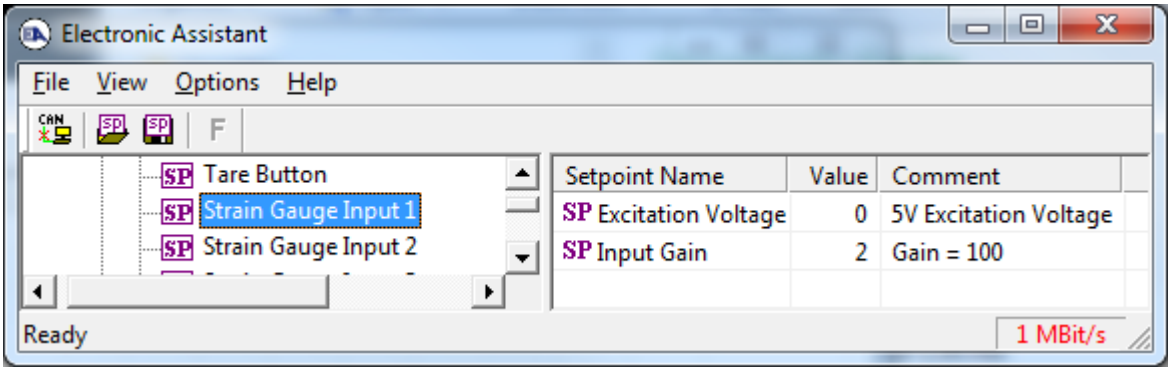


Screen Capture of Default Tare Button Setpoints

Name	Range	Default	Notes
Debounce Time	0 to 65000	50ms	Refer to Section 1.2.1
Long Press Time to Enter Calibration	*EngageTime* to 65000	3000ms	This time represents how long the tare button needs to be pressed in order to enter calibration state. Refer to Section 1.2
Long Press Time to Engage Calibration Step	0 to *EnterTime*	2000ms	This time represents how long the tare button needs to be pressed in order to commence calibration step the controller is in. Refer to Section 1.2
Time Delay Before Executing Engaged Step	0 to 65000	2000ms	This time represents how long after the calibration step has been engaged that the controller will execute the calibration. This time allows for visual feedback that the step has been engaged and also gives time to double-tap the Tare button to cancel the calibration step. Refer to Section 1.2

3.2. Strain Gauge Input Setpoints

The Strain Gauge Input block is defined in Section 1.3. Please refer there for detailed information about how all these setpoints are used.

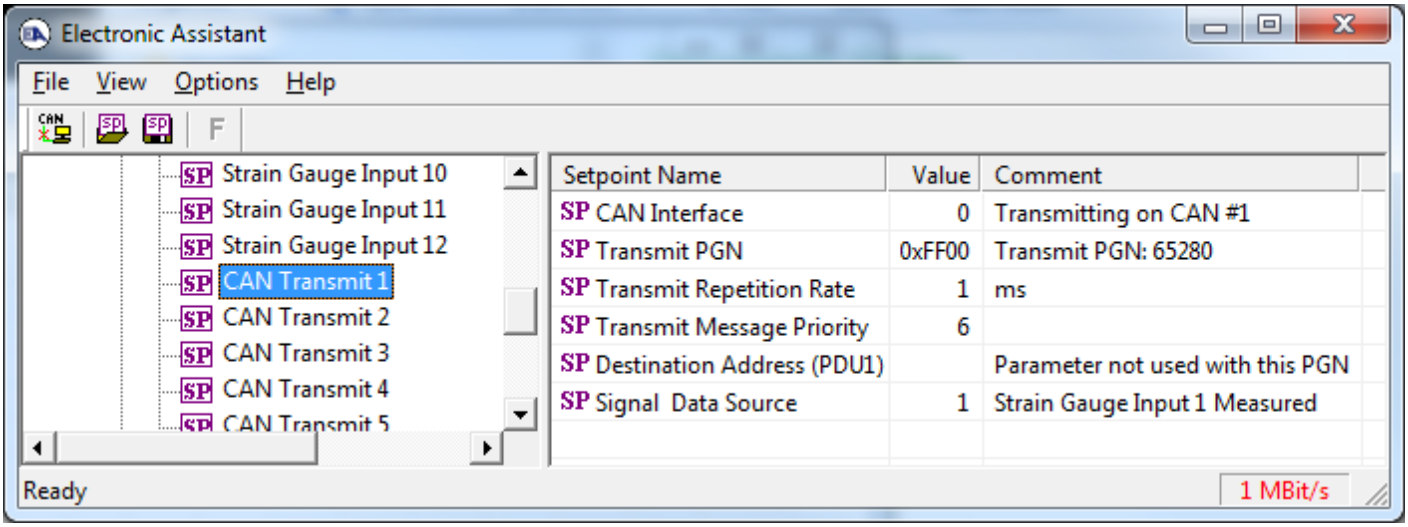


Screen Capture of Default Strain Gauge Input 1 Setpoints

Name	Range	Default	Notes
Excitation Voltage	Drop List	0 – 5V Excitation Voltage	Refer to Table 1
Input Gain	Drop List	2 – Gain = 100	Refer to Table 2

3.3. CAN Transmit Setpoints

The CAN Transmit function block is defined in Section 1.5. Please refer to that section for detailed information about how all these setpoints are used.



