maximatecc


# maxAI Configuration Software V2.3.X.X

## Installation and Operation Manual

# Table of Contents

# 1 Scope and Use of This Manual

*…provide the reader with enough background information to understand the overall installation and operation of the maxAI 430iv configuration software…*

The intent of this manual is to provide the reader with all the information required to install and operate the maxAI 430iv configuration software.

The user is expected to have a basic knowledge of the vehicle's operating parameters normally displayed on an instrument cluster, such as engine RPM, vehicle speed, engine temperature, transmission temperature, engine oil pressure, transmission oil pressure, etc.

maxAI 430iv Configuration Software allows the user to configure the maxAI 430iv display via a user friendly, easy to operate PC interface. The software allows the user to modify and configure up to 5 screens with a maximum of 5 parameters per screen.

Once configuration is set on the software, the new configuration is transferred to the display by USB or Bluetooth connection.

# 2 Installation Instructions

## 2.1 System Requirements

| Component | Recommended | Minimum |
|---|---|---|
| Processor | Intel Compatible (x86)<br>>2GHz<br>>2 Cores | Intel Compatible (x86)<br>>1GHz<br>>2Cores |
| Memory(RAM) | 8G | 4GB |
| Hard drive capacity | >100GB | Defined by OS minimum |
| USB | 2.0 or 3.0 | 1.1 |
| Operating System | Windows 10 (>Version 1709) | |

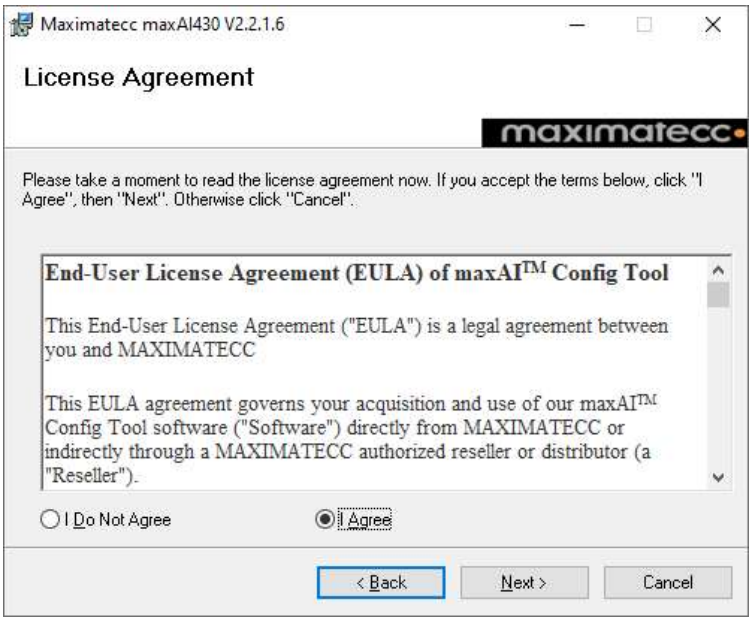
## 2.1 PC Tool Application Installation

PC Tool Application can be downloaded from the following link:

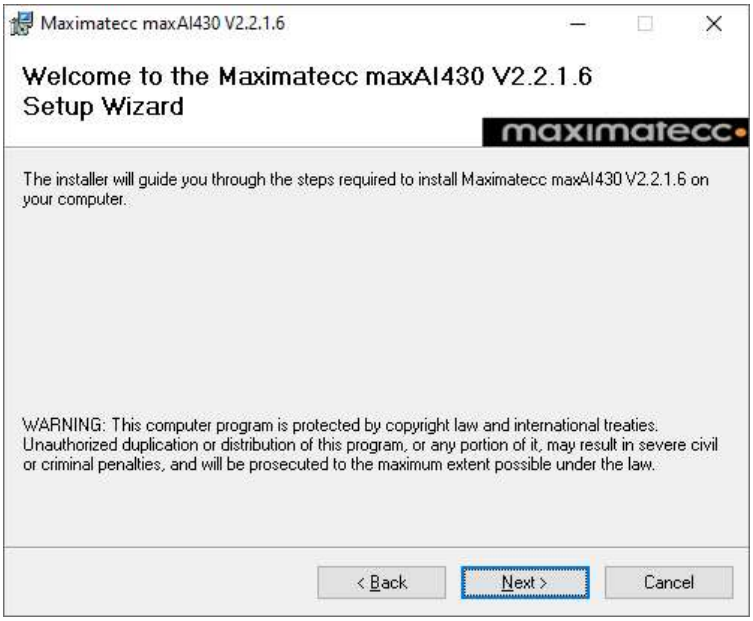
https://www.maximatecc.com/products/maxai-430i-advanced-instrumentation/

un-compress **SetupAdvancedClusterPCTTool V2.2.1.0.zip** file and run **setup.exe** with administrator rights.

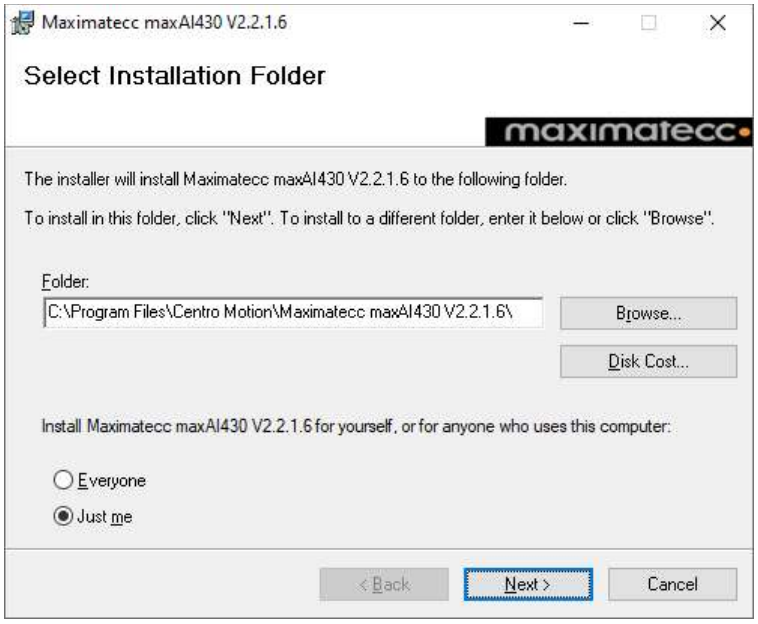

Click **Next**.



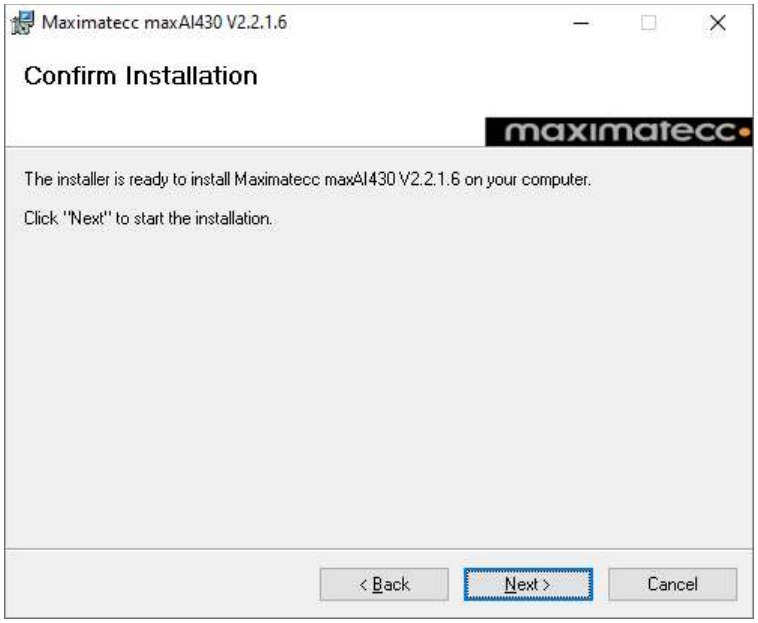

Select **I agree** and click **Next**.



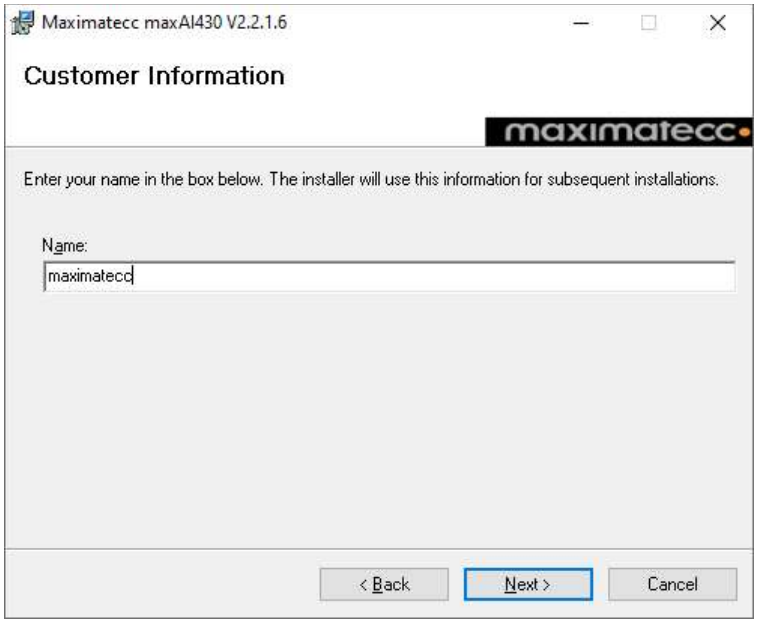

Click **Next**.



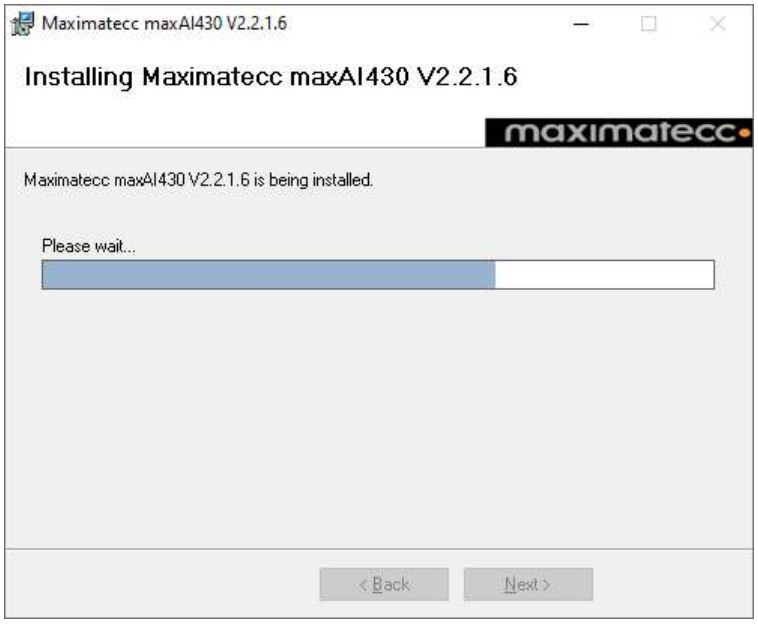

The installer will choose a default folder location. Click on **Browse** if you wish to choose an alternate location. Select the users that will have access to the software by selecting **Everyone** or **Just me**. Click **Next** to continue.




Click **Next**.

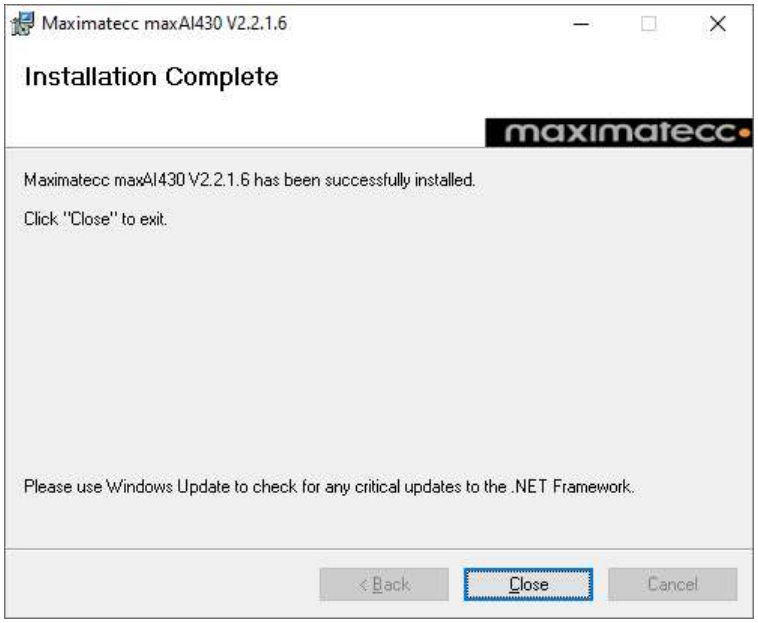



Enter your name into the box, then click **Next**.




Wait while installation process is completed.


Click **OK** on the following pop-up.




When progress has finished, click **Close** to complete installation.


Go to folder where the software was installed and double click the **Advanced Cluster PCTool maxAI430i** file or click the icon installed on the PC desk top to open the PC Tool Application.

# 3 Getting Started

## 3.1 Required Hardware

The Configuration Software speaks to the maxAI display via USB cable for configuration and firmware update or Bluetooth for configuration only. In addition to the maxAI display, the following items are required for display configuration.
Connect PC→USB→maxAI Display
Connect Power Supply→maxAI Display


PC with Software

Adapter Harness/Power Supply

USB Cable

# 4 Communication

## 4.1 Connecting with USB


After connecting all hardware with a USB cable and opening Configuration software, establish USB communication by first selecting the model being connected then selecting **USB** under **Communications**.


Once the appropriate selections are made select **Initialize** at the top of the window.


Once communication is established, a pop up will confirm successful connection to the device and the Config Tool will indicate that it is connected at the top of the window.

## 4.2 Connecting with Bluetooth


Before making a USB connection, you may wish to change the **BLE Name** (Bluetooth Name) of the device. In order to change the name of the device, you will need to initially connect via USB. Once USB communication is established, rename the BLE Name to desired designation.


Once the BLE Name is filled in, select **Write** to set the new BLE Name to the device.


Once the BLE Name is known you are ready to connect via Bluetooth. To connect, first make sure the BLE Name is correct to match the device you wish to connect to. Once the BLE Name is correctly filled in, select the model being connected then selecting **Bluetooth** under **Communications**.


Once the appropriate selections are made select **Initialize** at the top of the window.


Once communication is established, a pop up will confirm successful connection to the device and the Config Tool will indicate that it is connected at the top of the window.

# 5 Configuration Software Navigation

The configuration Software is broken down into 2 tabs with options or sub tabs under each item as follows:

1. Settings
    - Cluster
        - Model
        - Custom Parameters
    - Clock
        - Synchronize
        - Time
        - Date
    - International
        - Language (can be added at customer request)
        - Units
    - Service Interval
        - Enable
        - Hours
        - Travel Distance
    - Odometer/Hours
        - Low Resolution
        - High Resolution
        - Frequency
            a) PPM
        - Hours RTC
    - Communication
        - USB/Bluetooth
        - CAN Baud Rate Channel 0
        - CAN Baud Rate Channel 1
    - BLE Name
        - Cluster Name
    - Address
        - Cluster Address
2. Setup
    - Configure Display
        - Splash
            a) Customer Splash Image
            b) Display Time
        - Icons
            a) Apply Icons

- Screen 1-Screen 5
    a) Cluster Layout
        a. Enable
    b) Show Options
        a. Conf Screen Timeout
        b. Autoswitch Theme by Light Sensor
        c. Transmission Position Display
        d. Loss of Communication
        e. Popup Banner
- Video
    a) Video Display
        a. Enabled
    b) Video Switch Options
        a. Signal
        b. Source
        c. On
        d. Units

- Inputs
    - Digital
        a) Add
        b) Remove
    - Resistance
        a) Part Number
        b) Add
        c) Remove
    - Voltage
        a) Part Number
        b) Add
        c) Remove
    - Frequency
        a) Add
        b) Remove
    - Current
        a) Add
        b) Remove
- Gauge Sources
    - Signal Name
    - Source
    - Display LO-Limit
    - Display HI-Limit
    - Units
- Warning Lights
    - LED

a) Signal Name
b) Source
c) Threshold-Lo
d) Threshold-Hi
e) Units
f) Enable
g) Logic

- LCD
  a) Signal Name
  b) Source
  c) Threshold-Lo
  d) Threshold-Hi
  e) Units
  f) Enable
  g) Logic

- Output
  - Type
  - Activated by
- Cluster Config
  - PC File
  - Cluster
  - Firmware

# 6 Session Start

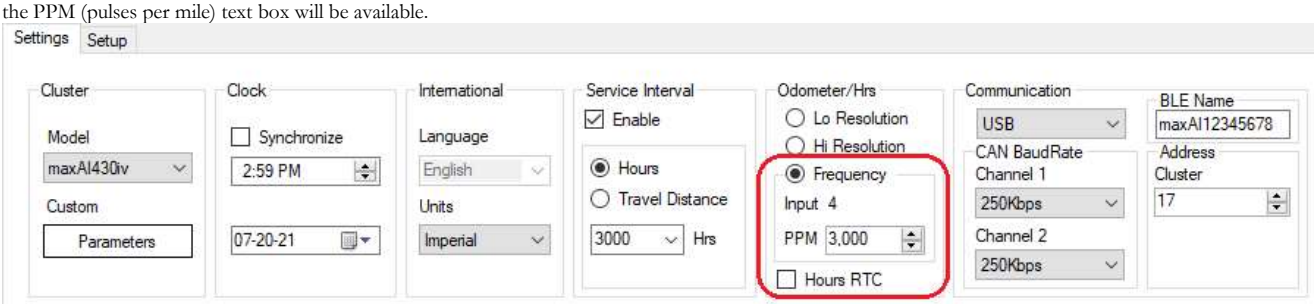

**License**: Shows software activation type
**New:** Start a session with defaults in all tool control's fields
**Restore:** Permits recover previous configuration when tool is closed and reopened

# 7 Setting Up Display Configuration

## 7.1 Settings

The **Settings** tab will allow you to set basic display functions.


**Cluster Parameters** menu allows you to view and adjust communication parameters for specific models.
**Clock** menu allows the setting of the time and date. This can be set manually by using the up and down arrows for time and the calendar drop down for date. The time and date can also be automatically set by selecting **Synchronize**. This will set time and date to the values on the PC.
**International** menu allows you to change the units of measure. The options are **Imperial**, **Metric KPa**, or **Metric Bar**. Future software releases will include the option to change language.
**Service Interval** menu allows you to set service time intervals for both **Hours** or **Travel Distance**. To enable this feature, **Enable** must be selected and value set. Select the parameter then select the value from the drop down.
**Odometer/Hours** menu
The Odometer and the hour meter can be configured to use CAN J1939 signals or input 4 configured as frequency input. The user shall configure the input 4 as a frequency counter (Setup: Inputs) and then Assigned to Vehicle Speed Gauge (Setup: Gauge Sources) then the frequency checkbox will be enabled, and the PPM (pulses per mile) text box will be available.

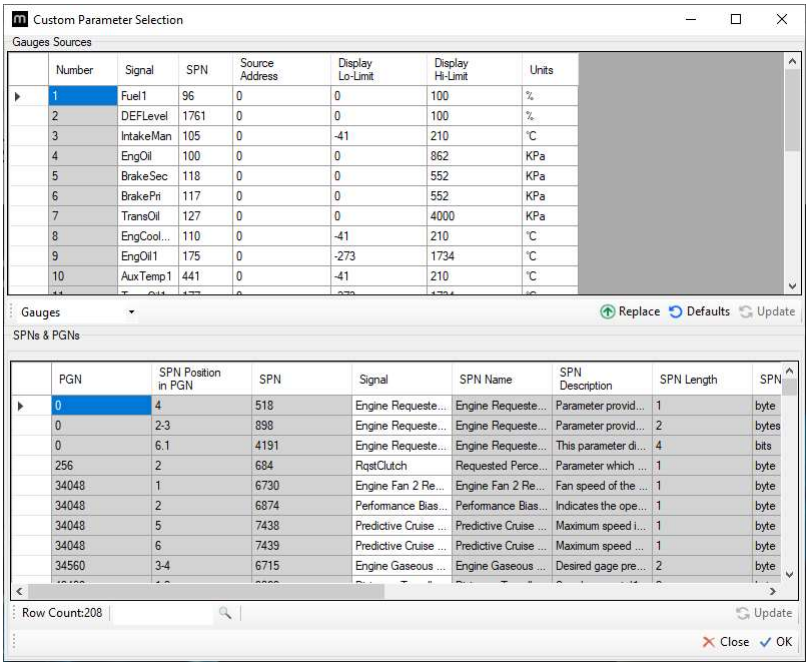



The Hour meter have the Real time clock configuration available, during this mode the hour meter will count the time from the RTC internal module. The trigger for this counter will be the RPM value from the input 1 configured as tachometer input.

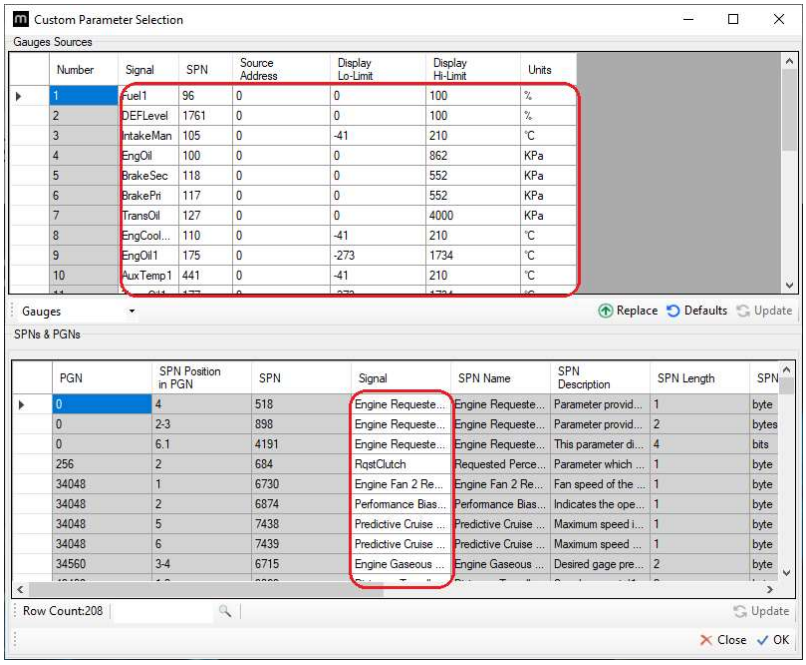
**Communication** menu allows you to set the Baud Rate independently for each CAN Channel necessary for the system the maxAI 430iv will be used on.