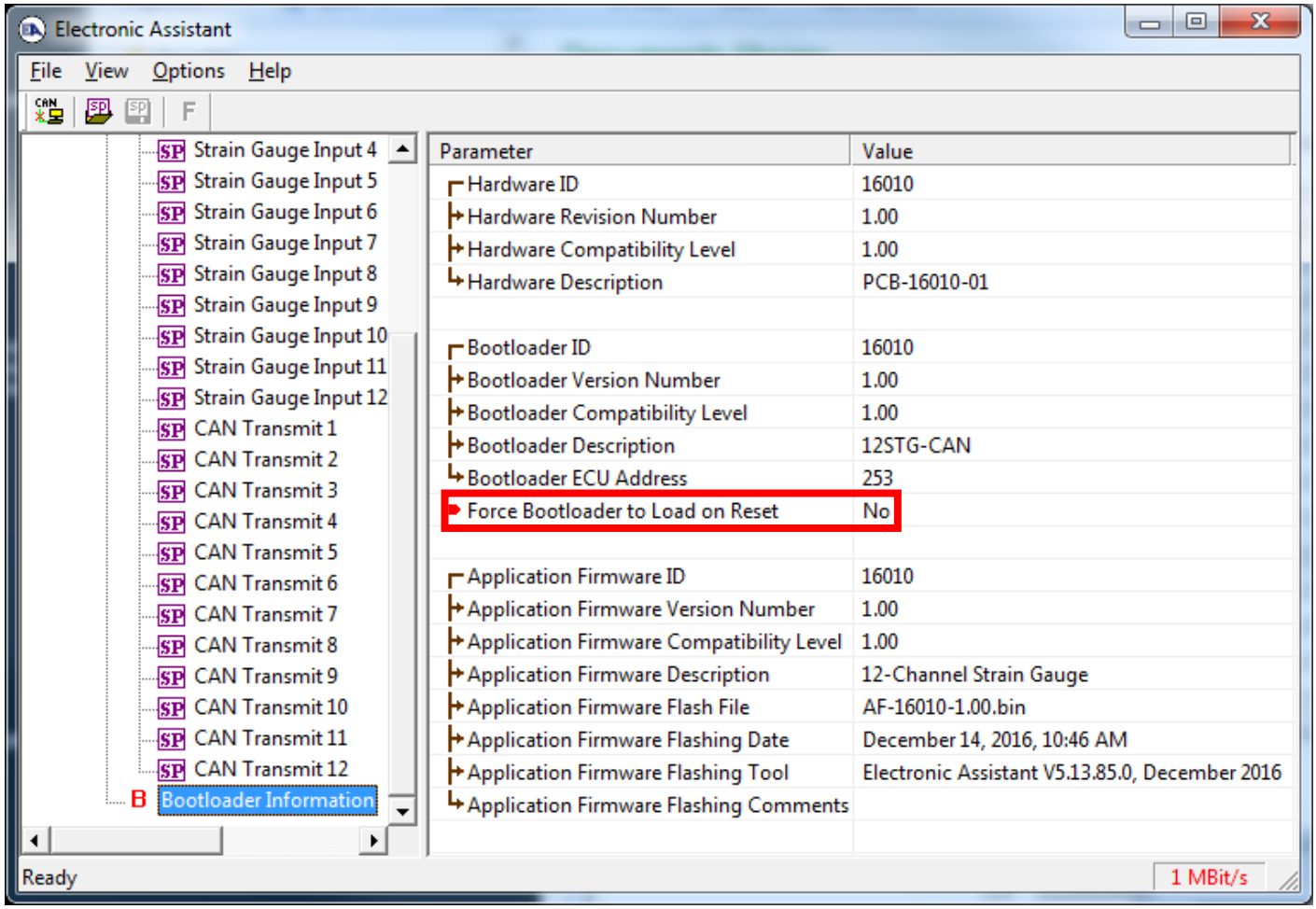
Screen Capture of Default CAN Transmit 1 Setpoints

Name	Range	Default	Notes
CAN Interface	Drop List	0 – CAN #1	Controller supports dual CAN peripheral and any *CAN Transmit* data can be broadcasted on either one
Transmit PGN	0 to 65535	65280 ($FF00)	See Section 1.5 and Table 4 for defaults
Transmit Repetition Rate	0 to 60,000 ms	1ms	0ms disables transmit
Transmit Message Priority	0 to 7	6	Proprietary B Priority
Destination Address (for PDU1)	0 to 255	254 (0xFE, Null Address)	Not used by default
Transmit Data Source	Drop List	Different for each	See Table 3

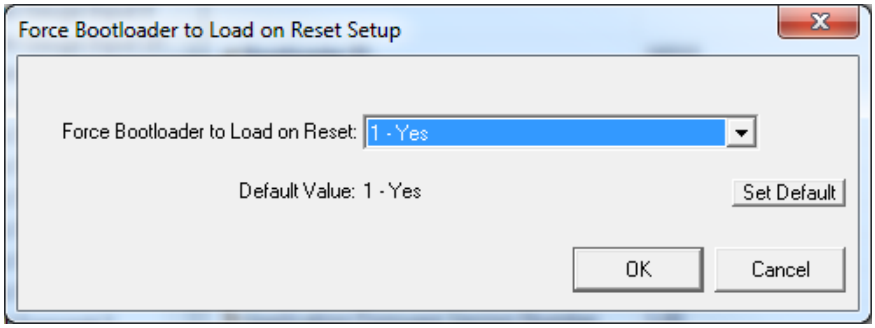
4. REFLASHING OVER CAN WITH EA ® BOOTLOADER

The AX200100 can be upgraded with new application firmware using the **Bootloader Information** section. This section details the simple step-by-step instructions to upload new firmware provided by Axiomatic onto the unit via CAN, without requiring it to be disconnected from the J1939 network.

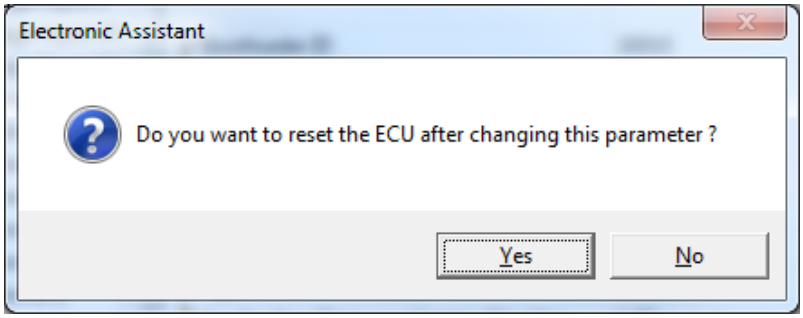
1. When EA first connects to the ECU, the **Bootloader Information** section will display the following information.



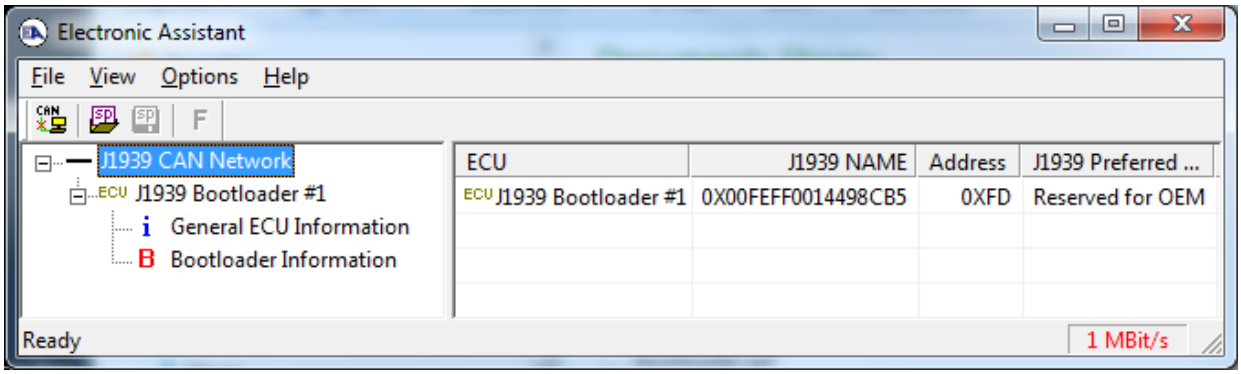
2. To use the bootloader to upgrade the firmware running on the ECU, change the variable **"Force Bootloader To Load on Reset**" to *Yes.*