## 7.2 Cluster Custom Parameters

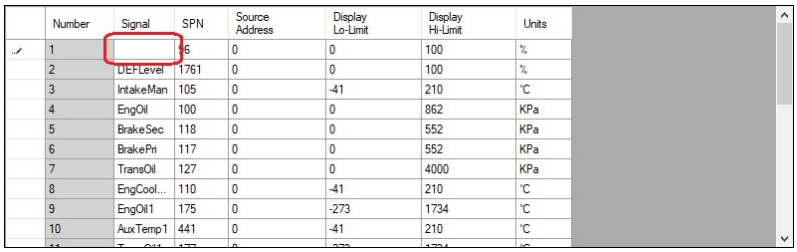

Select **Parameters** on the **Settings** tab.



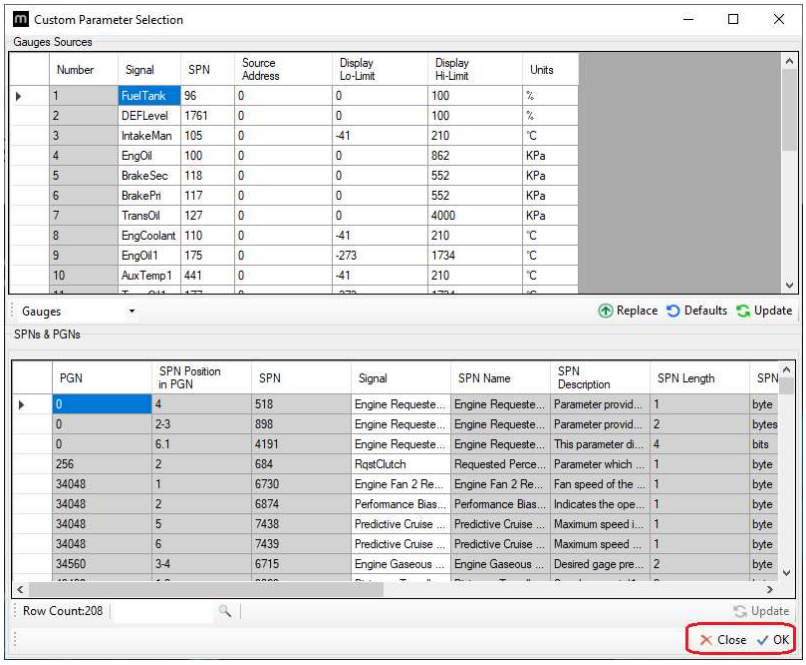
The **Custom Parameters Selection** window will open, the default section is **Gauges**.




The grey shaded cells can not be changed, but all white cells can be adjusted to user preferences.

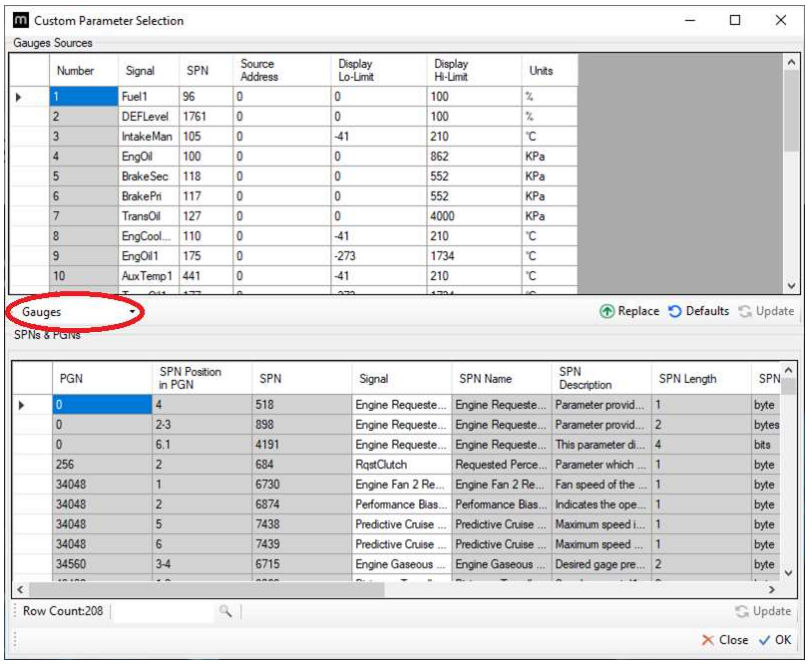



Select the parameter to change by double clicking on the parameter cell. This will bring up a text cursor. The original parameter can then be deleted and new parameter filled in. The new designation will be limited to 10 characters.

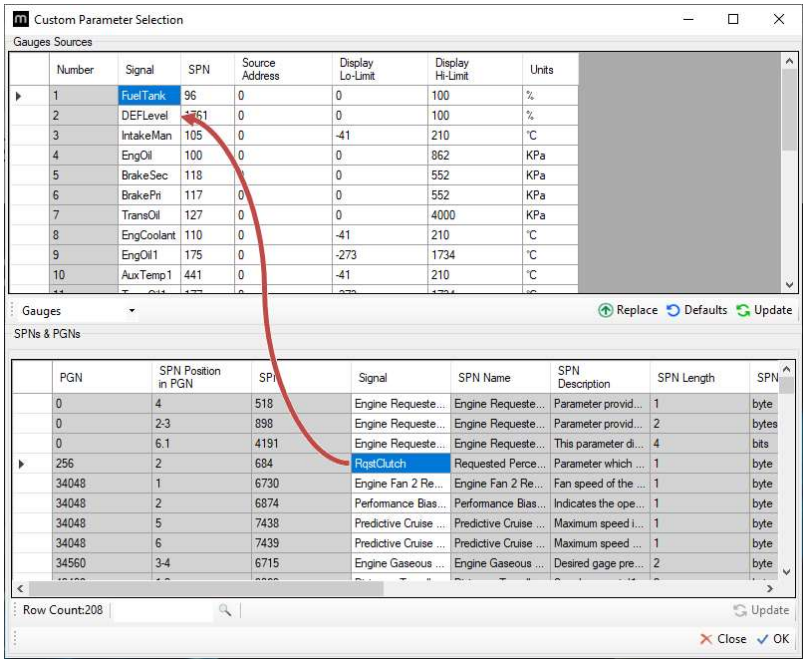



Once all of the parameters are set to the user settings select **OK** to set the new parameters, or if you wish to cancel the changes select **Close**.

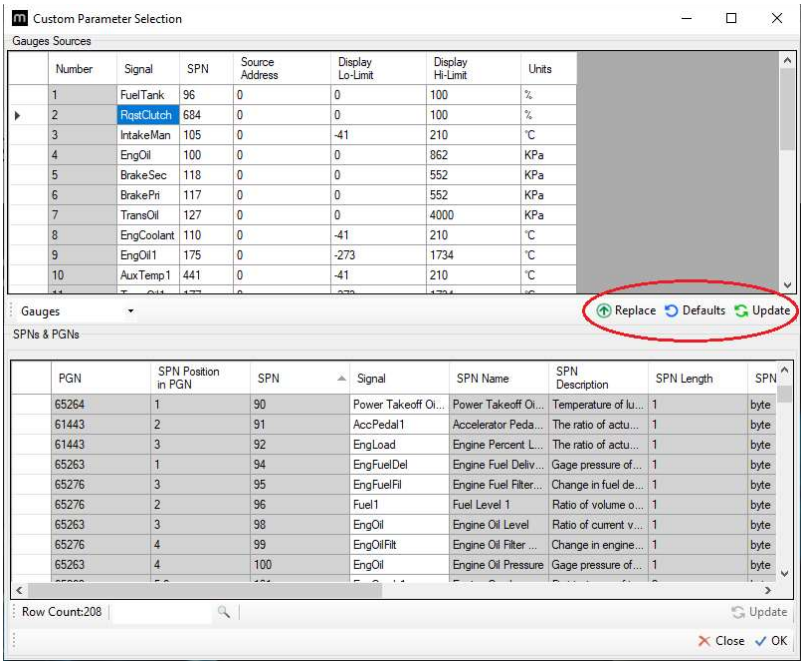
# 7.3 Gauges



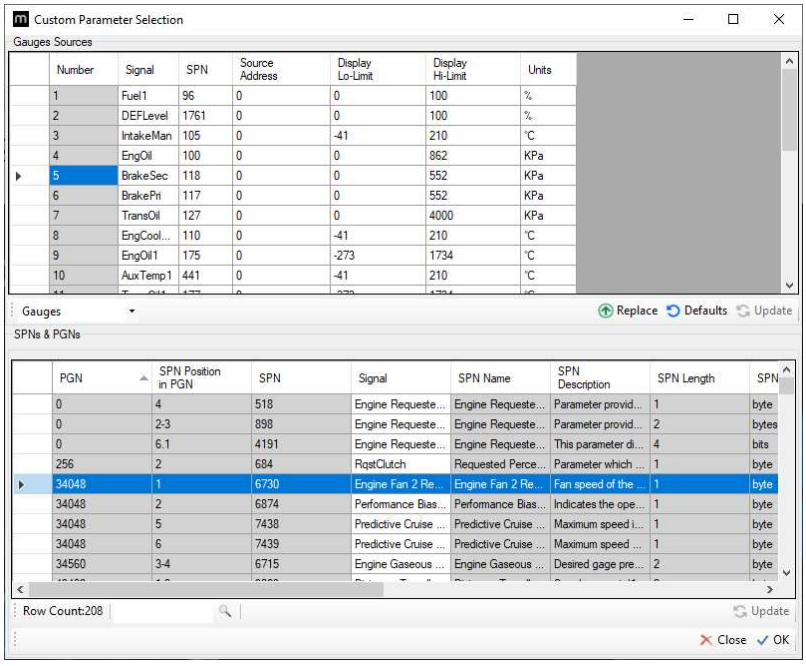

**Gauges** is the default initial **Custom Parameters Selection.**



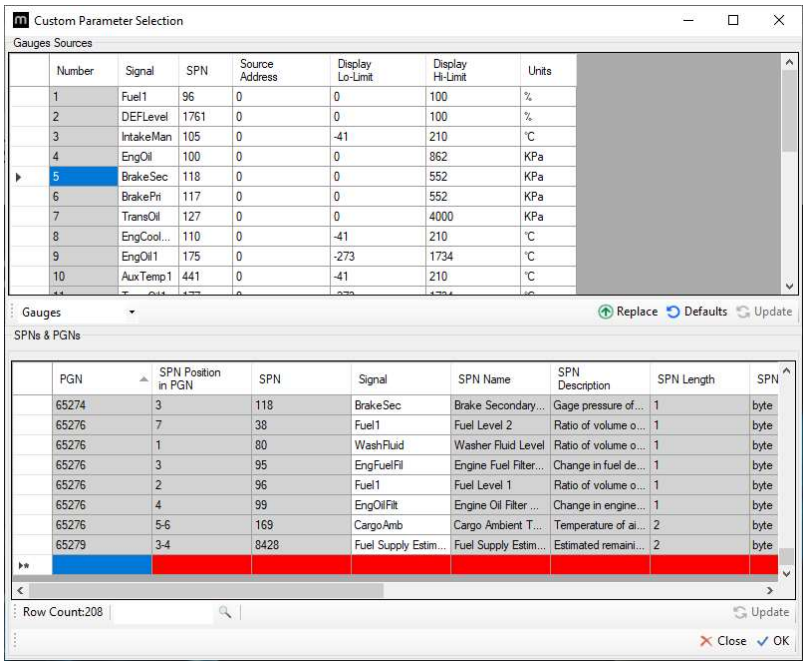

**Gauge Source** information can also be updated by dragging the preferred SPN & PGN data from the **SPNs & PNGs** panel to the Gauge Source position desired in the **Gauge Source** panel.



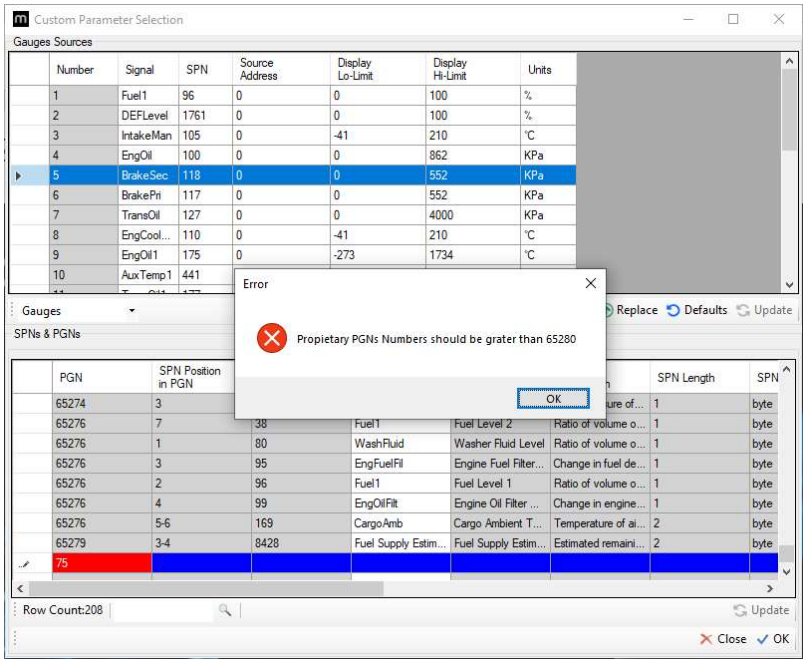

Other shortcuts can be done using the parameter shortcut buttons.



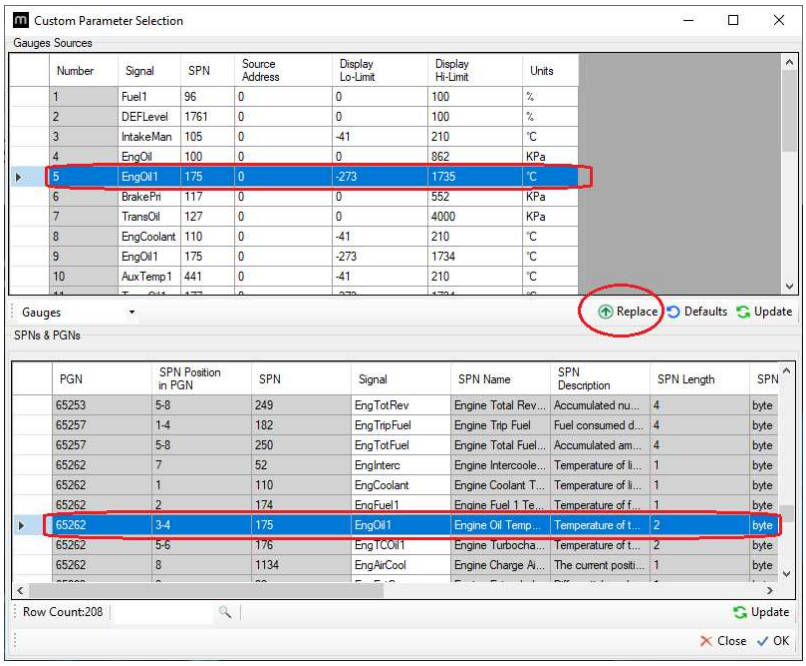

To replace a selection in the **Gauge Sources** panel with a selection from the **SPNs & PGNs** panel using the buttons, first select the gauge number to be replaced in the **Gauge Sources** panel and then select the desired row from the **SPNs & PGNs** panel.



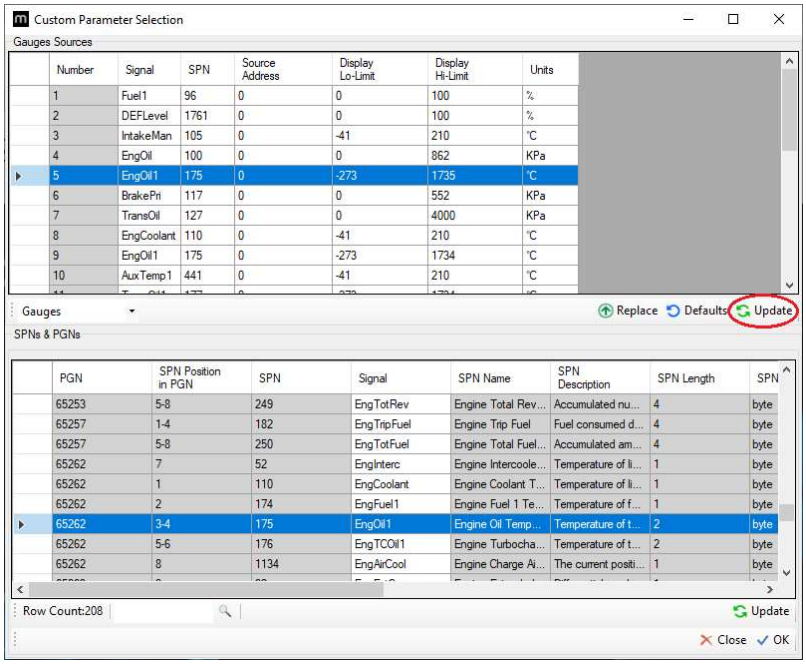

Custom PGN's can be set up by scrolling to the botton of **SPN's & PGN's** where a blank row is available. Each cell in the row must be filled out in order for the custom PGN to be saved.



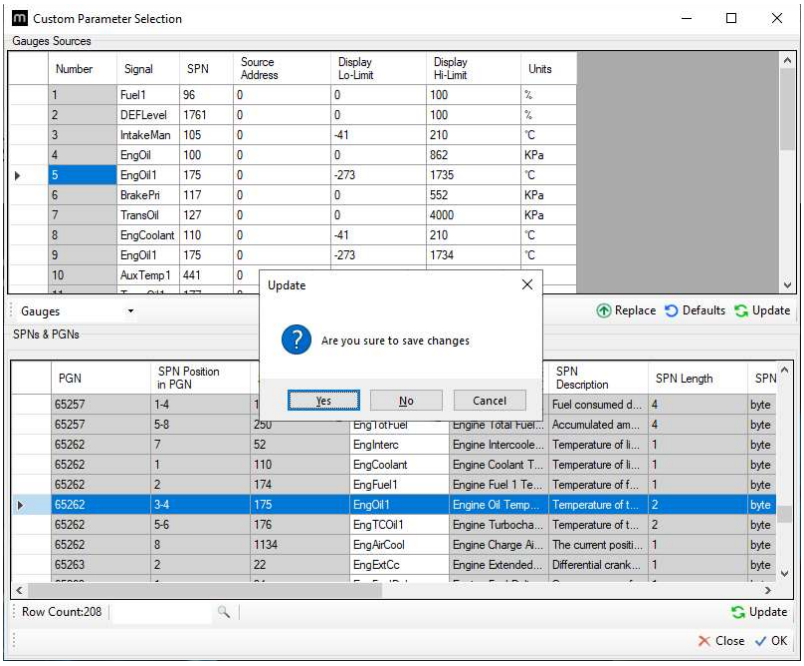

Custom PGN's must be greater than 65280. If a number lower than this is selected, a notification will pop up and the PGN will change to this number.




When the selections are made, select the Replace button and the selection will be replaced in the **Gauge Sources** panel. If changes are made by accident and you wish to revert to default settings, select the Defaults button to reset parameters to factory default settings.

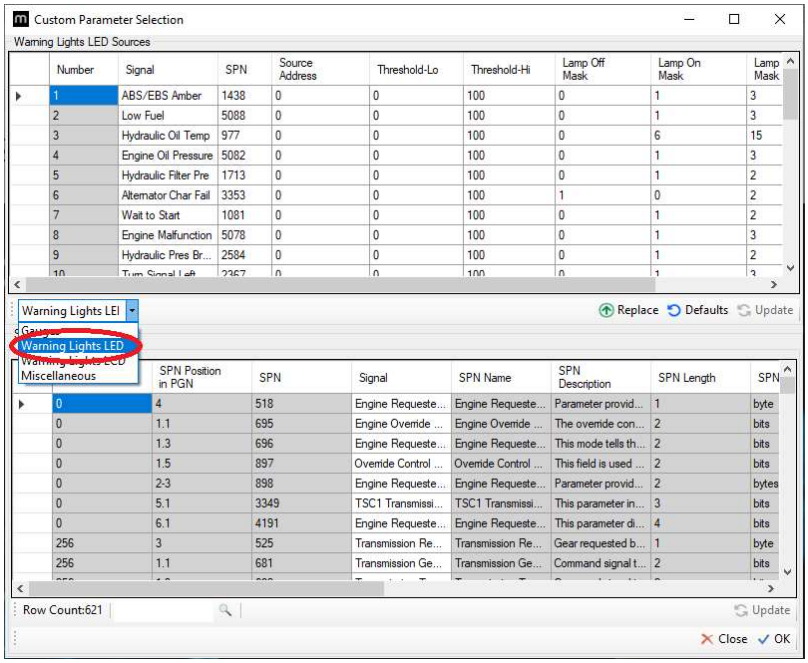



Once all parameters are changed to desired settings, select the Update button to save the settings.



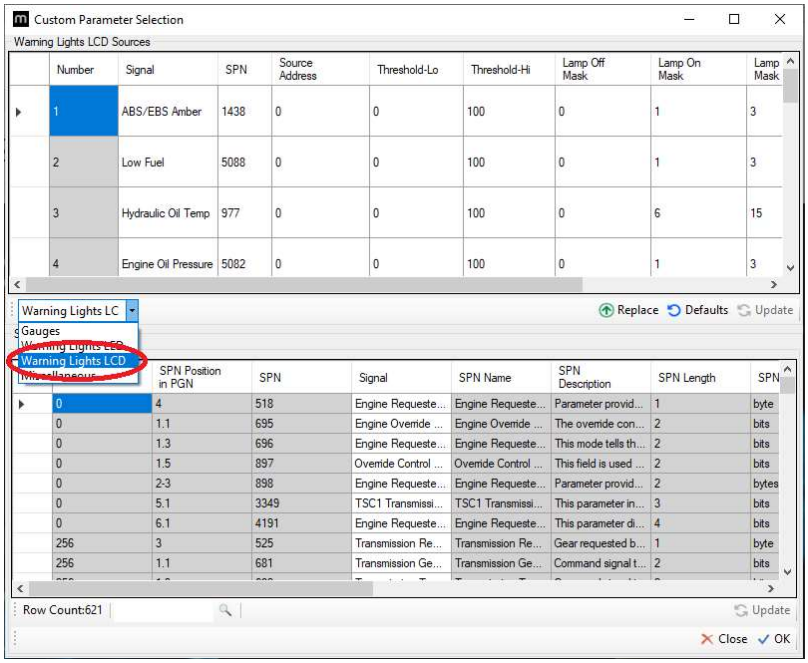

You will be asked to confirm that you wish to save changes. Select **YES** to apply changes. Selecting **NO** will allowing you to continue editing without removing all existing changes. Selecting **CANCEL** will revert all changes and cancel editing.