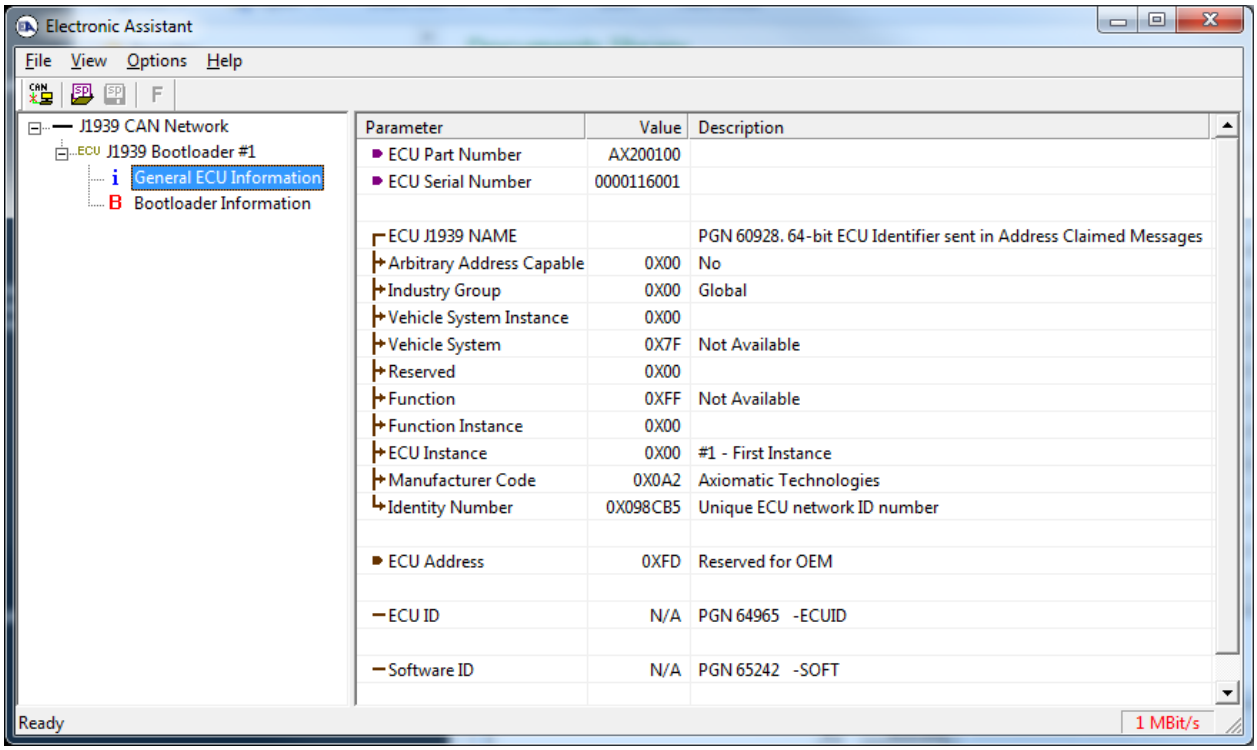


3. When the prompt box asks if you want to reset the ECU, select *Yes*.



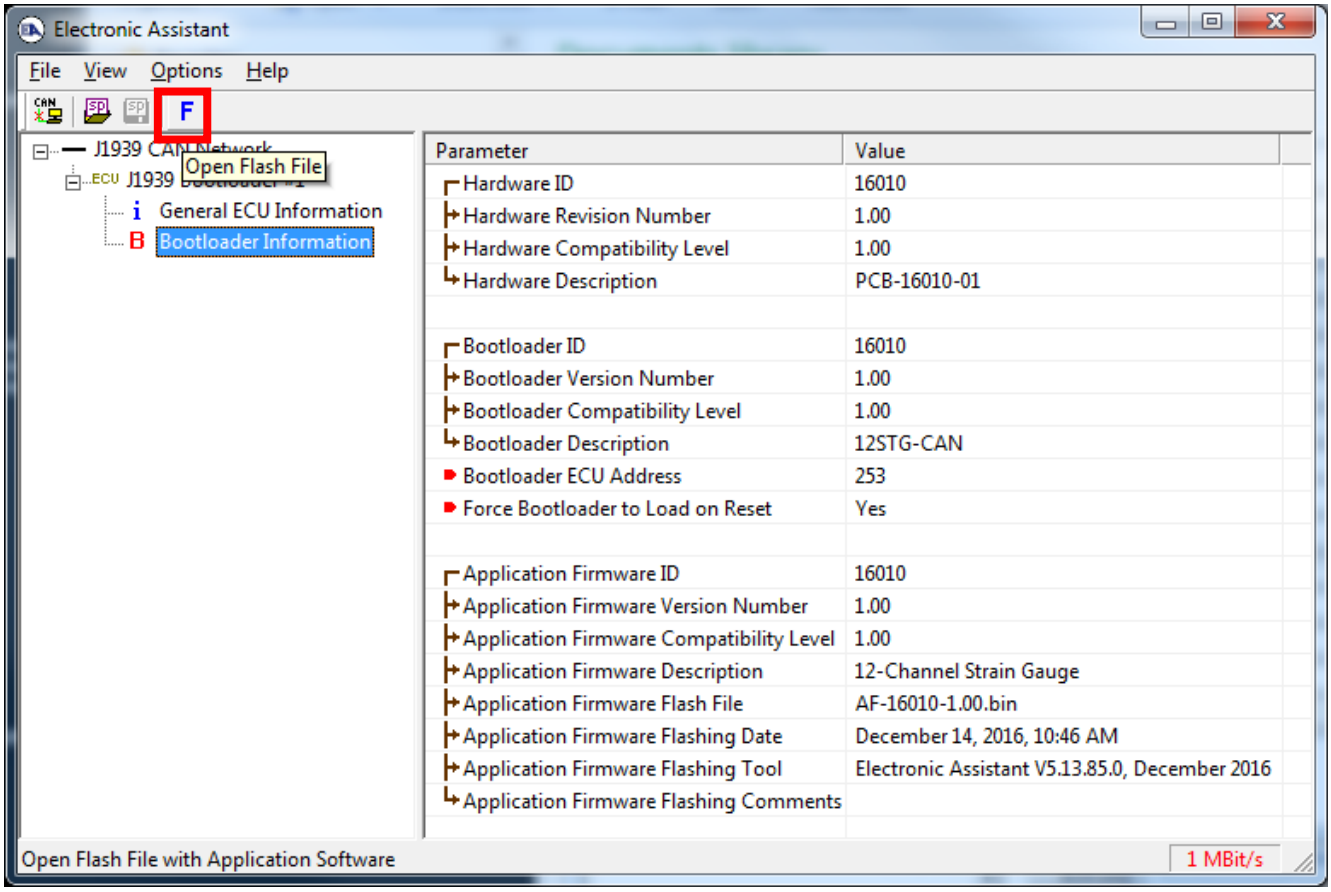
4. Upon reset, the ECU will no longer show up on the J1939 network as an AX200100 but rather as **J1939 Bootloader #1**.





Note that the bootloader is NOT Arbitrary Address Capable. This means that if you want to have multiple bootloaders running simultaneously (not recommended) you would have to manually change the address for each one before activating the next, or there will be address conflicts, and only one ECU would show up as the bootloader. Once the 'active' bootloader returns to regular functionality, the other ECU(s) would have to be power cycled to re-activate the bootloader feature.

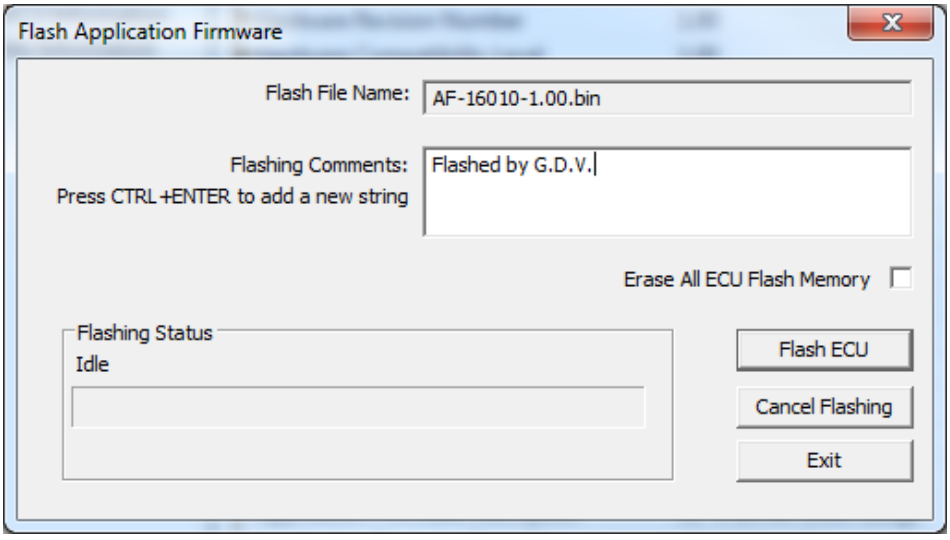
5. When the **Bootloader Information** section is selected, the same information is shown as when it was running the AX200100 firmware, but in this case the **F**lashing feature has been enabled.