## 7.4 LED Warning Lights



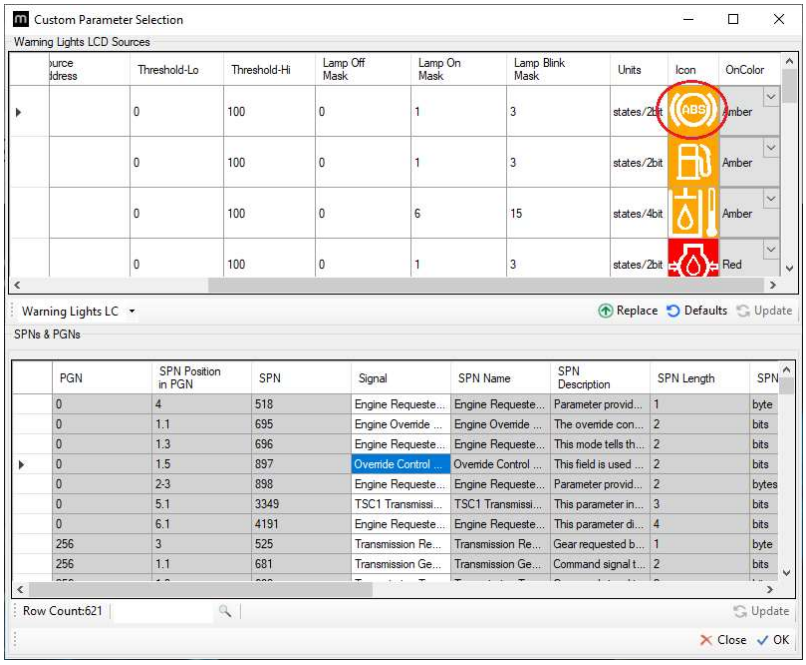

On models with icons, such as maxAI 430i and maxAI 430iv, the LED warning lights can also be configured here. This is done by selecting **Warning Lights LED** from the tab at the center of the page on the left side, as indicated in the above illustration. 20 warning lights can be set up. Editing capabilities for warning lights are the same as for the gauges.

# 7.5 LCD Warning Lights

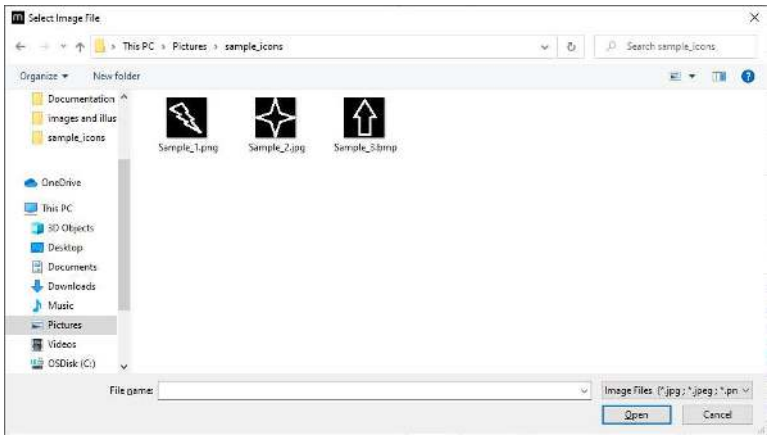



**LCD Warning Lights** is available in all models, maxAI 430, maxAI 430i, maxAI 430v and maxAI 430iv, These Warning Lights will appear as a pop-up image in the LCD, after dismissing the pop-up the status of the Warning Light can be monitored by an LCD lamp on base screen and on a more detailed level through a menu option in the cluster. This option is available by selecting **Warning Lights LCD** from the dropdown menu the tab at the center of the page on the left side, as indicated in the above illustration.

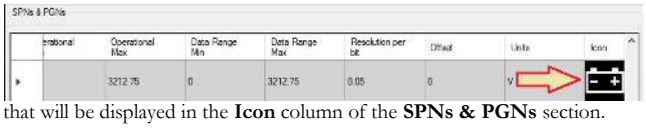

There is a total of 21 configurable **LCD Warning Lights**. Editing capabilities for warning lights are the same as for the gauges.



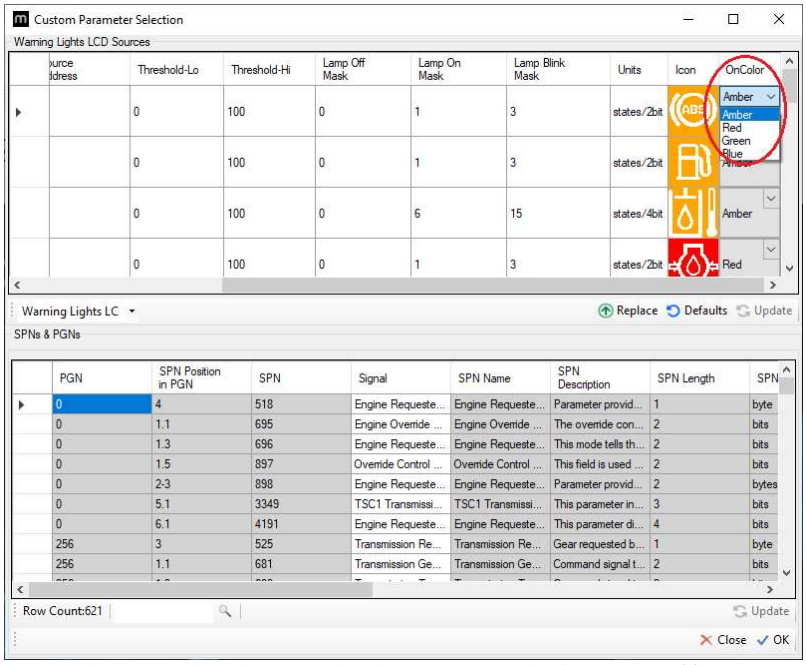

**LCD Warning Lights** icons can be customized double clicking on the image under the **Icons** column on the far right of the parameters row.



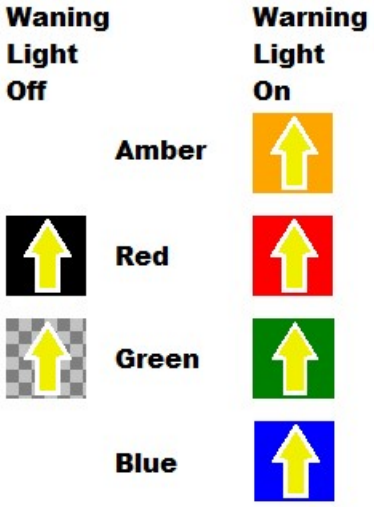

A **Select Image File** menu will appear. Any ***.jpg, *.jpeg, *.png, *.gif, *.tiff, *.nef** or ***.bmp** image can be selected as long it has an image size of **50 x 50 Pixels**.




Some signals already have a default icon that will be displayed in the **Icon** column of the **SPNs & PGNs** section.

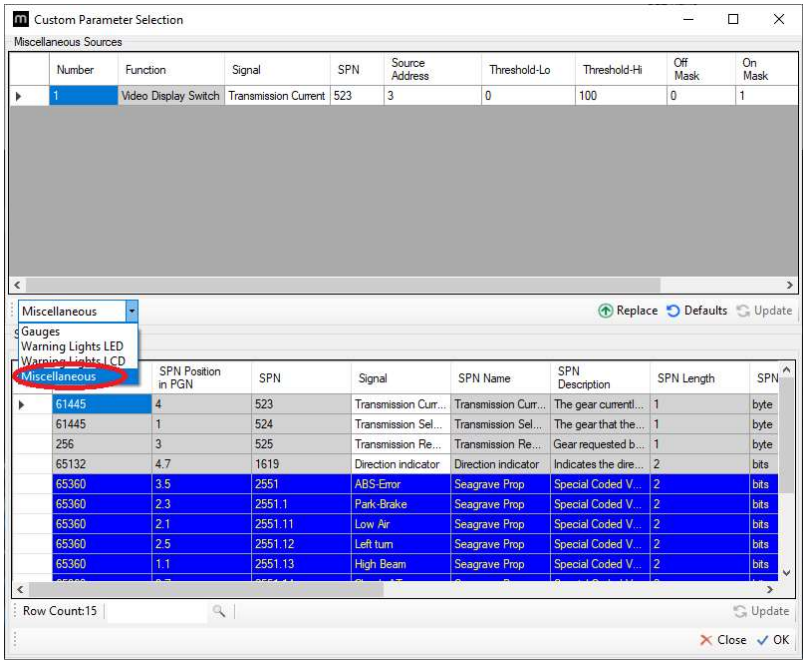



The Warning Light Active background color can be selected from the dropdown menu of the **OnColor** column. The available colors are **Amber**, **Red**, **Green** and **Blue**.




True color images are supported to use as icon but consider that **Transparent*** and **Black+** pixels will be used as image background, and these sections will change color to selected on color when Warning Light is active.
*Only GIF and PNG image file formats could include transparencies.
+Black pixels are considered when all RGB registers <50

## 7.6 Miscellaneous




On models with advance features, such as maxAI 430v and maxAI 430iv, the Camera Video CAN activation can be configured here. This is done by selecting **Miscellaneous** from the tab at the center of the page on the left side, as indicated in the above illustration. Editing capabilities are the same as for the gauges, but the amount of J1939 standard messages will be limited to **PGN 61445 SPN 523, PGN 61445 SPN 524**, **PGN 256 SPN 525** and **PGN 65132 SPN 1619**. Any proprietary **PGN** can be selected.

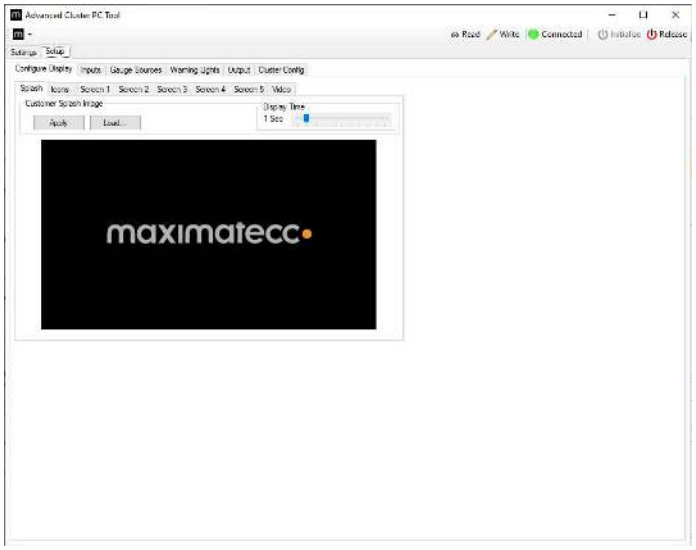
**NOTE**: Make sure to configure the **Source Address** to the appropriate value.

# 8 Setup

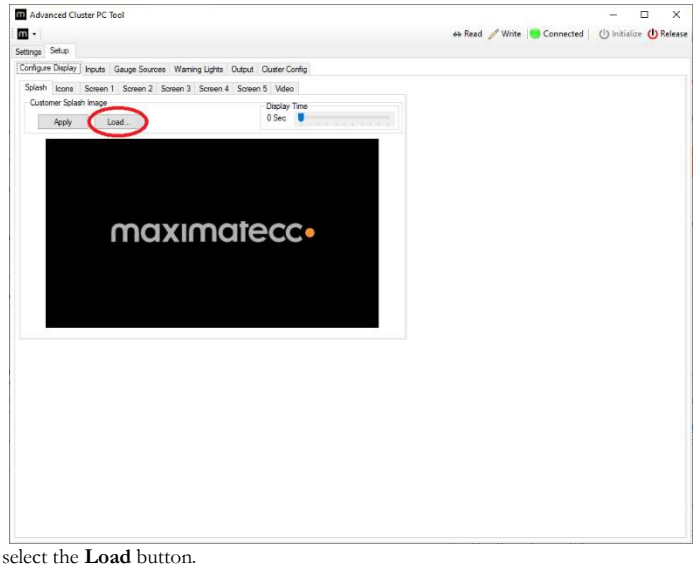
The **Setup** tab will allow you to set your instrumentation parameters including number of screens, cluster layout for each screen, analog inputs, instrumentation sources and limits, warning light sources and limits, and output, as well as open and save configurations and read or write configurations to and from the maxAI 430iv.

## 8.1 Tab 1 - Configure Display

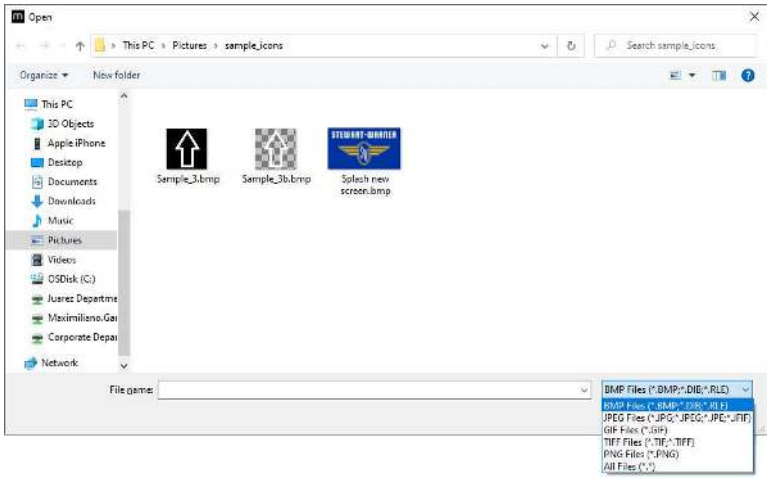
### 8.1.1 Splash



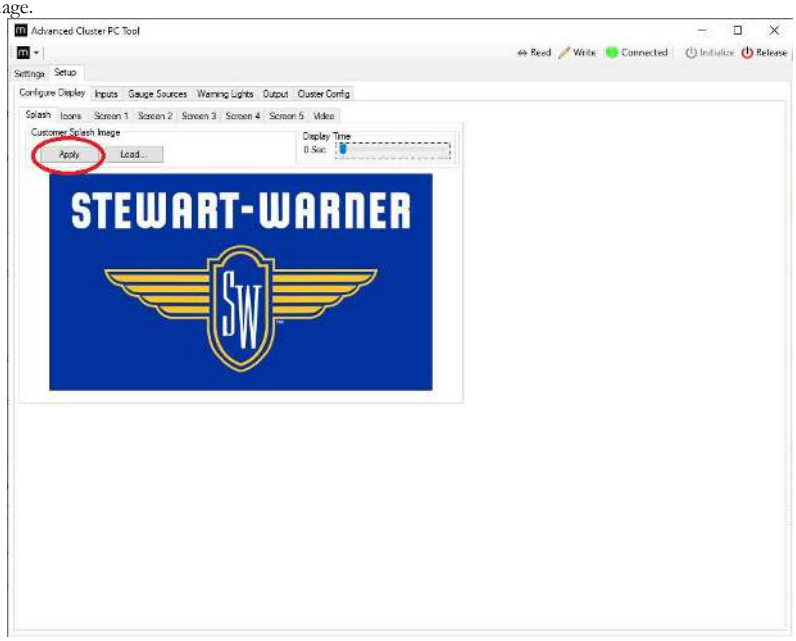

Select **Splash** tab.



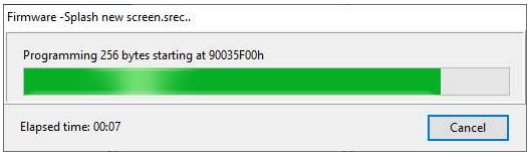

To change the cluster splash screen, select the **Load** button.



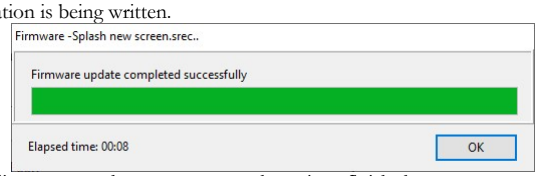

Select the file to be used for the new splash screen. For best results, choose an image that is sized to 480 x 272. All other sizes will be automatically adjusted to this size and may distort the image.



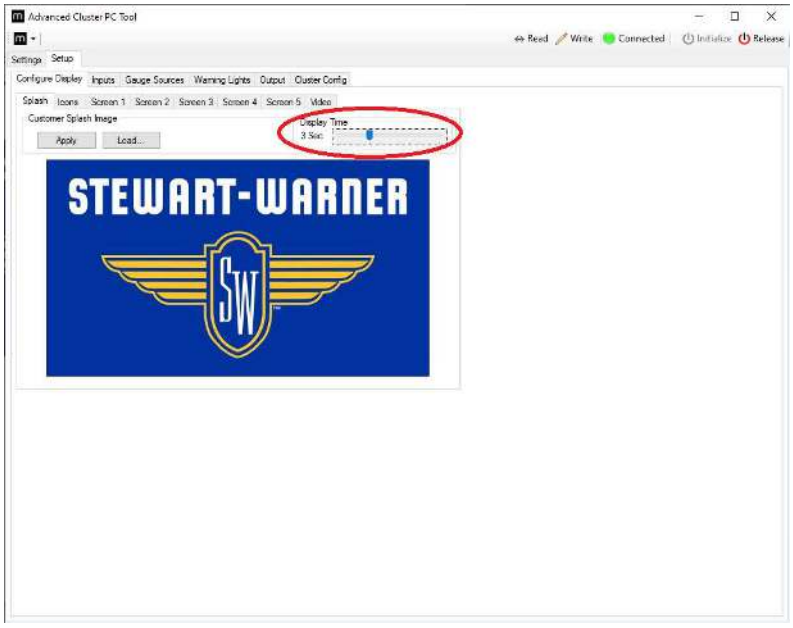

Once the new image is selected, it will show up on the screen. At this point, the new splash screen will be ready to write to the display. Click on Apply to start the writing process of the splash screen in to the cluster.




The progress bar will indicate the new information is being written.

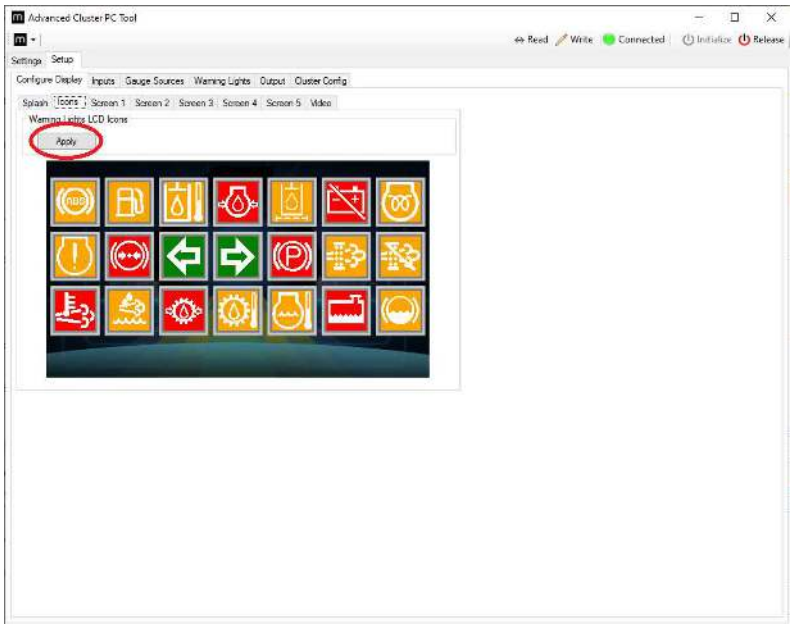



Once the process is completed click **OK** and disconnect and reconect power the unit to finish the process.

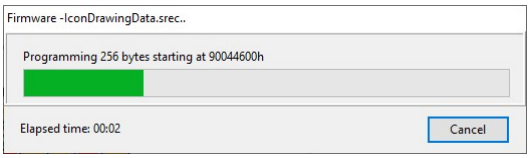



The display time can be configured from 0 Seconds (no Slpash Screen) up to 10 seconds using the **Display Time** slider.

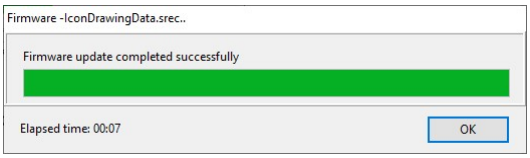
### 8.1.2 Icons




The configured icons images for the LCD Warning Lights are displayed in this tab, to wirte the images in to the cluster click on **Apply**.



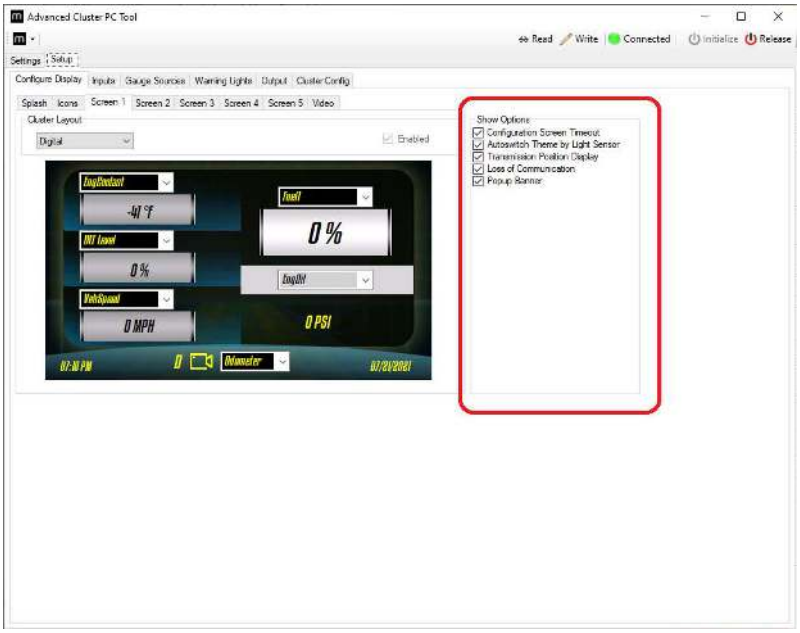

The progress bar will indicate the new information is being written.



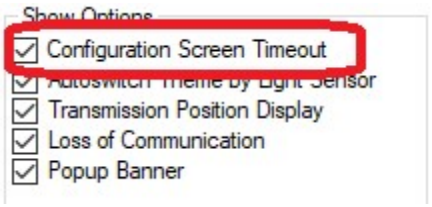

Once the process is completed click **OK** and disconnect and reconect power the unit to finish the process.

## 8.1.3 Screen 1 - 5

The section Show Options is common between screens 1 - 5:



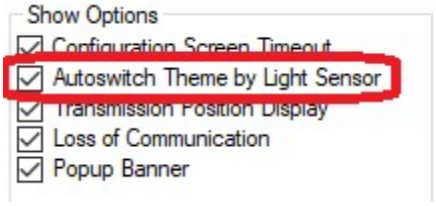

## CONFIGURATION SCREEN TIMEOUT





This option will enable a timeout of 5 seconds that will automaticaly close the Configuration Screen if no input is received in the keypads. When disabled the Configuration Screen will be open until the close keypad is pressed.

## AUTOSWITCH THEME BY LIGHT SENSOR




This option will enable the cluster to automaticlly switch between Daylight or Nigthlight color themes. When disabled the color themes should be manually selected by user using the Configuration Screen menu.

# TRANSMISSION POSITION DISPLAY

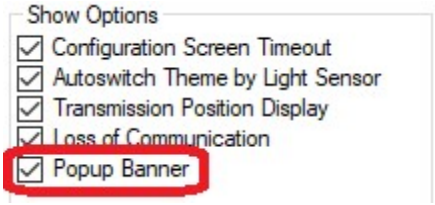


This option will enable the cluster to display the transmission gear position (current gear), once this option is enabled the display will show the gear information at the bottom of the screen by using the current gear J1939 SPN from the transmission source address.

# LOSS OF COMMUNICATION

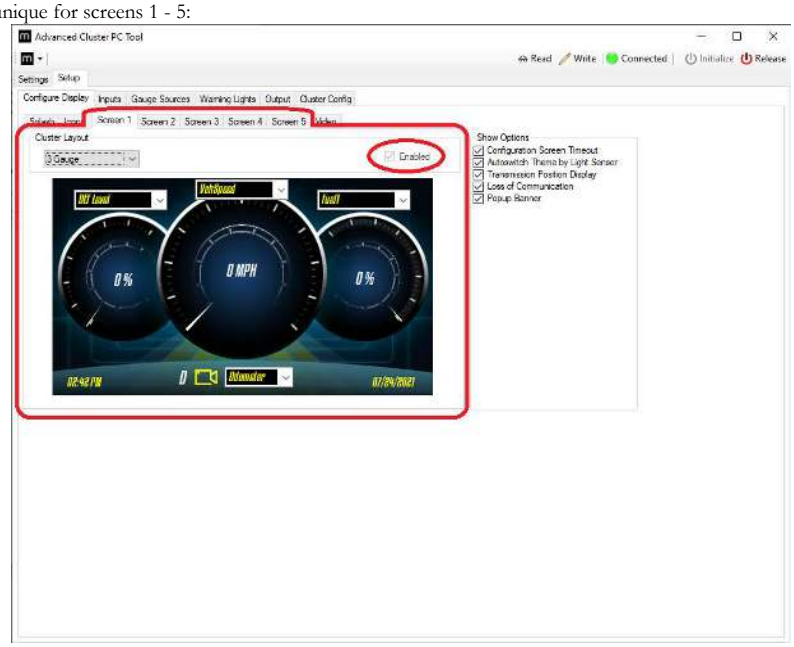

This option will enable the cluster to report the CAN communication loss for any of the two Channels. The CAN loss notice will appear as a banner in the top of the LCD screen.

# POPUP BANNER




This option will enable the cluster to display to report fault codes recevied from Engine, Transmission or Retarder. The fault codes notice will appear as a banner in the top of the LCD screen.

The section Cluster Layout is unique for screens 1 - 5:




Up to **5 different screens** can be enabled by user, screen 1 is always enabled by default, screens 2 to 5 can be optianally enabled. Each screen can be configured to one of four different **layouts** from the drop down menu. The instrumentation of each layout is discribed in the following sections.


A common feature for all layouts is the Odometer/Tip Odometer/Total Hours at the center bottom of te layout. User can select a different option for each enabled screen.

## DIGITAL


**Digital** layout contains five digital gauges, that can be assigned to any of the **Gauge Sources** using the dropdown menu at the top of each gauge.

## ANALOG


**Analog** layout contains four bar gauges and one analog gauge, that can be assigned to any of the **Gauge Sources** using the dropdown menu at the top of each gauge.

## 3 GAUGE

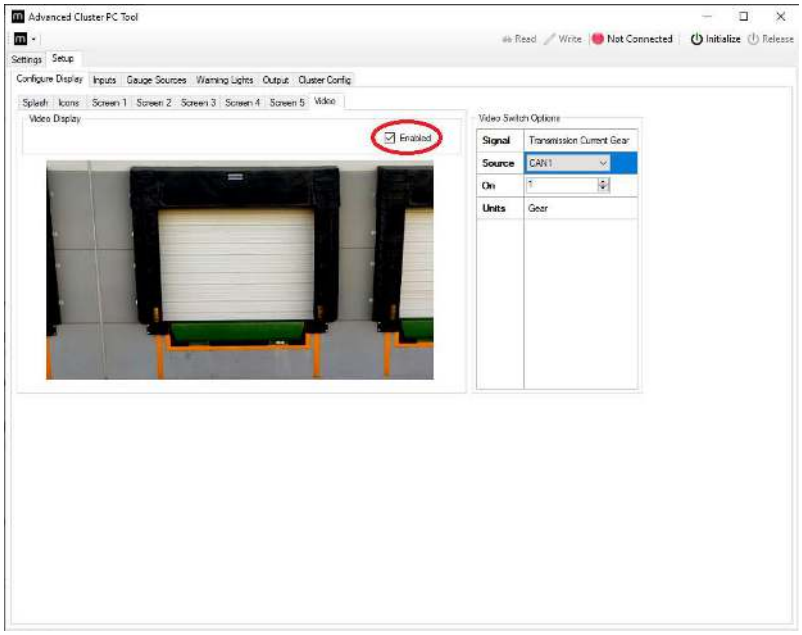

**3 Gauge** layout contains three analog gauges, that can be assigned to any of the **Gauge Sources** using the dropdown menu at the top of each gauge.

## SINGLE

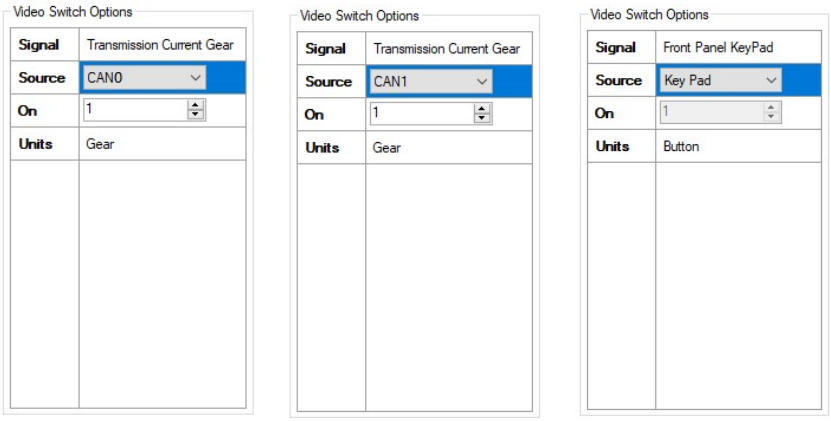

**Single** layout contains one analog gauge, that can be assigned to any of the **Gauge Sources** using the dropdown menu at the top of each gauge

## 8.1.4 Video

On models with video input, such as maxAI 430v and maxAI 430iv, got the option to configure to display Video from an external camera.




The video can be enabled using the checkbox indicated in the image above.




Each source option contains a **Signal** description, **Source**, **On** value and **Units**.

**Signal**

This field will briefly describe the signal that has been selected on **Source** field.

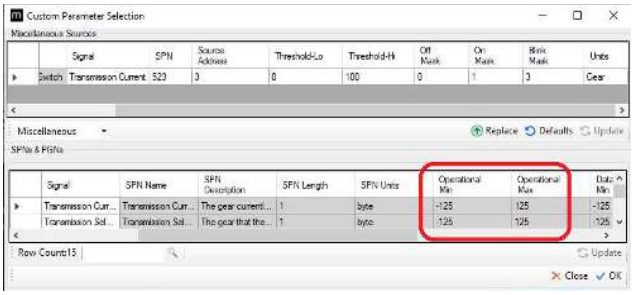
**Source**

This field contains a drop-down menu where the user can select one of the three configurable video switch Source options: CAN0, CAN1 or Keypad.

CAN0 and CAN1 will use the message configured in Miscellaneous Custom Parameters Selection in the corresponding CAN channel.

**On**

For **Source CAN0** or **CAN1**, **On** value can be selected by using the Physical Value. The Physical Values are determined by the **Operational Min** and **Operational Max** from Miscellaneous Custom Parameters Selection table.

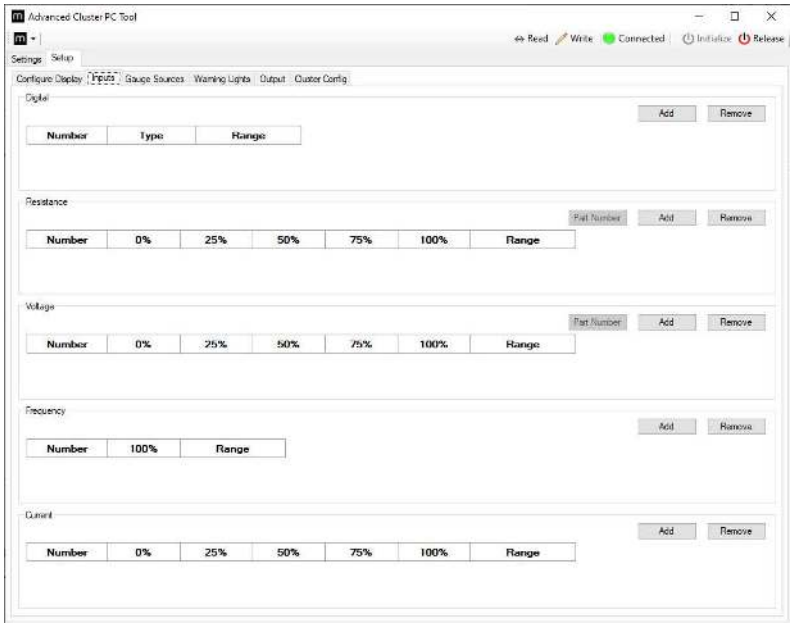



For **Source Key Pad**, **On** value is fixed to 1 (second button from left to right)

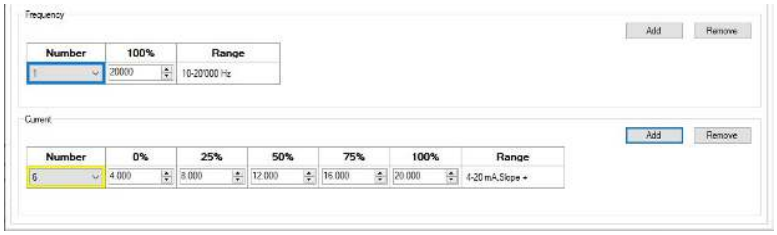
**Units**

This field will display the units of the **Source** signal.

## 8.2 Tab 2 – Inputs

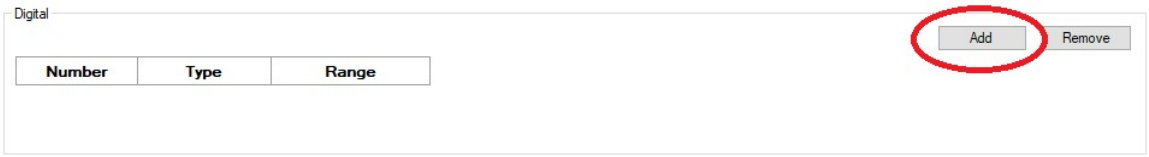



There is a total of **six** configurable inputs to the cluster, these are non J1939 inputs. Inputs **one through five** can be configurable as **Digital**, **Resistance**, **Voltage** or **Frequency**; input **six** can only be configured as **Current**.

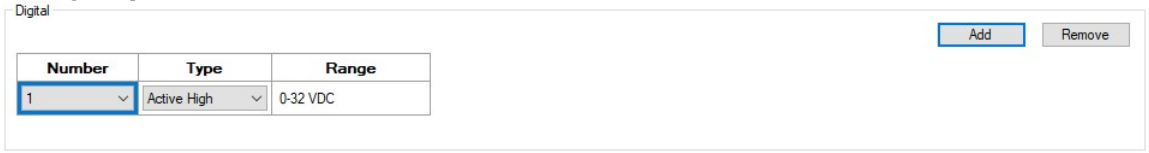



Drop down menus will have either a **bold blue** or **bold yellow** outline. The **bold blue** outline indicates that more options available. The **bold yellow** outline indicates only one option is available.

## 8.2.1 Digital

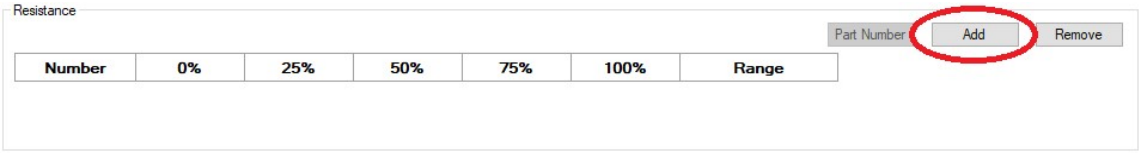



To configure a **Digital** input, click on **Add** button.

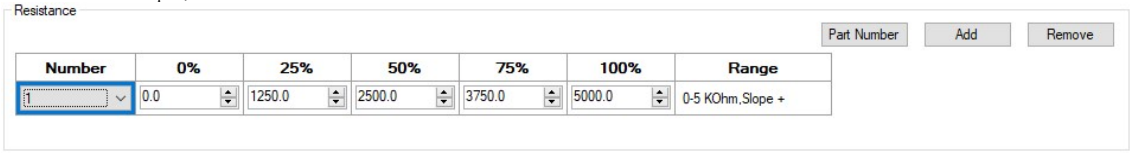



Once the input is added the input **Number** and the **Type** can be changed. Any **Number** that is not assigned to any other input can be selected. The **Type** can be selected as **Active High** or **Active Low**. The **Range** column will display the voltage level that are used for **Digital** inputs.
The **Remove** button will remove the last input in the **Digital** list.

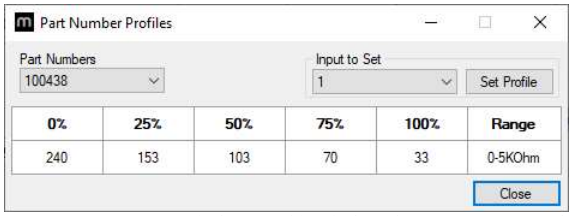
## 8.2.2 Resistance




To configure a **Resistance** input, click on **Add** button.

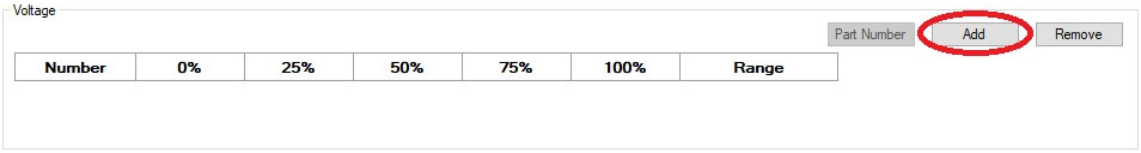



Once the input is added the input **Number** and the **Resistance Interpolation Table** can be changed. The **Range** column will display the resistance values that can be used for **Resistance** inputs.

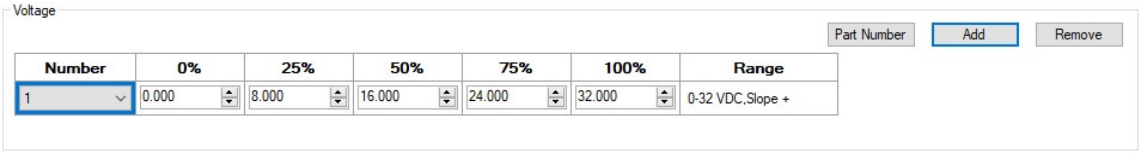



The **Part Number** button will pop up the **Part Number Profiles** window. In this window the **Part Numbers** drop down menu will contain pre-set resistance interpolation tables that can be assigned to a **Resistance** input by selecting the corresponding input number from **Input to Set** dropdown menu and clicking **Set Profile** button.
The **Remove** button will remove the last input in the **Resistance** list.

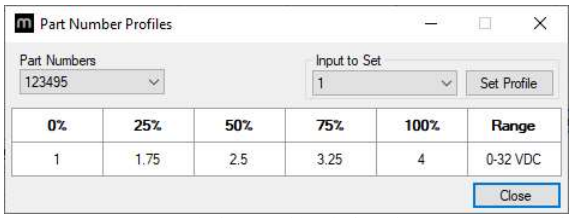
## 8.2.3 Voltage




To configure a **Voltage** input, click on **Add** button.

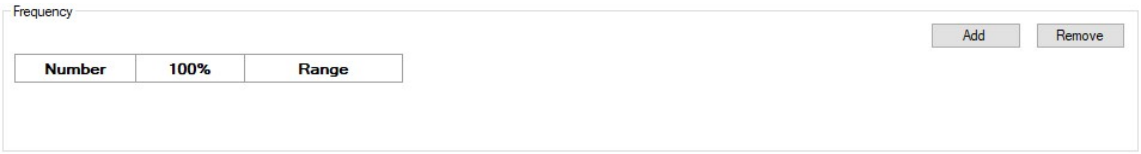



Once the input is added the input **Number** and the **Voltage Interpolation Table** can be changed. The **Range** column will display the voltage levels that can be used for **Voltage** inputs.

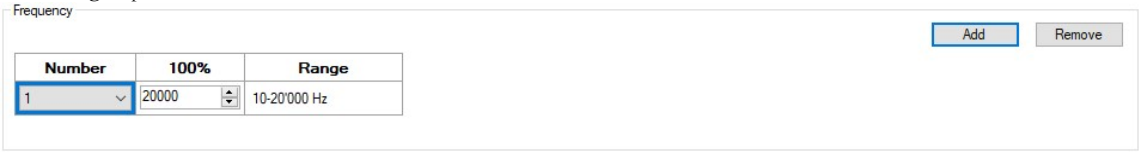



The **Part Number** button will pop up the **Part Number Profiles** window. In this window the **Part Numbers** drop down menu will contain pre-set resistance interpolation tables that can be assigned to a **Voltage** input by selecting the corresponding input number from **Input to Set** dropdown menu and clicking **Set Profile** button.
The **Remove** button will remove the last input in the **Voltage** list.

## 8.2.4 Frequency

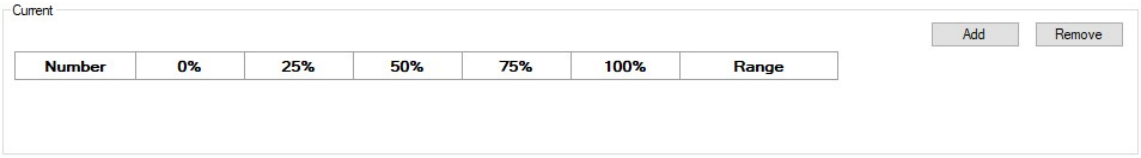



To configure a **Voltage** input, click on **Add** button.

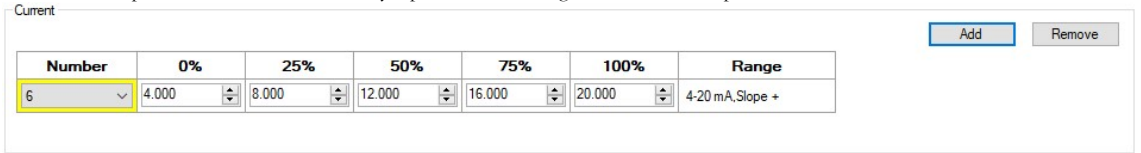



Once the input is added the input **Number** and the **100%** frequency can be changed. Any **Number** that is not assigned to any other input can be selected. The **100%** frequency will indicate the frequency that will be considered as 100% input value. The **Range** column will display the frequency rage that are used for **Frequency** inputs.
The **Remove** button will remove the last input in the **Frequency** list.

## 8.2.5 Current

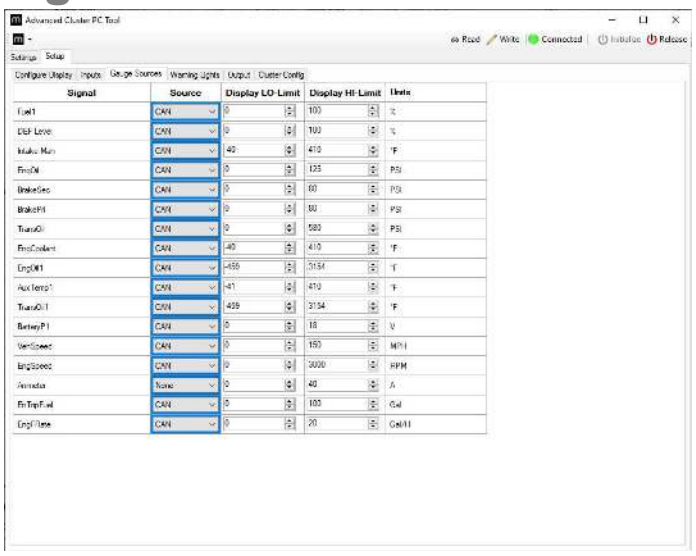



To configure a **Current** input, click on **Add** button. Only input 6 can be configured as **Current** input.

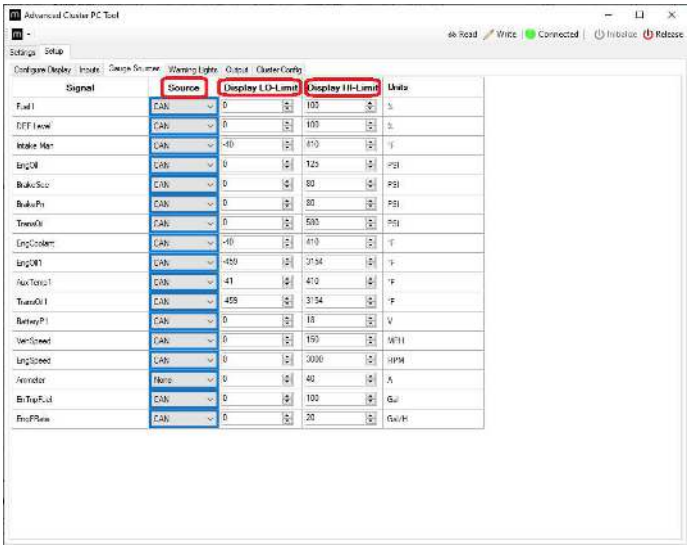



Once the input is added the **Current Interpolation Table** can be changed. The **Range** column will display the current values that can be used for **Current** inputs.