6. Select the **F**lashing button and navigate to where you had saved the **AF-16010-x.yy.bin** file sent from Axiomatic. (Note: only binary (.bin) files can be flashed using the EA tool)

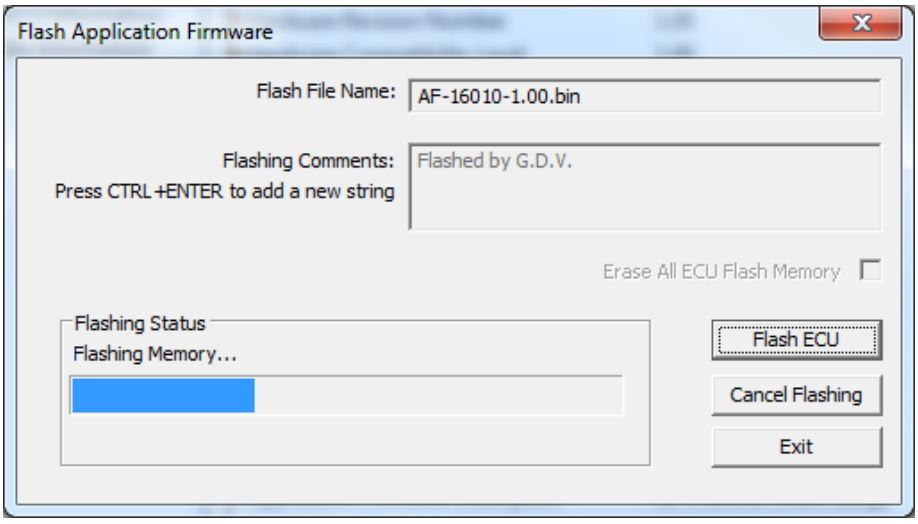
7. Once the Flash Application Firmware window opens, you can enter comments such as “Firmware upgraded by [Name]” if you so desire. This is not required, and you can leave the field blank if you do not want to use it.

   Note: You do not have to date/time-stamp the file, as this is done automatically by the EA tool when you upload the new firmware.

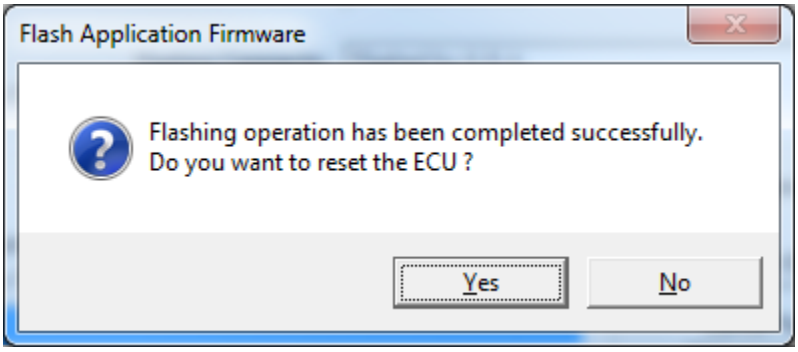


WARNING: Do not check the “Erase All ECU Flash Memory” box unless instructed to do so by your Axiomatic contact. Selecting this will erase ALL data stored in non-volatile flash. It will also erase any configuration of the setpoints that might have been done to the ECU and reset all setpoints to their factory defaults. By leaving this box unchecked, none of the setpoints will be changed when the new firmware is uploaded.

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



9. Once the firmware has finished uploading, a message will popup indicating the successful operation. If you select to reset the ECU, the new version of the AX200100 application will start running, and the ECU will be identified as such by EA. Otherwise, the next time the ECU is power-cycled, the AX200100 application will run rather than the bootloader function.



Note: If at any time during the upload the process is interrupted, the data is corrupted (bad checksum) or for any other reason the new firmware is not correct, i.e. bootloader detects that the file loaded was not designed to run on the hardware platform, the bad or corrupted application will not run. Rather, when the ECU is reset or power-cycled the **J1939 Bootloader** will continue to be the default application until valid firmware has been successfully uploaded into the unit.