## 8.3 Tab 3 – Gauges Sources



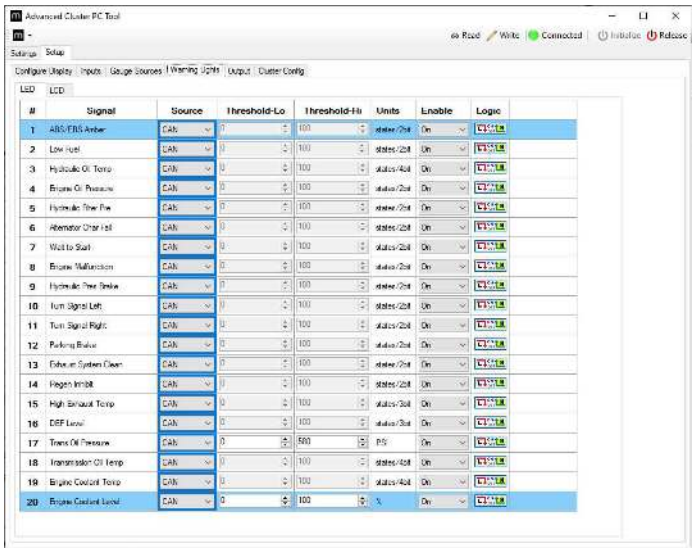

Each instrument setup under the **Configure Display** tab will require a signal source. This source will be selected under the **Gauge Source** tab. Some instruments, such as **Engine Trip Fuel** and **Engine Fuel Rate** are driven by CAN signal only. These instruments, along with instruments on the list that were not configured to a screen, will not allow source selection. The **Lo-Limit** and **Hi-Limit** to be displayed must also be set under this tab.



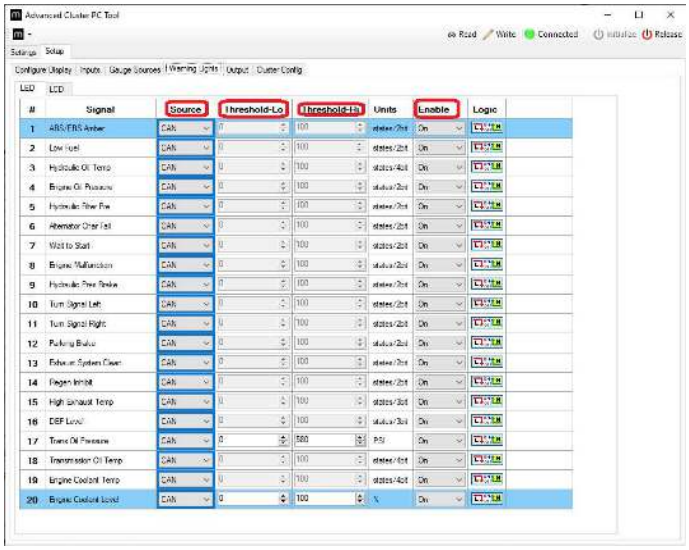

For each instrument selected, select the signal source. This can be CAN signal or one of the input signals set up under the **Inputs** tab. Once the source is selected, set the **Display Lo-Limit** and **Display Hi-Limit** to be shown on each instrument.

# 8.4 Tab 4 – Warning Lights

## 8.4.1 Warning Lights: LED

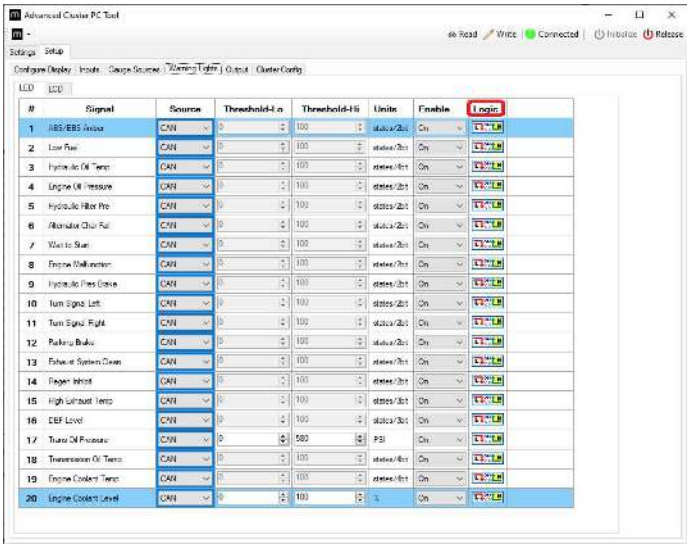


The maxAI 430i and maxAI 430iv are equipped with 20 individual telltale LED warning lights. Similar to the gauge source, the LED warning light signal source will be selected under the **Warning Lights: LED** tab. The limit values must also be defined so the light will respond as desired.



For each LED warning light, select the signal source. This can be CAN signal or one of the input signals set up under the **Inputs** tab. Once the source is selected, set the **Threshold-Lo** and **Threshold-Hi** limits to trigger each LED warning light. The **Enable** column will give three options: **On**, **Off** and **On Ign Off**, the last option will allow to turn On the LED warning light when ignition is Off, the Display will remain

off but the LED warning light will illuminate, this functionality will increase the current consumption of Ignition Off functionality.

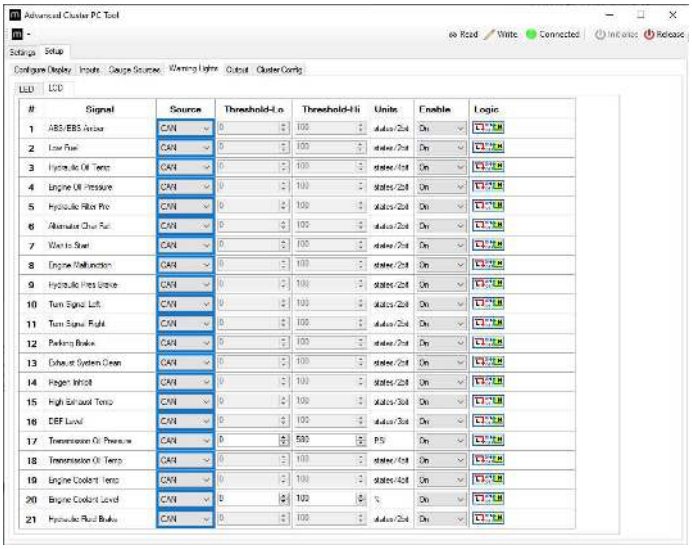


The logic function determines how the threshold values will function. **Logic High**  means that the LED warning light will turn on when the value reaches the high threshold while ascending. The LED warning light will not turn off until the value reaches the low threshold while descending. Alternately, **Logic Low**  means that the LED warning light will turn on when the value reaches the low threshold while descending. The LED warning light will not turn off until the value reaches the high threshold while ascending.

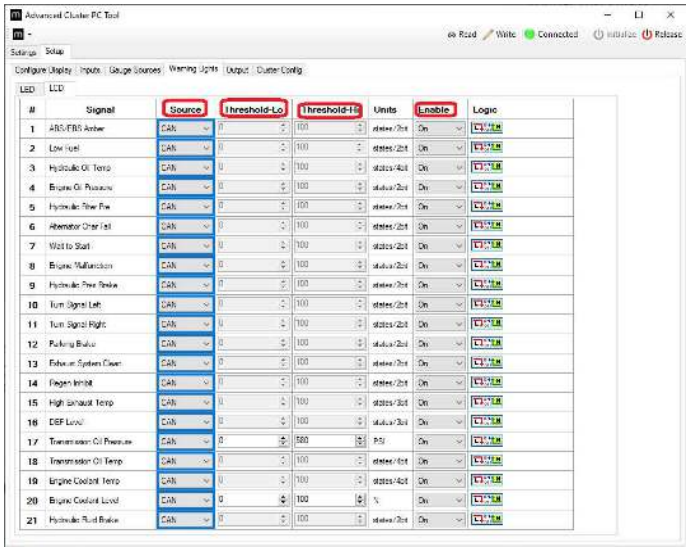
**Example:**

If you wish to set the oil pressure LED warning light to turn on when the oil pressure goes below 10 PSI, select **Logic Low**  and set **Threshold-Lo** to 10 PSI. The LED warning light will only come on when oil pressure drops below this value. **Threshold-Hi** is also necessary to set. Once the oil pressure goes back up, the light will not turn back off until the pressure exceeds the value set in **Threshold-Hi.** If this value is set to 15 PSI, the oil pressure LED warning light will remain on until the oil pressure exceeds 15 PSI.

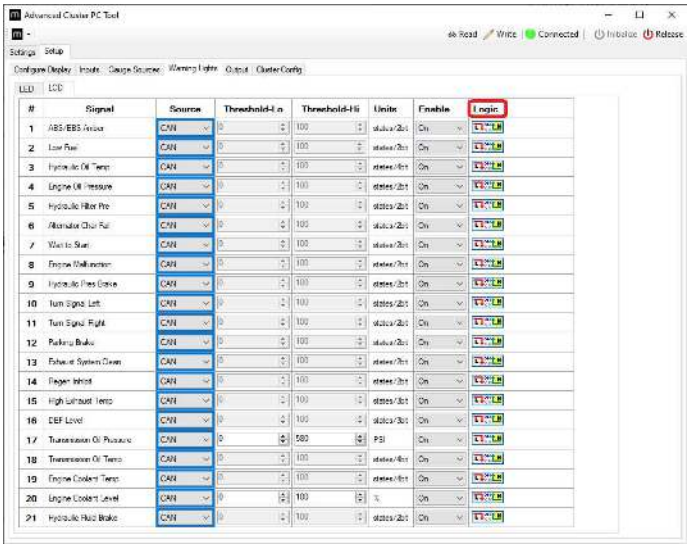
## 8.4.2 Warning Lights: LCD



LCD warning lights work similar to LED Warning Lights, but instead to be connected to a LED light, these warning lights will be displayed as a pop up in the display.. LCD warning light signal source will be selected under the **Warning Lights: LCD** tab. The limit values must also be defined so the light will respond as desired.



For each LCD warning light, select the signal source. This can be CAN signal or one of the input signals set up under the **Inputs** tab. Once the source is selected, set the **Threshold-Lo** and **Threshold-Hi** limits to trigger each LCD warning light. The **Enable** column will give two options: **On** and **Off**.

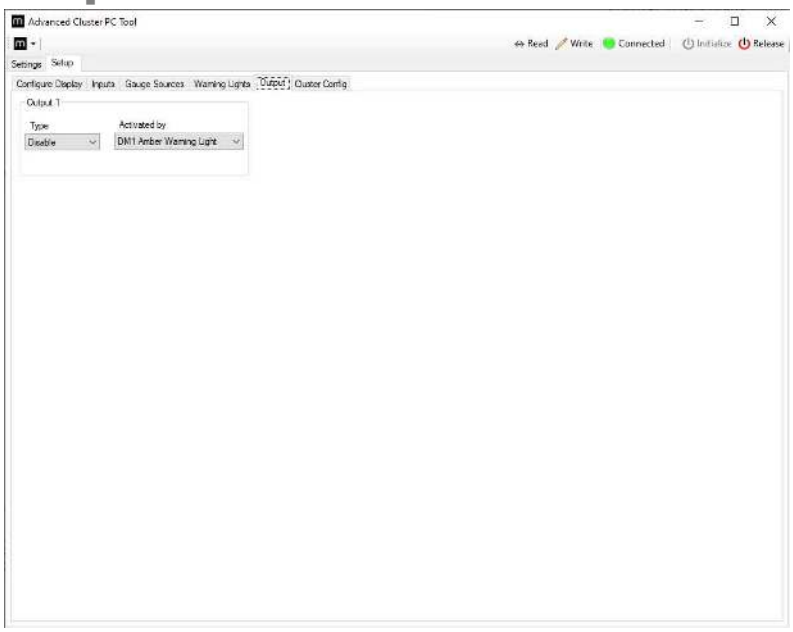



The logic function determines how the threshold values will function. **Logic High**  means that the LCD warning light will turn on when the value reaches the high threshold while ascending. The LCD warning light will not turn off until the value reaches the low threshold while descending. Alternately, **Logic Low**  means that the LCD warning light will turn on when the value reaches the low threshold while descending. The LCD warning light will not turn off until the value reaches the high threshold while ascending.

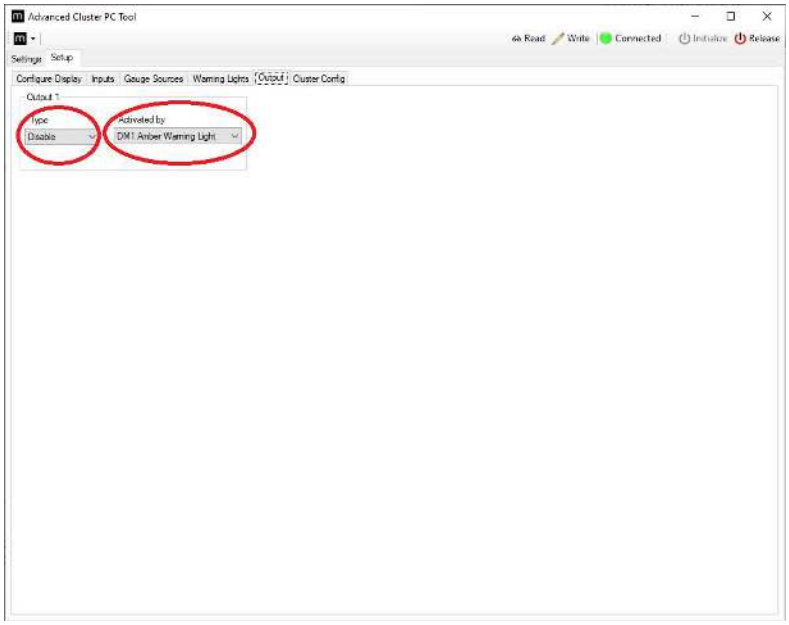
**Example:**

If you wish to set the oil pressure LCD warning light to turn on when the oil pressure goes below 10 PSI, select **Logic Low**  and set **Threshold-Lo** to 10 PSI. The LCD warning light will only come on when oil pressure drops below this value. **Threshold-Hi** is also necessary to set. Once the oil pressure goes back up, the light will not turn back off until the pressure exceeds the value set in **Threshold-Hi.** If this value is set to 15 PSI, the oil pressure LCD warning light will remain on until the oil pressure exceeds 15 PSI.

## 8.5 Tab 5 – Output

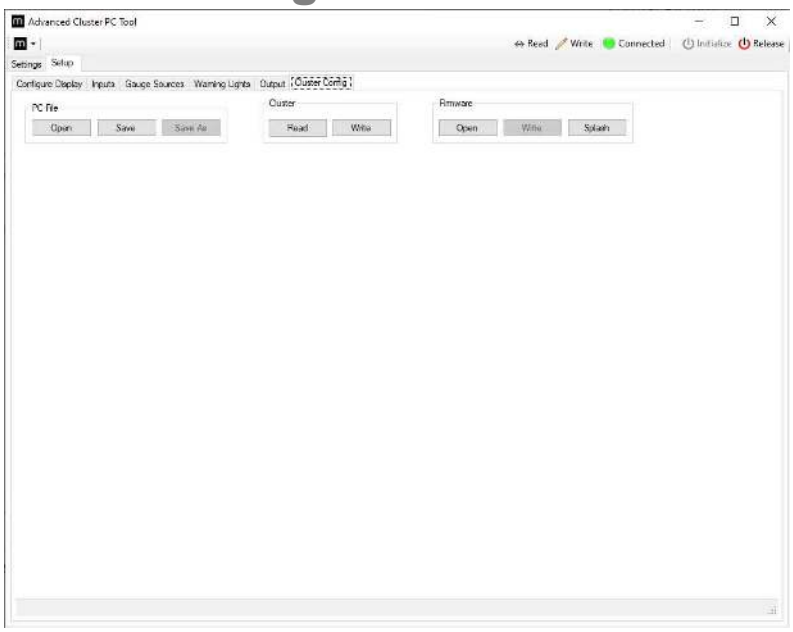



The maxAI 430i is equipped with one digital output. This output can be disabled or set to **Low Side** (switch to ground) or **High Side** (switch to battery**.)** The output is triggered by the CAN **DM1 Amber Warning Light**, **DM1 Stop Light**, or **Either.**



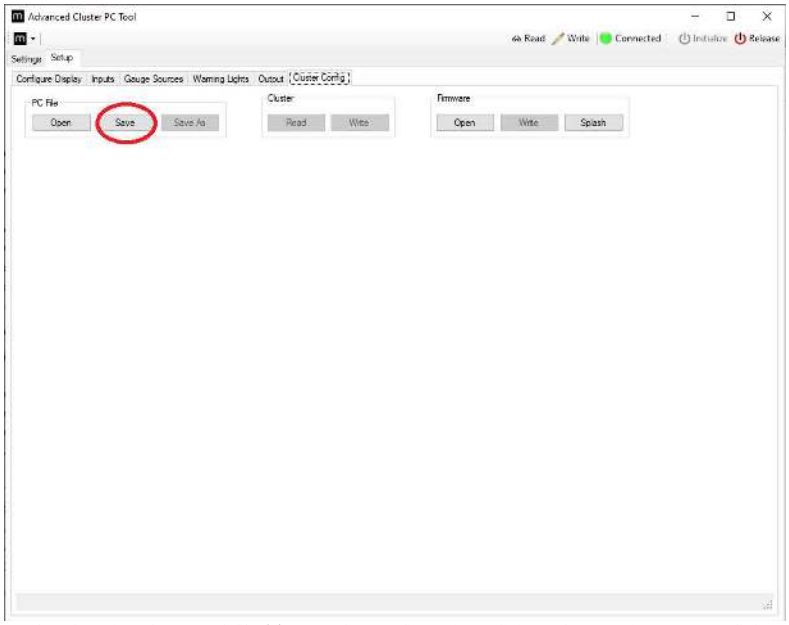

Select the output type and activation type for the digital output.

## 8.6 Tab 6 – Cluster Config

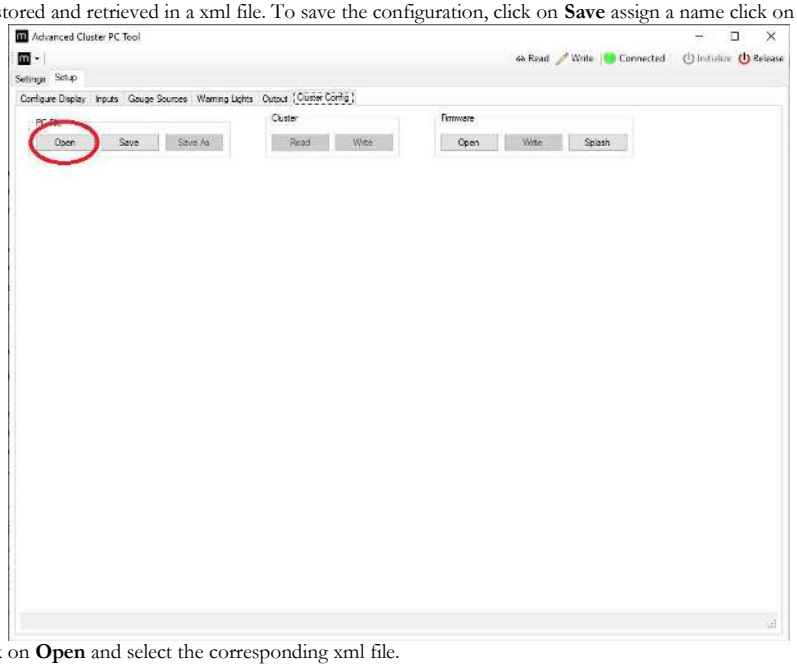



The **Cluster Config** tab allows the user to read/write the configuration to the maxAI 430. This tab also allows the user to load/save PC Tool configurations, and to update firmware in maxAI 430.

### 8.6.1 PC File

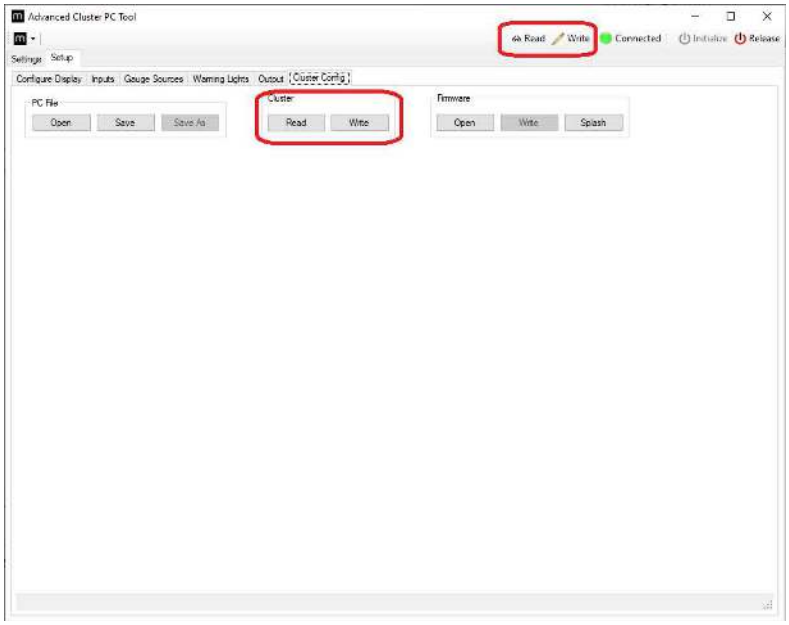



PC Tool configuration can be stored and retrieved in a xml file. To save the configuration, click on **Save** assign a name click on save.



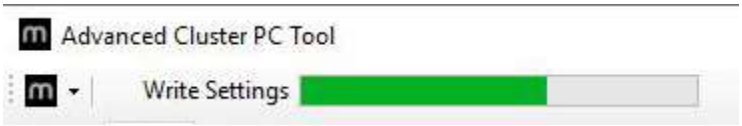

To load the configuration, click on **Open** and select the corresponding xml file.

## 8.6.2 Cluster

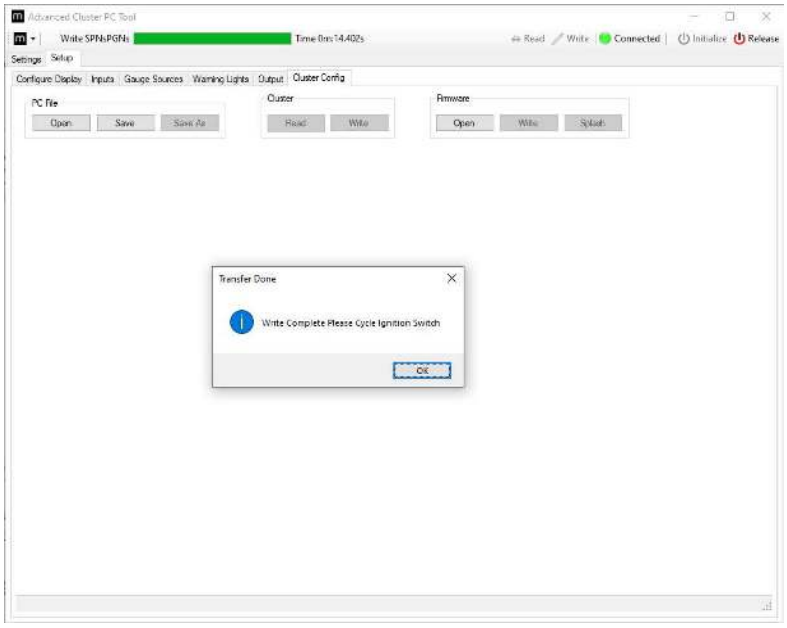



Before reading or writing the configuration to the maxAI 430 display, confirm that Configuration Software is connected to the maxAI 430 display by looking for a green light at the top of the screen. Once connection is confirmed, click on the **Read** button to read the current cluster configuration or **Write** button to write the new configuration to the cluster. When the configuration transfer begins, the progress will be indicated at the upper left-hand corner of the screen. Writing can also be performed from any screen by selecting **Write** on the bar at the top of the screen.


**Read Settings** indicator.

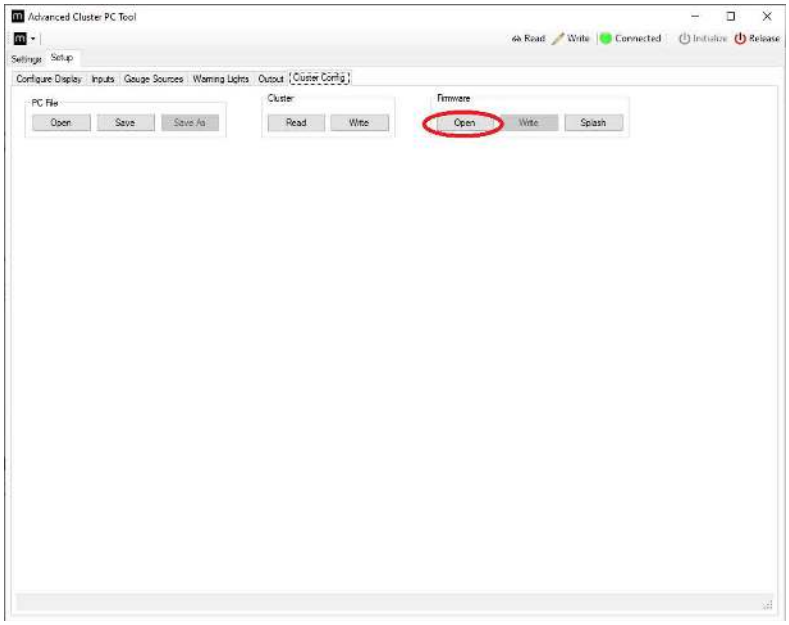



**Write Settings** indicator.

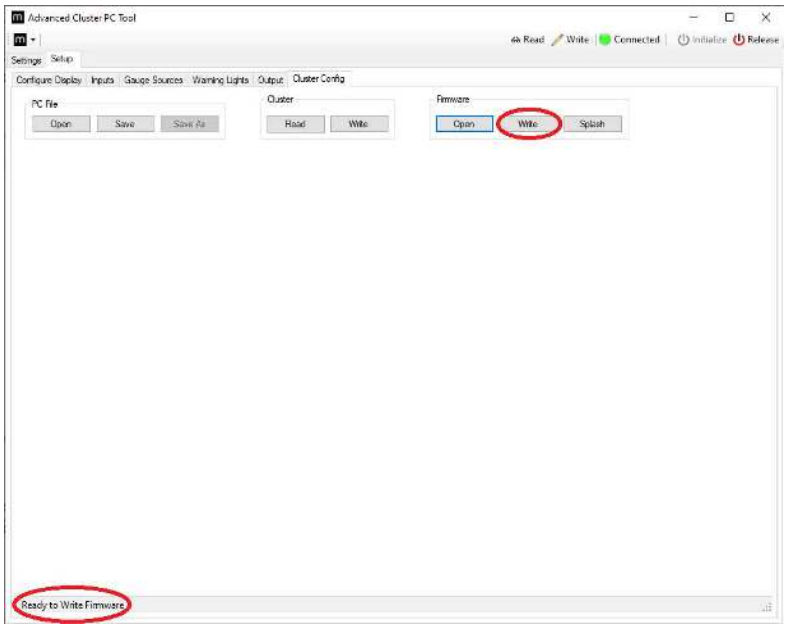



Once the transfer is complete, the Configuration Software will indicate completion with a pop up screen indicating the completion. Click OK and cycle power on the maxAI 430i display.

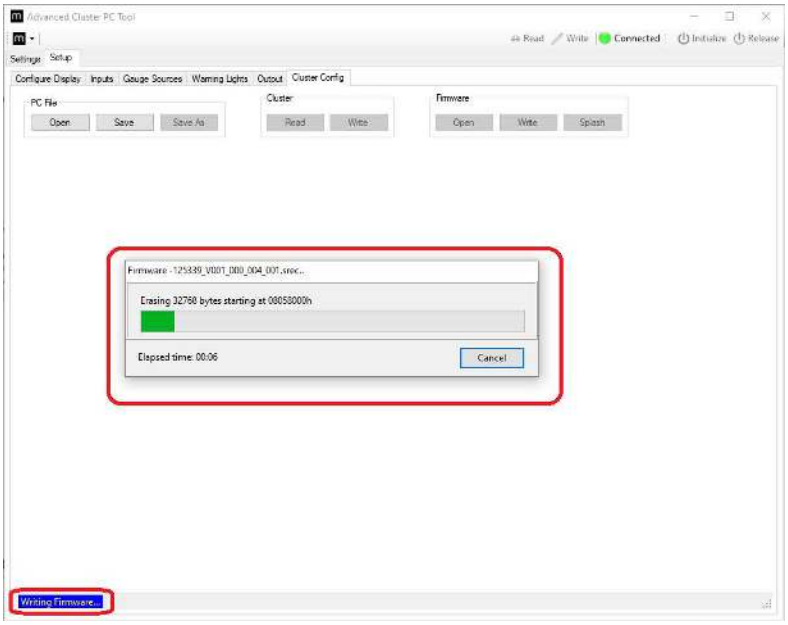
### 8.6.3 Firmware



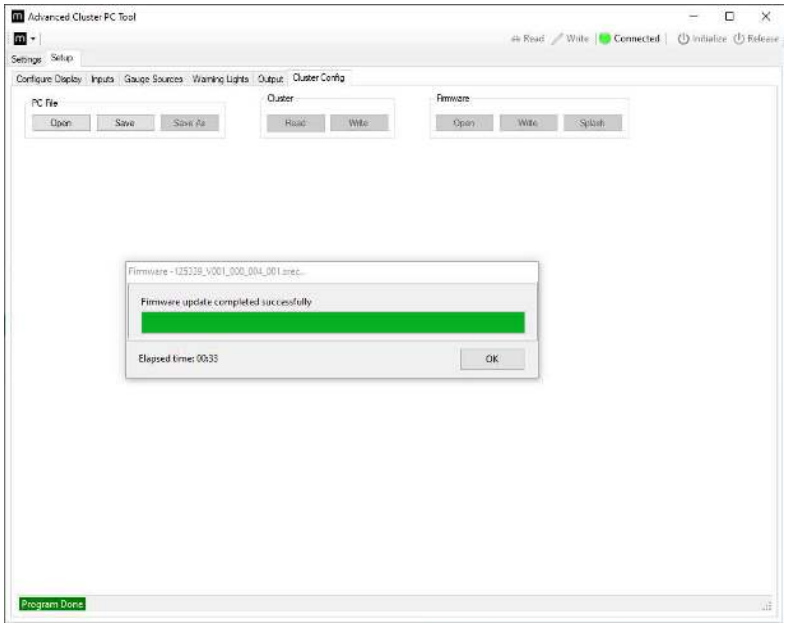

The maxAI 430i firmware can be updated through the **Cluster Config** tab. To update the firmware, select Open and select the firmware file located on an accessible drive.




Once the firmware is selected, it will indicate that the firmware is ready to write in the lower left corner. Select **Write** to begin writing the firmware.




The write process will begin, and progress shown on the progress bar.




Once the firmware is finished writing to the cluster, select **OK** to exit the firmware update.

# 9 Supported PGNs

The following chart indicates the current list of available PGNs to be set in the Parameters. Functionality is based on broadcast on the CAN bus.

| PGN | SPN | SPN Name | Units | Type |
|---|---|---|---|---|
| 0 | 518 | Engine Requested Torque/Torque Limit | % | Status |
| 0 | 695 | Engine Override Control Mode | states/2bit | Status |
| 0 | 696 | Engine Requested Speed Control Conditions | states/2bit | Status |
| 0 | 897 | Override Control Mode Priority | states/2bit | Status |
| 0 | 898 | Engine Requested Speed/Speed Limit | RPM | Status |
| 0 | 3349 | TSC1 Transmission Rate | states/3bit | Status |
| 0 | 4191 | Engine Requested Torque (Fractional) | % | Measured |
| 256 | 525 | Transmission Requested Gear | Gear | Status |
| 256 | 681 | Transmission Gear Shift Inhibit Request | states/2bit | Status |
| 256 | 682 | Transmission Torque Converter Lockup Request | states/2bit | Status |
| 256 | 683 | Disengage Driveline Request | states/2bit | Status |
| 256 | 684 | Requested Percent Clutch Slip | % | Status |
| 256 | 685 | Disengage Differential Lock Request - Front Axle 1 | states/2bit | Status |
| 256 | 686 | Disengage Differential Lock Request - Front Axle 2 | states/2bit | Status |
| 256 | 687 | Disengage Differential Lock Request - Rear Axle 1 | states/2bit | Status |
| 256 | 688 | Disengage Differential Lock Request - Rear Axle 2 | states/2bit | Status |
| 256 | 689 | Disengage Differential Lock Request - Central | states/2bit | Status |
| 256 | 690 | Disengage Differential Lock Request - Central Front | states/2bit | Status |
| 256 | 691 | Disengage Differential Lock Request - Central Rear | states/2bit | Status |
| 256 | 1852 | Transmission Mode 1 | states/2bit | Status |
| 256 | 1853 | Transmission Mode 2 | states/2bit | Status |
| 256 | 1854 | Transmission Mode 3 | states/2bit | Status |
| 256 | 1855 | Transmission Mode 4 | states/2bit | Status |
| 256 | 2985 | Transmission Shift Selector Display Mode Switch | states/2bit | Measured |
| 256 | 4242 | Transmission Reverse Gear Shift Inhibit Request | states/2bit | Status |
| 256 | 4246 | Transmission Mode 5 | states/2bit | Status |

| | | | | |
|---|---|---|---|---|
| 256 | 4247 | Transmission Mode 6 | states/2bit | Status |
| 256 | 4248 | Transmission Mode 7 | states/2bit | Status |
| 256 | 4249 | Transmission Mode 8 | states/2bit | Status |
| 256 | 4255 | Transmission Requested Launch Gear | states/4bit | Measured |
| 256 | 5762 | Transmission Load Reduction Inhibit Request | states/2bit | Status |
| 256 | 7695 | Transmission Auto-Neutral (Manual Return) Request | states/2bit | Status |
| 34048 | 6730 | Engine Fan 2 Requested Percent Speed | % | Status |
| 34048 | 6874 | Performance Bias Selection | % | Measured |
| 34048 | 6881 | SCR Operator Inducement Override Switch | states/2bit | Status |
| 34048 | 7033 | Heat Exchanger Debris Purge Inhibit Switch | states/2bit | Measured |
| 34048 | 7034 | Heat Exchanger Debris Purge Force Switch | states/2bit | Measured |
| 34048 | 7436 | Predictive Cruise Control Enable Switch | states/2bit | Measured |
| 34048 | 7437 | Predictive Cruise Control Deactivation Request | states/2bit | Measured |
| 34048 | 7438 | Predictive Cruise Control Maximum Positive Offset | Km/h | Status |
| 34048 | 7439 | Predictive Cruise Control Maximum Negative Offset | Km/h | Status |
| 34048 | 7579 | Elevated Engine Speed Allowed Switch | states/2bit | Measured |
| 34048 | 7580 | Aftertreatment Regeneration Engine Speed Allowed Switch | states/2bit | Measured |
| 34048 | 7694 | Transmission Auto-Neutral (Manual Return) Enable Switch | states/2bit | Status |
| 34048 | 7759 | Engine Stop-Start Disable Command | states/2bit | Status |
| 34048 | 8148 | Aftertreatment System Enable Command | states/2bit | Status |
| 34048 | 8855 | Active Shift Console Request | states/2bit | Status |
| 34560 | 5793 | Desired Engine Fueling State | states/2bit | Status |
| 34560 | 6715 | Engine Gaseous Fuel Supply Desired Pressure | KPa | Status |
| 34560 | 6833 | Engine Gaseous Fuel Usage Inhibited | states/2bit | Measured |
| 34560 | 7829 | Transmission Idle Governor Fueling Inhibit | states/2bit | Measured |
| 34560 | 8614 | Engine Shutdown Command | states/2bit | Status |
| 49408 | 3069 | Distance Travelled While MIL is Activated | Km | Measured |
| 49408 | 3294 | Distance Since Diagnostic Trouble Codes Cleared | Km | Measured |
| 56832 | 988 | Trip Group 1 | states/2bit | Status |

| | | | | |
|---|---|---|---|---|
| 56832 | 989 | Trip Group 2 - Proprietary | states/2bit | Status |
| 56832 | 1211 | Engine Build Hours Reset | states/2bit | Status |
| 56832 | 3600 | Steering Straight Ahead Position Reset | states/2bit | Status |
| 56832 | 6218 | Engine Spark Plug Secondary Voltage Tracking Reset | states/2bit | Status |
| 56832 | 6219 | Engine Ignition Control Maintenance Hours Reset | states/2bit | Measured |
| 56832 | 6898 | Bin Lift Count Reset | states/2bit | Measured |
| 56832 | 6985 | Tire Configuration Information | states/2bit | Measured |
| 56832 | 6986 | Tire Sensor Information | states/2bit | Measured |
| 57344 | 986 | Engine Fan 1 Requested Percent Speed | % | Status |
| 57344 | 1653 | Vehicle Limiting Speed Governor Enable Switch | states/2bit | Measured |
| 57344 | 1654 | Vehicle Limiting Speed Governor Increment Switch | states/2bit | Measured |
| 57344 | 1655 | Vehicle Limiting Speed Governor Decrement Switch | states/2bit | Measured |
| 57344 | 1656 | Engine Automatic Start Enable Switch | states/2bit | Measured |
| 57344 | 1666 | Automatic Gear Shifting Enable Switch | states/2bit | Measured |
| 57344 | 1682 | Battery Main Switch Hold Request | states/2bit | Status |
| 57344 | 1683 | Auxiliary Heater Mode Request | states/4bit | Status |
| 57344 | 1684 | Auxiliary Heater Coolant Pump Request | states/2bit | Status |
| 57344 | 1685 | Request Engine Zone Heating | states/2bit | Status |
| 57344 | 1686 | Request Cab Zone Heating | states/2bit | Status |
| 57344 | 1691 | Cab Interior Temperature Command | °C | Status |
| 57344 | 1714 | Operator Seat Direction Switch | states/2bit | Measured |
| 57344 | 1856 | Seat Belt Switch | states/2bit | Measured |
| 57344 | 3695 | Aftertreatment Regeneration Inhibit Switch | states/2bit | Measured |
| 57344 | 3696 | Aftertreatment Regeneration Force Switch | states/2bit | Measured |
| 57344 | 5630 | Park Brake Command | states/2bit | Status |
| 61441 | 521 | Brake Pedal Position | % | Measured |
| 61441 | 561 | ASR Engine Control Active | states/2bit | Status |
| 61441 | 562 | ASR Brake Control Active | states/2bit | Status |
| 61441 | 563 | Anti-Lock Braking (ABS) Active | states/2bit | Status |

| | | | | |
|---|---|---|---|---|
| 61441 | 575 | ABS Off-road Switch | states/2bit | Measured |
| 61441 | 576 | ASR Off-road Switch | states/2bit | Measured |
| 61441 | 577 | ASR "Hill Holder" Switch | states/2bit | Measured |
| 61441 | 969 | Remote Accelerator Enable Switch | states/2bit | Measured |
| 61441 | 970 | Engine Auxiliary Shutdown Switch | states/2bit | Measured |
| 61441 | 971 | Engine Derate Switch | states/2bit | Measured |
| 61441 | 972 | Accelerator Interlock Switch | states/2bit | Measured |
| 61441 | 973 | Engine Retarder Selection | % | Measured |
| 61441 | 1121 | EBS Brake Switch | states/2bit | Measured |
| 61441 | 1238 | Traction Control Override Switch | states/2bit | Measured |
| 61441 | 1243 | ABS Fully Operational | states/2bit | Status |
| 61441 | 1438 | ABS/EBS Amber Warning Signal (Powered Vehicle) | states/2bit | Status |
| 61441 | 1439 | EBS Red Warning Signal | states/2bit | Status |
| 61441 | 1792 | Tractor-Mounted Trailer ABS Warning Signal | states/2bit | Status |
| 61441 | 1793 | ATC/ASR Information Signal | states/2bit | Status |
| 61441 | 1836 | Trailer ABS Status | states/2bit | Status |
| 61441 | 2911 | Halt brake switch | states/2bit | Measured |
| 61441 | 7941 | Railroad Mode Switch | states/2bit | Measured |
| 61442 | 161 | Transmission Input Shaft Speed | RPM | Measured |
| 61442 | 191 | Transmission Output Shaft Speed | RPM | Measured |
| 61442 | 522 | Percent Clutch Slip | % | Measured |
| 61442 | 560 | Transmission Driveline Engaged | states/2bit | Measured |
| 61442 | 573 | Transmission Torque Converter Lockup Engaged | states/2bit | Status |
| 61442 | 574 | Transmission Shift In Process | states/2bit | Measured |
| 61442 | 606 | Engine Momentary Overspeed Enable | states/2bit | Status |
| 61442 | 607 | Progressive Shift Disable | states/2bit | Status |
| 61442 | 4816 | Transmission Torque Converter Lockup Transition in Process | states/2bit | Measured |
| 61442 | 5015 | Momentary Engine Maximum Power Enable | states/2bit | Status |
| 61443 | 29 | Accelerator Pedal Position 2 | % | Measured |

| | | | | |
|---|---|---|---|---|
| 61443 | 91 | Accelerator Pedal Position 1 | % | Measured |
| 61443 | 92 | Engine Percent Load At Current Speed | % | Status |
| 61443 | 558 | Accelerator Pedal 1 Low Idle Switch | states/2bit | Measured |
| 61443 | 559 | Accelerator Pedal Kickdown Switch | states/2bit | Measured |
| 61443 | 974 | Remote Accelerator Pedal Position | % | Measured |
| 61443 | 1437 | Road Speed Limit Status | states/2bit | Status |
| 61443 | 2970 | Accelerator Pedal 2 Low Idle Switch | states/2bit | Measured |
| 61443 | 2979 | Vehicle Acceleration Rate Limit Status | states/2bit | Status |
| 61443 | 3357 | Actual Maximum Available Engine - Percent Torque | % | Measured |
| 61443 | 5021 | Momentary Engine Maximum Power Enable Feedback | states/2bit | Status |
| 61443 | 5398 | Estimated Pumping - Percent Torque | % | Measured |
| 61443 | 5399 | DPF Thermal Management Active | states/2bit | Status |
| 61443 | 5400 | SCR Thermal Management Active | states/2bit | Status |
| 61444 | 190 | Engine Speed | RPM | Measured |
| 61444 | 512 | Driver's Demand Engine - Percent Torque | % | Measured |
| 61444 | 513 | Actual Engine - Percent Torque | % | Measured |
| 61444 | 899 | Engine Torque Mode | states/4bit | Measured |
| 61444 | 1675 | Engine Starter Mode | states/4bit | Status |
| 61444 | 2432 | Engine Demand – Percent Torque | % | Measured |
| 61445 | 523 | Transmission Current Gear | Gear | Measured |
| 61445 | 524 | Transmission Selected Gear | Gear | Status |
| 61445 | 526 | Transmission Actual Gear Ratio | Ratio | Measured |
| 61448 | 1762 | Hydraulic Pressure | KPa | Measured |
| 61448 | 1763 | Engine Hydraulic Pressure Governor Mode Indicator | states/2bit | Status |
| 61448 | 1764 | Engine Hydraulic Pressure Governor Switch | states/2bit | Measured |
| 61448 | 2599 | Fire Apparatus Pump Engagement | states/2bit | Measured |
| 61448 | 6702 | Fire Apparatus Okay To Pump Interlock | states/2bit | Measured |
| 61448 | 6703 | Hydraulic Pressure Governor Increase Switch | states/2bit | Measured |
| 61448 | 6704 | Hydraulic Pressure Governor Decrease Switch | states/2bit | Measured |