5. Technical Specifications

5.1. Power Supply

Power Supply Input - Nominal	12 or 24Vdc nominal operating voltage 7…61 Vdc power supply range for voltage transients
Surge Protection	Provided
Reverse Polarity Protection	Provided for up to -80Vdc
Under-voltage Protection	Provided (hardware shutdown)
Overvoltage Protection	Provided (hardware shutdown)

5.2. Inputs

Strain Gauge Inputs	12 Channels Accepts 4-wire Strain Gauge inputs Input range selectable from+/- 2.5mV (Gain 1000) to +/- 2.5VDC (Gain 1). All input channels have excitation and ground connections provided. All inputs send a message to the CAN bus. • Resolution 24-Bits SAR converter • All input channels have excitation and ground connection on the connector. • Individually selectable 5V or 10V excitation voltage for each of the 12 input channels • Programmable input gain of 1, 10, 100 and 1000 enables gauge sensitivity selectable from 200mV/V down to 0.4mV/V. • Integrated digital filter with real-time averaging with up to 65536 averaged conversations • 98dB SNR at 1Msps (digital filter =1) up to 140dB SNR at 15.25sps (digital filter = 65536) • ±4.5ppm INL maximum and no missing codes at 24 bits • Accuracy is +/- 0.5% throughout the entire range of the input. • Each channel has an individual bi-color status/ calibration/ error LED indicator.
Measurement rate	The measurement rate is 1000 scans per second for all 12 channels. The update rate is 1msec for all 12 channels.
Resolution	24-Bit resolution
Drift	Overall drift with temperature is 50 ppm/°C of span (maximum).
Input Accuracy	+/- 0.5% throughout the entire range of the input
Excitation	12 +5V/+10V excitation connections
Other Input	1 Digital Input Active Low Configurable pullup or pulldown resistor Digital Input: Active High to 5V or Active Low to GND Amplitude: up to +Vsupply
Grounds	12 GND connections

5.3. Communication

CAN	2 CAN 2.0B port, protocol SAE J1939 1 Mbps Baud Rate Transmit Rate 1 mSec.
Network Termination	According to the CAN standard, 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 should be placed between CAN_H and CAN_L terminals at both ends of the network.

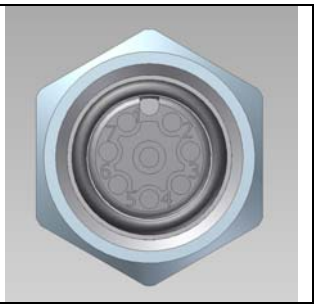
5.4. General Specifications

Microprocessor	STM32F407VGT7
Communications	2 CAN ports (SAE J1939)
User Interface	Electronic Assistant®, P/N: AX070502
SAE J1939 Compliance	The ECU is compliant with the following SAE J1939 standards. • J1939 Recommended Practice for a Serial Control and Communications Vehicle Network, SAE, April 2011 • J1939/21 Data Link Layer, SAE, December 2010 • J1939/71 Vehicle Application Layer, SAE, March 2011 • J1939/81 Network Management, SAE, May 2003
Operating Conditions	-40 to 85°C (-40 to 185°F)
Quiescent Current	112 mA @ 12Vdc; 90 mA @ 24Vdc typical
Weight	1.37 lb. (0.622 kg)
Protection	IP66, PCB assembly is conformal coated.
Vibration	Pending
Shock	Pending

Enclosure and Dimensions	Cast aluminum, painted Refer to dimensional drawing.
Electrical Connections	6 CONEC M12 8-pin connectors (A-coded), P/N: 43-01332 (Ports 1-6) 1 CONEC M12 8-pin connector (A-coded) P/N: 43-01014 (Port 7)

Port 1: Input Channels 1 and 2

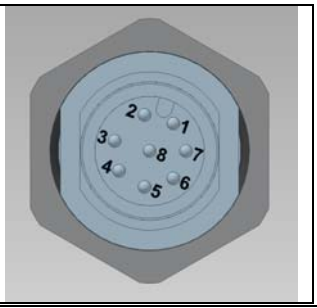
PIN#	Description
1	Excitation 1 +
2	IN 1+
3	IN 1-
4	Excitation 1 -
5	Excitation 2 +
6	IN 2+
7	IN 2-
8	Excitation 2 -



The remaining connectors have the same pin out order as Port 1.
Port 2: Input Channels 3 and 4
Port 3: Input Channels 5 and 6
Port 4: Input Channels 7 and 8
Port 5: Input Channels 9 and 10
Port 6: Input Channels 11 and 12

Port 7: Digital Input, Power and CAN

PIN#	Description
1	BATT +
2	CAN1_H
3	CAN1_L
4	Digital Input 1 +
5	BATT -
6	CAN2_H
7	CAN2_L
8	Input GND