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|---|---|---|---|---|
| 61448 | 6705 | Hydraulic Pressure Governor Idle Switch | states/2bit | Measured |
| 61448 | 6706 | Hydraulic Pressure Governor Preset Switch | states/2bit | Measured |
| 61448 | 6707 | Hydraulic Intake Pressure | MPa | Measured |
| 61448 | 6708 | Hydraulic Discharge Pressure Set Point | KPa | Measured |
| 61475 | 4331 | Aftertreatment 1 Diesel Exhaust Fluid Actual Dosing Quantity | g/h | Measured |
| 61475 | 4332 | Aftertreatment 1 SCR System 1 State | states/4bit | Status |
| 61475 | 4333 | Aftertreatment 1 Diesel Exhaust Fluid Actual Quantity of Integrator | g | Measured |
| 61475 | 4334 | Aftertreatment 1 Diesel Exhaust Fluid Doser 1 Absolute Pressure | KPa | Measured |
| 61475 | 6595 | Aftertreatment 1 Diesel Exhaust Fluid Actual Dosing Quantity (High Range) | g/min | Measured |
| 61475 | 7524 | Aftertreatment 1 SCR System 2 State | states/4bit | Status |
| 61677 | 7745 | Engine Start Request | states/2bit | Status |
| 61677 | 7746 | Engine Start Consent | states/3bit | Status |
| 61677 | 7747 | Engine Start Abort Request | states/2bit | Status |
| 61677 | 7748 | Engine Starter 1 Feedback | states/3bit | Status |
| 61677 | 7749 | Engine Starter 2 Feedback | states/3bit | Status |
| 61677 | 7750 | Engine Start Control Message Counter | states/4bit | Status |
| 61677 | 7788 | Transmission Shift Selector Requested Vehicle Direction | states/3bit | Status |
| 61709 | 6885 | Engine Fuel Valve 2 Differential Pressure | KPa | Measured |
| 64561 | 7332 | Aftertreatment Thermal Management Status | states/2bit | Status |
| 64561 | 7440 | Aftertreatment Active Regeneration Inhibited Due to Low Exhaust Pressure | states/2bit | Status |
| 64561 | 7441 | Aftertreatment Ambient Air Temperature | °C | Measured |
| 64561 | 7502 | Aftertreatment Engine Speed Increase request | states/2bit | Status |
| 64561 | 7503 | Aftertreatment Engine Load Request | states/2bit | Status |
| 64561 | 7588 | Aftertreatment Diesel Exhaust Fluid Heater Circuit Breaker | states/2bit | Status |
| 64561 | 7606 | Aftertreatment Diesel Exhaust Fluid Tank Volume | % | Measured |
| 64561 | 7607 | Aftertreatment Diesel Exhaust Fluid Tank Temperature | °C | Measured |
| 64561 | 7899 | Diesel Exhaust Fluid Quality Malfunction Evaluation Period Active | states/2bit | Status |
| 64586 | 6915 | SCR System Cleaning Lamp Command | states/3bit | Status |

| | | | | |
|---|---|---|---|---|
| 64586 | 6916 | SCR System Cleaning Status | states/2bit | Status |
| 64586 | 6917 | SCR System Cleaning Inhibited Status | states/2bit | Status |
| 64586 | 6918 | SCR System Cleaning Inhibited Due to Inhibit Switch | states/2bit | Status |
| 64586 | 6919 | SCR System Cleaning Inhibited Due to Clutch Disengaged | states/2bit | Status |
| 64586 | 6920 | SCR System Cleaning Inhibited Due to Service Brake Active | states/2bit | Status |
| 64586 | 6921 | SCR System Cleaning Inhibited Due to PTO Active | states/2bit | Status |
| 64586 | 6922 | SCR System Cleaning Inhibited Due to Accelerator Pedal Off Idle | states/2bit | Status |
| 64586 | 6923 | SCR System Cleaning Inhibited Due to Out of Neutral | states/2bit | Status |
| 64586 | 6924 | SCR System Cleaning Inhibited Due to Vehicle Speed Above Allowed Speed | states/2bit | Status |
| 64586 | 6925 | SCR System Cleaning Inhibited Due to Parking Brake Not Set | states/2bit | Status |
| 64586 | 6926 | SCR System Cleaning Inhibited Due to Low Exhaust Temperature | states/2bit | Status |
| 64586 | 6927 | SCR System Cleaning Inhibited Due to System Fault Active | states/2bit | Status |
| 64586 | 6928 | SCR System Cleaning Inhibited Due to System Timeout | states/2bit | Status |
| 64586 | 6929 | SCR System Cleaning Inhibited Due to Temporary System Lockout | states/2bit | Status |
| 64586 | 6930 | SCR System Cleaning Inhibited Due to Permanent System Lockout | states/2bit | Status |
| 64586 | 6931 | SCR System Cleaning Inhibited Due to Engine Not Warmed Up | states/2bit | Status |
| 64586 | 6932 | SCR System Cleaning Inhibited Due to Vehicle Speed Below Allowed Speed | states/2bit | Status |
| 64586 | 6933 | SCR System Cleaning Automatic Initiation Configuration | states/2bit | Status |
| 64586 | 6934 | SCR System Cleaning Forced Status | states/3bit | Status |
| 64586 | 7848 | Aftertreatment 1 SCR System Conditions Not Met for Active Cleaning | states/2bit | Status |
| 64712 | 5794 | Feedback Engine Fueling State | states/2bit | Status |
| 64712 | 5795 | Engine Fueling Inhibit Allowed | states/2bit | Status |
| 64712 | 5866 | Engine Fueling Inhibit Prevented Reason | states/4bit | Status |
| 64712 | 6333 | Engine Gas Substitution Fuel Percentage | % | Measured |
| 64712 | 6791 | Engine Dual Fuel Mode | states/2bit | Status |
| 64712 | 6896 | Engine Fueling Inhibit Request Count | states/4bit | Status |
| 64712 | 6897 | Engine Fueling Desired Request Count | states/4bit | Status |
| 64716 | 5758 | Aftertreatment 1 Intake 1 Gas Sensor Power Supply | states/2bit | Status |

| | | | | |
|---|---|---|---|---|
| 64716 | 5759 | Aftertreatment 1 Outlet 1 Gas Sensor Power Supply | states/2bit | Status |
| 64716 | 5760 | Aftertreatment 2 Intake 1 Gas Sensor Power Supply | states/2bit | Status |
| 64716 | 5761 | Aftertreatment 2 Outlet 1 Gas Sensor Power Supply | states/2bit | Status |
| 64716 | 8146 | Aftertreatment 1 Intake 2 Gas Sensor Power Supply | states/2bit | Status |
| 64716 | 8147 | Aftertreatment 1 Outlet 2 Gas Sensor Power Supply | states/2bit | Status |
| 64773 | 5093 | Engine Protect Lamp Data | states/2bit | Measured |
| 64773 | 5094 | Engine Amber Warning Lamp Data | states/2bit | Measured |
| 64773 | 5095 | Engine Red Stop Lamp Data | states/2bit | Measured |
| 64773 | 5096 | OBD Malfunction Indicator Lamp Data | states/2bit | Measured |
| 64773 | 5097 | Engine Brake Active Lamp Data | states/2bit | Measured |
| 64773 | 5098 | Compression Brake Enable Switch Indicator Lamp Data | states/2bit | Measured |
| 64773 | 5099 | Engine Oil Pressure Low Lamp Data | states/2bit | Measured |
| 64773 | 5100 | Engine Coolant Temperature High Lamp Data | states/2bit | Measured |
| 64773 | 5101 | Engine Coolant Level Low Lamp Data | states/2bit | Measured |
| 64773 | 5102 | Engine Idle Management Active Lamp Data | states/2bit | Measured |
| 64773 | 5103 | Engine Air Filter Restriction Lamp Data | states/2bit | Measured |
| 64773 | 5416 | Engine Wait To Start Lamp Data | states/2bit | Measured |
| 64773 | 5470 | Engine Fuel Filter Restricted Lamp Data | states/2bit | Status |
| 64773 | 6202 | Engine Control Module 1 Ready for Use Lamp Data | states/2bit | Measured |
| 64773 | 6203 | Engine Control Module 2 Ready for Use Lamp Data | states/2bit | Measured |
| 64773 | 6204 | Engine Control Module 3 Ready for Use Lamp Data | states/2bit | Measured |
| 64773 | 6711 | Engine Speed High Lamp Data | states/2bit | Status |
| 64773 | 6712 | Engine Speed Very High Lamp Data | states/2bit | Status |
| 64773 | 6900 | Vehicle Acceleration Rate Limit Lamp Data | states/2bit | Measured |
| 64774 | 1847 | Hill Holder Lamp Command | states/2bit | Status |
| 64774 | 5087 | Vehicle Battery Voltage Low Lamp Command | states/2bit | Status |
| 64774 | 5088 | Vehicle Fuel Level Low Lamp Command | states/2bit | Status |
| 64774 | 5089 | Vehicle Air Pressure Low Lamp Command | states/2bit | Status |
| 64774 | 5090 | Vehicle HVAC Recirculation Lamp Command | states/2bit | Status |

| | | | | |
|---|---|---|---|---|
| 64774 | 5091 | Vehicle Battery Charging Lamp Command | states/2bit | Status |
| 64775 | 3987 | Compression Brake Enable Switch Indicator Lamp Command | states/2bit | Status |
| 64775 | 5077 | Engine Protect Lamp Command | states/2bit | Status |
| 64775 | 5078 | Engine Amber Warning Lamp Command | states/2bit | Status |
| 64775 | 5079 | Engine Red Stop Lamp Command | states/2bit | Status |
| 64775 | 5080 | OBD Malfunction Indicator Lamp Command | states/2bit | Status |
| 64775 | 5081 | Engine Brake Active Lamp Command | states/2bit | Status |
| 64775 | 5082 | Engine Oil Pressure Low Lamp Command | states/2bit | Status |
| 64775 | 5083 | Engine Coolant Temperature High Lamp Command | states/2bit | Status |
| 64775 | 5084 | Engine Coolant Level Low Lamp Command | states/2bit | Status |
| 64775 | 5085 | Engine Idle Management Active Lamp Command | states/2bit | Status |
| 64775 | 5086 | Engine Air Filter Restriction Lamp Command | states/2bit | Status |
| 64775 | 5469 | Engine Fuel Filter Restricted Lamp Command | states/2bit | Status |
| 64775 | 6205 | Engine Control Module 1 Ready for Use Lamp Command | states/2bit | Status |
| 64775 | 6206 | Engine Control Module 2 Ready for Use Lamp Command | states/2bit | Status |
| 64775 | 6207 | Engine Control Module 3 Ready for Use Lamp Command | states/2bit | Status |
| 64775 | 6709 | Engine Speed High Lamp Command | states/2bit | Status |
| 64775 | 6710 | Engine Speed Very High Lamp Command | states/2bit | Status |
| 64775 | 6899 | Vehicle Acceleration Rate Limit Lamp Command | states/2bit | Status |
| 64800 | 4765 | Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature | °C | Measured |
| 64800 | 4766 | Aftertreatment 1 Diesel Oxidation Catalyst Outlet Temperature | °C | Measured |
| 64800 | 4767 | Aftertreatment 1 Diesel Oxidation Catalyst Differential Pressure | KPa | Measured |
| 64830 | 4360 | Aftertreatment 1 SCR Intake Temperature | °C | Measured |
| 64830 | 4363 | Aftertreatment 1 SCR Outlet Temperature | °C | Measured |
| 64891 | 3719 | Aftertreatment 1 Diesel Particulate Filter Soot Load Percent | % | Measured |
| 64891 | 3720 | Aftertreatment 1 Diesel Particulate Filter Ash Load Percent | % | Measured |
| 64891 | 5466 | Aftertreatment 1 Diesel Particulate Filter Soot Load Regeneration Threshold | % | Status |
| 64892 | 3697 | Diesel Particulate Filter Lamp Command | states/3bit | Status |
| 64892 | 3698 | Exhaust System High Temperature Lamp Command | states/3bit | Status |

| | | | | |
|---|---|---|---|---|
| 64892 | 3699 | Aftertreatment Diesel Particulate Filter Passive Regeneration Status | states/2bit | Status |
| 64892 | 3700 | Aftertreatment Diesel Particulate Filter Active Regeneration Status | states/2bit | Status |
| 64892 | 3701 | Aftertreatment Diesel Particulate Filter Status | states/3bit | Status |
| 64892 | 3702 | Diesel Particulate Filter Active Regeneration Inhibited Status | states/2bit | Status |
| 64892 | 3703 | Diesel Particulate Filter Active Regeneration Inhibited Due to Inhibit Switch | states/2bit | Status |
| 64892 | 3704 | Diesel Particulate Filter Active Regeneration Inhibited Due to Clutch Disengaged | states/2bit | Status |
| 64892 | 3705 | Diesel Particulate Filter Active Regeneration Inhibited Due to Service Brake Active | states/2bit | Status |
| 64892 | 3706 | Diesel Particulate Filter Active Regeneration Inhibited Due to PTO Active | states/2bit | Status |
| 64892 | 3707 | Diesel Particulate Filter Active Regeneration Inhibited Due to Accelerator Pedal Off Idle | states/2bit | Status |
| 64892 | 3708 | Diesel Particulate Filter Active Regeneration Inhibited Due to Out of Neutral | states/2bit | Status |
| 64892 | 3709 | Diesel Particulate Filter Active Regeneration Inhibited Due to Vehicle Speed Above Allowed Speed | states/2bit | Status |
| 64892 | 3710 | Diesel Particulate Filter Active Regeneration Inhibited Due to Parking Brake Not Set | states/2bit | Status |
| 64892 | 3711 | Diesel Particulate Filter Active Regeneration Inhibited Due to Low Exhaust Temperature | states/2bit | Measured |
| 64892 | 3712 | Diesel Particulate Filter Active Regeneration Inhibited Due to System Fault Active | states/2bit | Status |
| 64892 | 3713 | Diesel Particulate Filter Active Regeneration Inhibited Due to System Timeout | states/2bit | Status |
| 64892 | 3714 | Diesel Particulate Filter Active Regeneration Inhibited Due to Temporary System Lockout | states/2bit | Status |
| 64892 | 3715 | Diesel Particulate Filter Active Regeneration Inhibited Due to Permanent System Lockout | states/2bit | Measured |
| 64892 | 3716 | Diesel Particulate Filter Active Regeneration Inhibited Due to Engine Not Warmed Up | states/2bit | Status |
| 64892 | 3717 | Diesel Particulate Filter Active Regeneration Inhibited Due to Vehicle Speed Below Allowed Speed | states/2bit | Status |
| 64892 | 3718 | Diesel Particulate Filter Automatic Active Regeneration Initiation Configuration | states/2bit | Status |
| 64892 | 3750 | Aftertreatment 1 Diesel Particulate Filter Conditions Not Met for Active Regeneration | states/2bit | Status |
| 64892 | 4175 | Diesel Particulate Filter Active Regeneration Forced Status | states/3bit | Status |
| 64892 | 5504 | Hydrocarbon Doser Purging Enable | states/2bit | Status |

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|---|---|---|---|---|
| 64892 | 5629 | Diesel Particulate Filter Active Regeneration Inhibited Due to Low Exhaust Pressure | states/2bit | Status |
| 64892 | 8857 | Diesel Particulate Filter Active Regeneration Availability Status | states/2bit | Status |
| 64914 | 632 | Engine Fuel Shutoff 1 Control | states/2bit | Status |
| 64914 | 2807 | Engine Fuel Shutoff 2 Control | states/2bit | Status |
| 64914 | 3543 | Engine Operating State | states/4bit | Status |
| 64914 | 3589 | Engine Oil Priming Pump Control | states/2bit | Status |
| 64914 | 3601 | Engine Fuel Shutoff Valve Leak Test Control | states/2bit | Status |
| 64914 | 3602 | Engine Oil Pre-heater Control | states/2bit | Status |
| 64914 | 3603 | Engine Electrical System Power Conservation Control | states/2bit | Status |
| 64914 | 3604 | Engine Pre-Heater Control | states/2bit | Status |
| 64914 | 3605 | Engine Coolant Pump Control | states/2bit | Status |
| 64914 | 3606 | Engine Controlled Shutdown Request | states/2bit | Status |
| 64914 | 3607 | Engine Emergency (Immediate) Shutdown Indication | states/2bit | Status |
| 64914 | 3608 | Engine Fuel Shutoff Vent Control | states/2bit | Status |
| 64914 | 3644 | Engine Derate Request | % | Status |
| 64914 | 4082 | Fuel Pump Primer Control | states/2bit | Status |
| 64914 | 6385 | Engine Starter Motor Relay Control | states/2bit | Status |
| 64914 | 6807 | Engine Desired Torque Request | % | Status |
| 64914 | 6884 | Engine Cold Ambient Elevated Idle Status | states/2bit | Status |
| 64920 | 3522 | Aftertreatment 1 Total Fuel Used | L | Measured |
| 64920 | 5827 | Aftertreatment 1 Diesel Particulate Filter Average Distance Between Active Regenerations | Km | Status |
| 64925 | 3509 | Sensor supply voltage 1 | V | Measured |
| 64925 | 3510 | Sensor supply voltage 2 | V | Measured |
| 64925 | 3511 | Sensor supply voltage 3 | V | Measured |
| 64925 | 3512 | Sensor supply voltage 4 | V | Measured |
| 64947 | 3245 | Aftertreatment 1 Exhaust Temperature 3 | °C | Measured |
| 64947 | 3246 | Aftertreatment 1 Diesel Particulate Filter Outlet Temperature | °C | Measured |
| 64948 | 3241 | Aftertreatment 1 Exhaust Temperature 1 | °C | Measured |
| 64948 | 3242 | Aftertreatment 1 Diesel Particulate Filter Intake Temperature | °C | Measured |

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|---|---|---|---|---|
| 64966 | 626 | Engine Start Enable Device 1 | states/2bit | Status |
| 64966 | 1804 | Engine Start Enable Device 2 | states/2bit | Status |
| 64966 | 2898 | Engine Start Enable Device 2 Configuration | states/4bit | Status |
| 64966 | 2899 | Engine Start Enable Device 1 Configuration | states/4bit | Status |
| 64966 | 5548 | Engine Cold Start Fuel Igniter Command | % | Status |
| 64966 | 5549 | Engine Cold Start Fuel Igniter Relay | states/2bit | Status |
| 64966 | 5550 | Engine Cold Start Fuel Igniter Relay Feedback | states/2bit | Measured |
| 64967 | 1568 | Engine Torque Curve Selection | states/4bit | Status |
| 64967 | 2889 | Engine Droop Accelerator 1 Select State | states/4bit | Status |
| 64967 | 2890 | Engine Multi-Unit Sync State | states/2bit | Status |
| 64967 | 2891 | Engine Alternate Low Idle Select State | states/2bit | Status |
| 64967 | 2893 | Engine Alternate Droop Accelerator 2 Select State | states/4bit | Status |
| 64967 | 2894 | Engine Droop Remote Accelerator Select State | states/4bit | Status |
| 64967 | 2895 | Engine Droop Auxiliary Input Select State | states/4bit | Status |
| 64967 | 2896 | Engine Auxiliary Governor State | states/2bit | Status |
| 64967 | 8664 | Engine Operating Mode Selection | states/4bit | Measured |
| 64971 | 1377 | Engine Synchronization Switch | states/2bit | Measured |
| 64971 | 2879 | Engine Droop Accelerator 2 Select | states/4bit | Measured |
| 64971 | 2881 | Engine Droop Accelerator 1 Select | states/4bit | Measured |
| 64971 | 2882 | Engine Alternate Rating Select | selection | Measured |
| 64971 | 2883 | Engine Alternate Low Idle Switch | states/2bit | Measured |
| 64971 | 2884 | Engine Auxiliary Governor Switch | states/2bit | Measured |
| 64971 | 2885 | Engine Droop Auxiliary Input Select | states/4bit | Measured |
| 64971 | 2886 | Engine Droop Remote Accelerator Select | states/4bit | Measured |
| 64971 | 6796 | Engine Torque Curve Selection Command | states/4bit | Status |
| 64971 | 8608 | Engine Operating Mode Command | states/4bit | Status |
| 64981 | 2789 | Engine Turbocharger 1 Calculated Turbine Intake Temperature | °C | Status |
| 64981 | 2790 | Engine Turbocharger 1 Calculated Turbine Outlet Temperature | °C | Status |
| 64981 | 2791 | Engine Exhaust Gas Recirculation 1 Valve 1 Control 1 | % | Status |

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|---|---|---|---|---|
| 64981 | 2792 | Engine Variable Geometry Turbocharger (VGT) Air Control Shutoff Valve | states/2bit | Status |
| 64981 | 2795 | Engine Variable Geometry Turbocharger (VGT) 1 Actuator Position | % | Measured |
| 64981 | 5323 | Engine Fuel Control Mode | states/2bit | Status |
| 64981 | 5457 | Engine Variable Geometry Turbocharger 1 Control Mode | states/2bit | Status |
| 64998 | 2580 | Hydraulic Brake Pressure Circuit 1 | KPa | Measured |
| 64998 | 2581 | Hydraulic Brake Pressure Circuit 2 | KPa | Measured |
| 64998 | 2582 | Hydraulic Brake Pressure Supply State Circuit 1 | states/2bit | Measured |
| 64998 | 2583 | Hydraulic Brake Pressure Supply State Circuit 2 | states/2bit | Measured |
| 64998 | 2584 | Hydraulic Brake Pressure Warning State Circuit 1 | states/2bit | Measured |
| 64998 | 2585 | Hydraulic Brake Pressure Warning State Circuit 2 | states/2bit | Measured |
| 64998 | 2930 | Hydraulic Brake System Audible Warning Command | states/2bit | Status |
| 64998 | 2931 | Hydraulic Brake Fluid Level Switch | states/2bit | Measured |
| 65089 | 2347 | High Beam Head Light Command | states/2bit | Status |
| 65089 | 2349 | Low Beam Head Light Command | states/2bit | Status |
| 65089 | 2351 | Alternate Beam Head Light Command | states/2bit | Status |
| 65089 | 2353 | Tractor Front Low Mounted Work Lights Command | states/2bit | Status |
| 65089 | 2355 | Tractor Front High Mounted Work Lights Command | states/2bit | Status |
| 65089 | 2357 | Tractor Underside Mounted Work Lights Command | states/2bit | Status |
| 65089 | 2359 | Tractor Rear Low Mounted Work Lights Command | states/2bit | Status |
| 65089 | 2361 | Tractor Rear High Mounted Work Lights Command | states/2bit | Status |
| 65089 | 2363 | Tractor Side Low Mounted Work Lights Command | states/2bit | Status |
| 65089 | 2365 | Tractor Side High Mounted Work Lights Command | states/2bit | Status |
| 65089 | 2367 | Left Turn Signal Lights Command | states/2bit | Status |
| 65089 | 2369 | Right Turn Signal Lights Command | states/2bit | Status |
| 65089 | 2371 | Left Stop Light Command | states/2bit | Status |
| 65089 | 2373 | Right Stop Light Command | states/2bit | Status |
| 65089 | 2375 | Center Stop Light Command | states/2bit | Status |
| 65089 | 2377 | Tractor Marker Light Command | states/2bit | Status |
| 65089 | 2379 | Implement Marker Light Command | states/2bit | Status |

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|---|---|---|---|---|
| 65089 | 2381 | Tractor Clearance Light Command | states/2bit | Status |
| 65089 | 2383 | Implement Clearance Light Command | states/2bit | Status |
| 65089 | 2385 | Rotating Beacon Light Command | states/2bit | Status |
| 65089 | 2387 | Tractor Front Fog Lights Command | states/2bit | Status |
| 65089 | 2389 | Rear Fog Light Command | states/2bit | Status |
| 65089 | 2391 | Back Up Light and Alarm Horn Command | states/2bit | Status |
| 65089 | 2393 | Lighting Data Request Command | states/2bit | Status |
| 65089 | 2395 | Implement OEM Option 1 Light Command | states/2bit | Status |
| 65089 | 2397 | Implement OEM Option 2 Light Command | states/2bit | Status |
| 65089 | 2399 | Implement Left Facing Work Light Command | states/2bit | Status |
| 65089 | 2401 | Implement Right Forward Work Light Command | states/2bit | Status |
| 65089 | 2403 | Running Light Command | states/2bit | Status |
| 65089 | 2405 | Implement Rear Work Light Command | states/2bit | Status |
| 65089 | 2406 | Implement Right Facing Work Light Command | states/2bit | Status |
| 65089 | 2597 | Implement Left Forward Work Light Command | states/2bit | Status |
| 65110 | 1761 | Aftertreatment 1 Diesel Exhaust Fluid Tank Volume | % | Measured |
| 65110 | 3031 | Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature 1 | °C | Measured |
| 65110 | 3363 | Aftertreatment 1 Diesel Exhaust Fluid Tank Heater | % | Measured |
| 65110 | 3517 | Aftertreatment 1 Diesel Exhaust Fluid Tank Level | mm | Measured |
| 65110 | 5245 | Aftertreatment Diesel Exhaust Fluid Tank Low Level Indicator | states/3bit | Status |
| 65110 | 5246 | Aftertreatment SCR Operator Inducement Severity | states/3bit | Status |
| 65128 | 1638 | Hydraulic Temperature | °C | Measured |
| 65128 | 1713 | Hydraulic Oil Filter Restriction Switch | states/2bit | Measured |
| 65128 | 1857 | Winch Oil Pressure Switch | states/2bit | Measured |
| 65128 | 2602 | Hydraulic Oil Level | % | Measured |
| 65129 | 1636 | Engine Intake Manifold 1 Temperature (High Resolution) | °C | Measured |
| 65129 | 1637 | Engine Coolant Temperature (High Resolution) | °C | Measured |
| 65129 | 2630 | Engine Charge Air Cooler 1 Outlet Temperature | °C | Measured |
| 65129 | 2986 | Engine Intake Valve Actuation System Oil Temperature | °C | Measured |

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|---|---|---|---|---|
| 65130 | 1380 | Engine Oil Level Remote Reservoir | % | Measured |
| 65130 | 1381 | Engine Fuel Supply Pump Intake Absolute Pressure | KPa | Measured |
| 65130 | 1382 | Engine Fuel Filter (suction side) Differential Pressure | KPa | Measured |
| 65130 | 3548 | Engine Waste Oil Reservoir Level | % | Measured |
| 65130 | 3549 | Engine Oil Filter Outlet Pressure | KPa | Measured |
| 65130 | 3550 | Engine Oil Priming Pump Switch | states/2bit | Measured |
| 65130 | 3551 | Engine Oil Priming State | states/2bit | Status |
| 65130 | 3552 | Engine Oil Pre-Heated State | states/2bit | Status |
| 65130 | 3553 | Engine Coolant Pre-heated State | states/2bit | Status |
| 65130 | 3554 | Engine Ventilation Status | states/3bit | Status |
| 65130 | 4083 | Fuel Pump Primer Status | states/2bit | Status |
| 65130 | 7104 | Engine Fuel Supply Pump Intake Pressure | KPa | Measured |
| 65132 | 1611 | Vehicle motion | states/2bit | Measured |
| 65132 | 1612 | Driver 1 working state | states/3bit | Status |
| 65132 | 1613 | Driver 2 working state | states/3bit | Status |
| 65132 | 1614 | Vehicle Overspeed | states/2bit | Measured |
| 65132 | 1615 | Driver card- driver 1 | states/2bit | Measured |
| 65132 | 1616 | Driver card- driver 2 | states/2bit | Measured |
| 65132 | 1617 | Driver 1 Time Related States | states/4bit | Measured |
| 65132 | 1618 | Driver 2 Time Related States | states/4bit | Measured |
| 65132 | 1619 | Direction indicator | states/2bit | Measured |
| 65132 | 1620 | Tachograph performance | states/2bit | Status |
| 65132 | 1621 | Handling information | states/2bit | Status |
| 65132 | 1622 | System event | states/2bit | Status |
| 65132 | 1623 | Tachograph output shaft speed | RPM | Measured |
| 65132 | 1624 | Tachograph vehicle speed | Km/h | Measured |
| 65159 | 1433 | Engine Desired Ignition Timing 1 | deg | Status |
| 65159 | 1434 | Engine Desired Ignition Timing 2 | deg | Status |
| 65159 | 1435 | Engine Desired Ignition Timing 3 | deg | Status |

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|---|---|---|---|---|
| 65159 | 1436 | Engine Actual Ignition Timing | deg | Status |
| 65164 | 354 | Relative Humidity | % | Measured |
| 65164 | 441 | Auxiliary Temperature 1 | °C | Measured |
| 65164 | 442 | Auxiliary Temperature 2 | °C | Measured |
| 65164 | 1387 | Auxiliary Pressure #1 | KPa | Measured |
| 65164 | 1388 | Auxiliary Pressure #2 | KPa | Measured |
| 65164 | 3087 | Auxiliary Level | mm | Measured |
| 65174 | 1188 | Engine Turbocharger Wastegate Actuator 1 Position | % | Measured |
| 65174 | 1189 | Engine Turbocharger Wastegate Actuator 2 Position | % | Measured |
| 65174 | 1190 | Engine Turbocharger Wastegate Actuator 3 Position | % | Measured |
| 65174 | 1191 | Engine Turbocharger Wastegate Actuator 4 Position | % | Measured |
| 65174 | 1192 | Engine Turbocharger Wastegate Actuator Control Air Pressure | KPa | Measured |
| 65174 | 5370 | Engine Turbocharger Wastegate Actuator 1 Desired Position | % | Status |
| 65174 | 5372 | Engine Turbocharger Wastegate Actuator 1 Temperature Status | states/3bit | Status |
| 65174 | 5373 | Engine Turbocharger Wastegate Actuator 2 Desired Position | % | Status |
| 65213 | 975 | Engine Fan 1 Estimated Percent Speed | % | Status |
| 65213 | 977 | Fan Drive State | states/4bit | Status |
| 65213 | 1639 | Fan Speed | RPM | Measured |
| 65213 | 4211 | Hydraulic Fan Motor Pressure | KPa | Measured |
| 65213 | 4212 | Fan Drive Bypass Command Status | % | Status |
| 65216 | 914 | Service Distance | km | Measured |
| 65216 | 915 | Service Delay/Calendar Time Based | weeks | Measured |
| 65226 | 623 | Diagnostic Reporting – DM1 | states/2bit | Status |
| 65226 | 624 | Diagnostic Reporting – DM1 | states/2bit | Status |
| 65226 | 987 | Diagnostic Reporting – DM1 | states/2bit | Status |
| 65226 | 1213 | Diagnostic Reporting – DM1 | states/2bit | Status |
| 65226 | 1706 | Diagnostic Reporting – DM1 | states/1bit | Status |
| 65226 | 3038 | Diagnostic Reporting – DM1 | states/2bit | Status |
| 65226 | 3039 | Diagnostic Reporting – DM1 | states/2bit | Status |

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|---|---|---|---|---|
| 65226 | 3040 | Diagnostic Reporting – DM1 | states/2bit | Status |
| 65226 | 3041 | Diagnostic Reporting – DM1 | states/2bit | Status |
| 65237 | 589 | Alternator Speed | RPM | Measured |
| 65237 | 3353 | Alternator 1 Status | states/2bit | Measured |
| 65237 | 3354 | Alternator 2 Status | states/2bit | Measured |
| 65237 | 3355 | Alternator 3 Status | states/2bit | Measured |
| 65237 | 3356 | Alternator 4 Status | states/2bit | Measured |
| 65242 | 965 | Number of Software Identification Fields | step | Measured |
| 65243 | 156 | Engine Fuel 1 Injector Timing Rail 1 Pressure | MPa | Measured |
| 65243 | 157 | Engine Fuel 1 Injector Metering Rail 1 Pressure | MPa | Measured |
| 65243 | 164 | Engine Fuel Injection Control Pressure | MPa | Measured |
| 65243 | 1349 | Engine Fuel 1 Injector Metering Rail 2 Pressure | MPa | Measured |
| 65244 | 236 | Engine Total Idle Fuel Used | L | Measured |
| 65247 | 514 | Nominal Friction - Percent Torque | % | Status |
| 65247 | 515 | Engine's Desired Operating Speed | RPM | Status |
| 65247 | 519 | Engine's Desired Operating Speed Asymmetry Adjustment | Ratio | Status |
| 65247 | 2978 | Estimated Engine Parasitic Losses - Percent Torque | % | Status |
| 65247 | 3236 | Aftertreatment 1 Exhaust Gas Mass Flow Rate | Kg/h | Measured |
| 65247 | 3237 | Aftertreatment 1 Intake Dew Point | states/2bit | Status |
| 65247 | 3238 | Aftertreatment 1 Exhaust Dew Point | states/2bit | Status |
| 65247 | 3239 | Aftertreatment 2 Intake Dew Point | states/2bit | Status |
| 65247 | 3240 | Aftertreatment 2 Exhaust Dew Point | states/2bit | Status |
| 65248 | 244 | Trip Distance | Km | Measured |
| 65248 | 245 | Total Vehicle Distance | Km | Measured |
| 65251 | 188 | Engine Speed At Idle, Point 1 | rpm | Measured |
| 65251 | 528 | Engine Speed At Point 2 | rpm | Measured |
| 65251 | 529 | Engine Speed At Point 3 | rpm | Measured |
| 65251 | 530 | Engine Speed At Point 4 | rpm | Measured |
| 65251 | 531 | Engine Speed At Point 5 | rpm | Measured |

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|---|---|---|---|---|
| 65251 | 532 | Engine Speed At High Idle, Point 6 | rpm | Measured |
| 65251 | 533 | Engine Maximum Momentary Override Speed, Point 7 | rpm | Measured |
| 65251 | 535 | Engine Requested Speed Control Range Lower Limit | rpm | Measured |
| 65251 | 536 | Engine Requested Speed Control Range Upper Limit | rpm | Measured |
| 65251 | 537 | Engine Requested Torque Control Range Lower Limit | % | Measured |
| 65251 | 538 | Engine Requested Torque Control Range Upper Limit | % | Measured |
| 65251 | 539 | Engine Percent Torque At Idle, Point 1 | % | Measured |
| 65251 | 540 | Engine Percent Torque At Point 2 | % | Measured |
| 65251 | 541 | Engine Percent Torque At Point 3 | % | Measured |
| 65251 | 542 | Engine Percent Torque At Point 4 | % | Measured |
| 65251 | 543 | Engine Percent Torque At Point 5 | % | Measured |
| 65251 | 544 | Engine Reference Torque | Nm | Measured |
| 65251 | 545 | Engine Gain (Kp) Of The Endspeed Governor | %/rpm | Measured |
| 65251 | 1712 | Engine Requested Speed Control Range Upper Limit (Extended Range) | rpm | Measured |
| 65251 | 1794 | Engine Moment of Inertia | $kgm^2$ | Status |
| 65251 | 1846 | Engine Default Torque Limit | Nm | Measured |
| 65251 | 3344 | Support Variable Rate TSC1 Message | bit | Status |
| 65251 | 3345 | Support TSC1 Control Purpose Group 1 | bit | Status |
| 65251 | 3346 | Support TSC1 Control Purpose Group 2 | bit | Status |
| 65251 | 3347 | Support TSC1 Control Purpose Group 3 | bit | Status |
| 65251 | 3348 | Support TSC1 Control Purpose Group 4 | bit | Status |
| 65251 | 7828 | Engine Default Idle Torque Limit | % | Measured |
| 65252 | 590 | Engine Idle Shutdown Timer State | states/2bit | Status |
| 65252 | 591 | Engine Idle Shutdown Timer Function | states/2bit | Measured |
| 65252 | 592 | Engine Idle Shutdown Timer Override | states/2bit | Status |
| 65252 | 593 | Engine Idle Shutdown has Shutdown Engine | states/2bit | Status |
| 65252 | 594 | Engine Idle Shutdown Driver Alert Mode | states/2bit | Status |
| 65252 | 605 | Refrigerant High Pressure Switch | states/2bit | Measured |
| 65252 | 875 | Refrigerant Low Pressure Switch | states/2bit | Measured |

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|---|---|---|---|---|
| 65252 | 985 | A/C High Pressure Fan Switch | states/2bit | Measured |
| 65252 | 1081 | Engine Wait to Start Lamp | states/2bit | Status |
| 65252 | 1107 | Engine Protection System Timer State | states/2bit | Status |
| 65252 | 1108 | Engine Protection System Timer Override | states/2bit | Status |
| 65252 | 1109 | Engine Protection System Approaching Shutdown | states/2bit | Status |
| 65252 | 1110 | Engine Protection System has Shutdown Engine | states/2bit | Status |
| 65252 | 1111 | Engine Protection System Configuration | states/2bit | Status |
| 65252 | 2812 | Engine Overspeed Test | states/2bit | Measured |
| 65252 | 2813 | Engine Air Shutoff Command Status | states/2bit | Status |
| 65252 | 2814 | Engine Alarm Output Command Status | states/2bit | Status |
| 65252 | 2815 | Engine Alarm Acknowledge | states/2bit | Measured |
| 65252 | 3667 | Engine Air Shutoff Status | states/2bit | Status |
| 65252 | 5404 | PTO Shutdown has Shutdown Engine | states/2bit | Status |
| 65252 | 5566 | Coolant Level Engine Protection Shutdown Status | states/2bit | Status |
| 65252 | 8159 | Engine Oil Pressure Switch | states/2bit | Measured |
| 65253 | 249 | Engine Total Revolutions | r | Measured |
| 65257 | 182 | Engine Trip Fuel | L | Measured |
| 65257 | 250 | Engine Total Fuel Used | L | Measured |
| 65262 | 52 | Engine Intercooler Temperature | °C | Measured |
| 65262 | 110 | Engine Coolant Temperature | °C | Measured |
| 65262 | 174 | Engine Fuel 1 Temperature 1 | °C | Measured |
| 65262 | 175 | Engine Oil Temperature 1 | °C | Measured |
| 65262 | 176 | Engine Turbocharger 1 Oil Temperature | °C | Measured |
| 65262 | 1134 | Engine Charge Air Cooler Thermostat Opening | % | Measured |
| 65263 | 22 | Engine Extended Crankcase Blow-by Pressure | KPa | Measured |
| 65263 | 94 | Engine Fuel Delivery Pressure | KPa | Measured |
| 65263 | 98 | Engine Oil Level | % | Measured |
| 65263 | 100 | Engine Oil Pressure | KPa | Measured |
| 65263 | 101 | Engine Crankcase Pressure 1 | KPa | Measured |

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|---|---|---|---|---|
| 65263 | 109 | Engine Coolant Pressure 1 | KPa | Measured |
| 65263 | 111 | Engine Coolant Level 1 | % | Measured |
| 65264 | 90 | Power Takeoff Oil Temperature | °C | Measured |
| 65264 | 186 | Power Takeoff Speed | RPM | Measured |
| 65264 | 187 | Power Takeoff Set Speed | RPM | Measured |
| 65264 | 978 | Engine Remote PTO Governor Variable Speed Control Switch | states/2bit | Measured |
| 65264 | 979 | Engine Remote PTO Governor Preprogrammed Speed Control Switch | states/2bit | Measured |
| 65264 | 980 | Engine PTO Governor Enable Switch | states/2bit | Measured |
| 65264 | 981 | Engine PTO Governor Accelerate Switch | states/2bit | Measured |
| 65264 | 982 | Engine PTO Governor Resume Switch | states/2bit | Measured |
| 65264 | 983 | Engine PTO Governor Coast/Decelerate Switch | states/2bit | Measured |
| 65264 | 984 | Engine PTO Governor Set Switch | states/2bit | Measured |
| 65264 | 2897 | Operator Engine PTO Governor Memory Select Switch | states/2bit | Measured |
| 65264 | 3447 | Remote PTO Governor Preprogrammed Speed Control Switch #2 | states/2bit | Measured |
| 65264 | 3448 | Auxiliary Input Ignore Switch | states/2bit | Measured |
| 65264 | 8639 | Engine PTO Governor Disable Switch | states/2bit | Measured |
| 65265 | 69 | Two Speed Axle Switch | states/2bit | Measured |
| 65265 | 70 | Parking Brake Switch | states/2bit | Measured |
| 65265 | 84 | Wheel-Based Vehicle Speed | Km/h | Measured |
| 65265 | 86 | Cruise Control Set Speed | Km/h | Measured |
| 65265 | 527 | Cruise Control States | states/3bit | Status |
| 65265 | 595 | Cruise Control Active | states/2bit | Measured |
| 65265 | 596 | Cruise Control Enable Switch | states/2bit | Measured |
| 65265 | 597 | Brake Switch | states/2bit | Measured |
| 65265 | 598 | Clutch Switch | states/2bit | Measured |
| 65265 | 599 | Cruise Control Set Switch | states/2bit | Measured |
| 65265 | 600 | Cruise Control Coast (Decelerate) Switch | states/2bit | Measured |
| 65265 | 601 | Cruise Control Resume Switch | states/2bit | Measured |
| 65265 | 602 | Cruise Control Accelerate Switch | states/2bit | Measured |

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|---|---|---|---|---|
| 65265 | 966 | Engine Diagnostic Test Mode Switch | states/2bit | Measured |
| 65265 | 967 | Engine Idle Decrement Switch | states/2bit | Measured |
| 65265 | 968 | Engine Idle Increment Switch | states/2bit | Measured |
| 65265 | 1237 | Engine Shutdown Override Switch | states/2bit | Measured |
| 65265 | 1633 | Cruise Control Pause Switch | states/2bit | Measured |
| 65265 | 3807 | Park Brake Release Inhibit Request | states/2bit | Status |
| 65266 | 51 | Engine Throttle Valve 1 Position 1 | % | Measured |
| 65266 | 183 | Engine Fuel Rate | L/h | Measured |
| 65266 | 184 | Engine Instantaneous Fuel Economy | km/L | Measured |
| 65266 | 185 | Engine Average Fuel Economy | Km/L | Measured |
| 65266 | 3673 | Engine Throttle Valve 2 Position | % | Measured |
| 65269 | 79 | Road Surface Temperature | °C | Measured |
| 65269 | 108 | Barometric Pressure | KPa | Measured |
| 65269 | 170 | Cab Interior Temperature | °C | Measured |
| 65269 | 171 | Ambient Air Temperature | °C | Measured |
| 65269 | 172 | Engine Intake 1 Air Temperature | °C | Measured |
| 65270 | 102 | Engine Intake Manifold #1 Pressure | KPa | Measured |
| 65270 | 105 | Engine Intake Manifold 1 Temperature | °C | Measured |
| 65270 | 106 | Engine Intake Air Pressure | KPa | Measured |
| 65270 | 107 | Engine Air Filter 1 Differential Pressure | KPa | Measured |
| 65270 | 112 | Engine Coolant Filter Differential Pressure | KPa | Measured |
| 65270 | 173 | Engine Exhaust Temperature | °C | Measured |
| 65271 | 114 | SLI Battery 1 Net Current | A | Measured |
| 65271 | 115 | Alternator Current | A | Measured |
| 65271 | 158 | Key Switch Battery Potential | V | Measured |
| 65271 | 167 | Charging System Potential (Voltage) | V | Measured |
| 65271 | 168 | Battery Potential / Power Input 1 | V | Measured |
| 65272 | 123 | Clutch Pressure | KPa | Measured |
| 65272 | 124 | Transmission Oil Level 1 | % | Measured |

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|---|---|---|---|---|
| 65272 | 126 | Transmission Filter Differential Pressure | KPa | Measured |
| 65272 | 127 | Transmission Oil Pressure | KPa | Measured |
| 65272 | 177 | Transmission Oil Temperature 1 | °C | Measured |
| 65272 | 3026 | Transmission Oil Level 1 Measurement Status | states/4bit | Status |
| 65272 | 3027 | Transmission Oil Level 1 High / Low | L | Measured |
| 65272 | 3028 | Transmission Oil Level 1 Countdown Timer | states/4bit | Measured |
| 65274 | 116 | Brake Application Pressure | KPa | Measured |
| 65274 | 117 | Brake Primary Pressure | KPa | Measured |
| 65274 | 118 | Brake Secondary Pressure | KPa | Measured |
| 65274 | 619 | Parking Brake Actuator | states/2bit | Measured |
| 65274 | 3557 | Parking Brake Red Warning Signal | states/2bit | Status |
| 65274 | 3808 | Park Brake Release Inhibit Status | states/2bit | Measured |
| 65276 | 38 | Fuel Level 2 | % | Measured |
| 65276 | 80 | Washer Fluid Level | % | Measured |
| 65276 | 95 | Engine Fuel Filter Differential Pressure | KPa | Measured |
| 65276 | 96 | Fuel Level 1 | % | Measured |
| 65276 | 99 | Engine Oil Filter Differential Pressure | KPa | Measured |
| 65276 | 169 | Cargo Ambient Temperature | °C | Measured |
| 65279 | 97 | Water In Fuel Indicator 1 | states/2bit | Measured |
| 65279 | 5675 | Operator Shift Prompt | states/2bit | Status |
| 65279 | 5825 | Driver Warning System Indicator Status | states/3bit | Status |
| 65279 | 5826 | Emission Control System Operator Inducement Severity | states/3bit | Status |
| 65279 | 6301 | Water in Fuel Indicator 2 | states/2bit | Measured |
| 65279 | 8428 | Fuel Supply Estimated Remaining Distance | Km | Status |
| 65279 | 8611 | Water In Charge Air Duct After Charge Air Cooler Indicator | states/2bit | Measured |
| 65279 | 8612 | Engine Overloaded Indicator | states/2bit | Status |

# 10 Gauge Abbreviations

| Abbreviation | Gauge Type |
|---|---|
| Fuel1 | Fuel Level |
| DEF Level | DEF Level |
| IntakeMan | Engine Intake Manifold Temperature |
| EngOil | Engine Oil Pressure |
| BrakeSec | Secondary Brake Pressure |
| BrakePri | Primary Brake Pressure |
| TransOil | Transmission Oil Pressure |
| EngCoolant | Engine Coolant Temperature |
| EngOil1 | Engine Oil Temperature |
| AuxTemp1 | |
| TransOil1 | Transmission Oil Temperature |
| BatteryP1 | Battery Voltage |
| VehSpeed | Vehicle Speed |
| EngSpeed | Engine Speed (RPM) |
| Ammeter | Ammeter |
| EnTripFuel | Trip Fuel Consumption |
| EngFRate | Current Fuel Economy |

# 11 Troubleshooting Guide

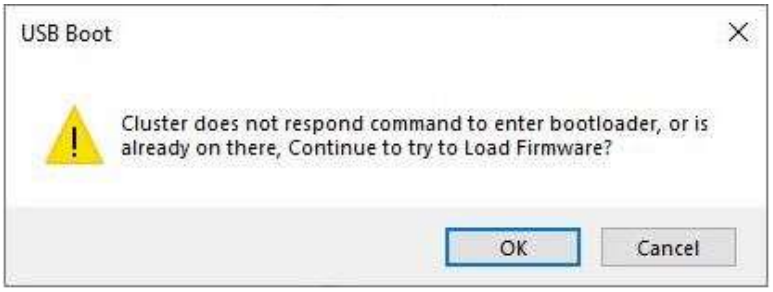
- How to reset Cluster to Factory Defaults?:

  Tool starts on factory defaults, to reset cluster to factory defaults connect to cluster then write configuration to cluster.

- During transfer configuration Tool is showing  a popup message “USB Communication Failure During Configuration Transfer”:


  1. Check correct cable connection during transferring.
  2. Cycle power to maxAI Cluster

- During Flashing process Tool is displaying a popup message “Cluster does not respond command to enter bootloader”:




  1. Cluster is ready and waiting to receive firmware update, from previous suspended update task.
  2. Cluster is not processing “Enter Bootloader Command” reset Cluster to then retry.

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# 12 Revision Log

| Date | Revision | Description | Approved |
|---|---|---|---|
| 8/18/2021 | O | Based on maxAI Configuration Tool rev N<br>- Updated general format<br>- Updated all images | MG |
| 8/18/2021 | P | - Updated section 3.5.1.5 Communications<br>CAN0 & CAN1 baud rate can be configured independently<br>Pin protected implementation<br>- Added new features<br>LCD Warning Lights<br>Miscellaneous (CAN camera activation)<br>Slash screen time config<br>Popup Banner<br>- Updated Supported PGNs<br>- Updated contact information | MG |
| 8/29/2021 | Q | - Updated Video section | MG |