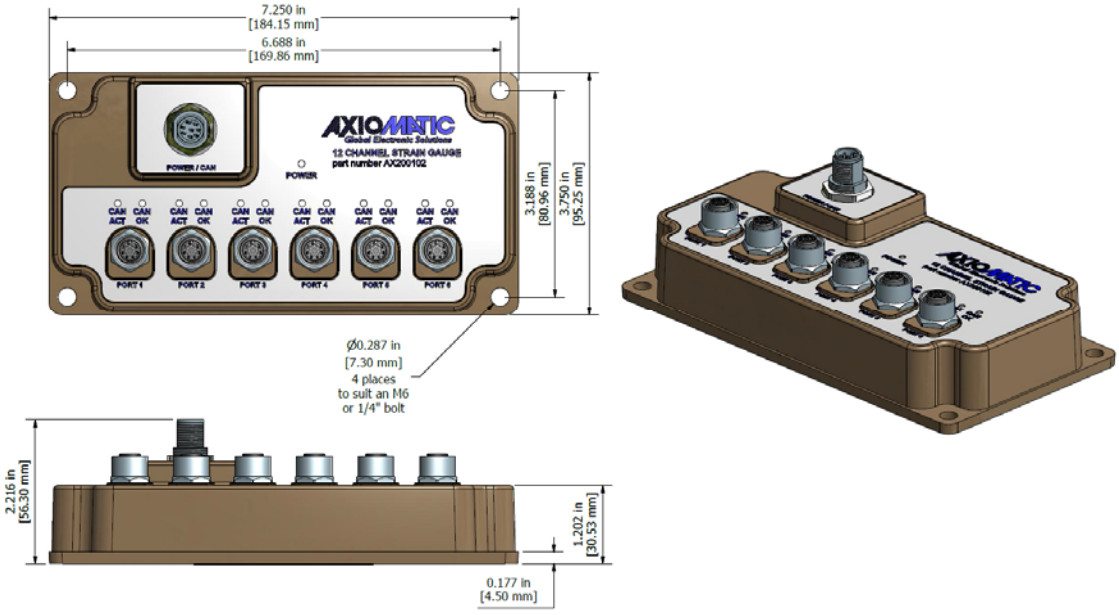


Figure 3.0 - Dimensional Drawing

6. VERSION HISTORY

Version	Date	Author	Modifications
1	December 14th, 2016	Gustavo Del Valle	Initial Draft
-	December 14, 2016	Amanda Wilkins	Added enclosure, dimensions, pin out, weight, quiescent current

OUR PRODUCTS

Actuator Controls

Battery Chargers

CAN bus Controls, Gateways

CAN/Wifi, CAN/Bluetooth

CAN/Ethernet

Current Converters

DC/DC Power Converters

DC Voltage/Current Signal Converters

Engine Temperature Scanners

Ethernet/CAN Converters

Fan Drive Controllers

Hydraulic Valve Controllers

I/O Controls

LVDT Simulators

Machine Controls

Motor Controls

PID Controls

Position Sensors, Angle Measurement Inclinometers, Gyroscopes

Power Supplies

PWM Signal Converters/Isolators

Resolver Signal Conditioners

Service Tools

Signal Conditioners

Strain Gauge CAN Controls

Surge Suppressors

OUR COMPANY

Axiomatic provides electronic machine controls, components, and systems to the off-highway, commercial vehicle, electric vehicle, power generator set, material handling, renewable energy and industrial OEM markets.

We provide efficient, innovative solutions that focus on adding value for our customers.

We emphasize service and partnership with our customers, suppliers, and employees to build long term relationships and mutual trust.

QUALITY DESIGN AND MANUFACTURING

Axiomatic is an ISO 9001:2015 registered facility.

SERVICE

All products to be returned to Axiomatic require a Return Materials Authorization Number (RMA#).

Please provide the following information when requesting an RMA number:

- Serial number, part number
- Axiomatic invoice number and date
- Hours of operation, description of problem
- Wiring set up diagram, application
- Other comments as needed

When preparing the return shipping paperwork, please note the following. The commercial invoice for customs (and packing slip) should state the harmonized international HS (tariff code), valuation and return goods terminology, as shown in italics below. The value of the units on the commercial invoice should be identical to their purchase price.

Goods Made In Canada (or Finland)
Returned Goods for Warranty Evaluation, HS: 9813.00
Valuation Identical Goods
Axiomatic RMA#

WARRANTY, APPLICATION APPROVALS/LIMITATIONS

Axiomatic Technologies Corporation reserves the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. Users should satisfy themselves that the product is suitable for use in the intended application. All our products carry a limited warranty against defects in material and workmanship. Please refer to our Warranty, Application Approvals/Limitations and Return Materials Process as described on www.axiomatic.com/service.html.

CONTACTS

Axiomatic Technologies Corporation
5915 Wallace Street
Mississauga, ON
CANADA L4Z 1Z8
TEL: +1 905 602 9270
FAX: +1 905 602 9279
www.axiomatic.com

Axiomatic Technologies Oy
Höytämöntie 6
33880 Lempäälä
FINLAND
TEL: +358 103 375 750
FAX: +358 3 3595 660
www.axiomatic.fi