

DATE	REV	CHANGES	BY	CHECK
5/10/20	0.0	Preliminary Version for Review	J.H.	
28/1/21	0.1	Scroll Manual & return added	J.H.	
18/10/21	0.2	Updated for Inputs specific population and 12/24V version	J.H.	
01/04/22	0.3	Removed watermark and changed to maxAI130	J.H.	

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1. SCOPE

1.1. IDENTIFICATION

This document applies to a 52mm diameter instrument SAE J1939 maxAI130 instrument with and without keypad.



1.2. SYSTEM OVERVIEW

This specification covers functional and environmental requirements for the instrument cluster manufactured by Maxima Technologies. The instrument has CAN bus communication and provides 4 inputs and displays information with lighted warnings and a LCD dot-matrix.

1.3. DOCUMENT

This document is property of Maxima Technologies and cannot be used or disclosed for any purpose other than as agreed in writing.

2. SYSTEM SPECIFICATIONS

2.1. OPERATIONAL MODES

No Power – The system is not receiving any electrical power.

Ignition On – The Battery input pin is switched to battery voltage and functions normally. CAN bus is operative in that mode.

2.2. MOUNTING

The instrument will be mounted to a panel with a bracket or screw. See drawing number 195211 for the recommended panel opening.

2.3. DOT MATRIX DISPLAY

The dot matrix has a resolution of 106x56 pixels. The viewing direction will be 6 o'clock. Technology: transfective, positive mode. It will be backlit in white for day and night visibility.

Functions integrated to the dot-matrix:

The instrument will display the SPNs that have been set in the menu.

2.4. LED INDICATORS

The instrument has 3 LEDs above the dot-matrix to indicate the status of the errors received in the Active Diagnostic Trouble Codes message DM1. The instrument will light the RED Stop Lamp and the AMBER Warning Lamp according to the information received in the message. If no error is present the GREEN LED will be lighted up.

2.5. POWER SUPPLY REQUIREMENTS

The instrument will receive power from the 12V or 24V nominal vehicle system. The operating range is from 9V to 32V. The instrument is not required to operate during cranking.

2.6. CONNECTOR

The connector will be a 8 pin Tyco electronics part number 1-794073-0.

The mating housings are:

770579-1 Standard version
794821-1 Sealed version

The complete pin-out is shown in the table below.

Pin	Name	Function
1	INPUT 1	ANALOG RESISTIVE OR SWITCHED TO GROUND INPUT
2	GND	POWER GROUND PIN
3	IGNITION	POSITIVE POWER PIN 12V or 24V
4	INPUT 2	ANALOG RESISTIVE OR SWITCHED TO GROUND INPUT
5	INPUT 3	ANALOG VOLTAGE INPUT
6	CAN HIGH	CAN BUS HIGH
7	CAN LOW	CAN BUS LOW
8	INPUT 4	SWITCHED TO BATTERY INPUT

Table 1

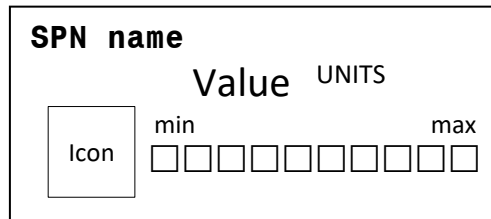
3. OPERATING INSTRUCTIONS

At power up the instrument will show the splash screen for a few seconds and then it will show the data (SPN) that is configured to get from the CAN bus. The instrument can show up to 11 SPN's that can be selected in the main menu.

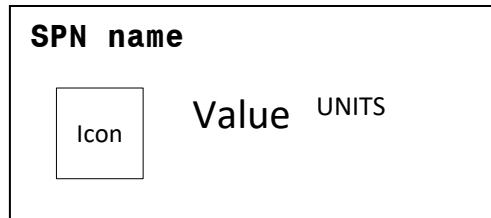
3.1. MAIN SCREEN

In the main screen the data collected from the CAN Bus is displayed on the screen. If scroll mode is active the SPN shown will jump automatically to the next item. Otherwise, the keys ▲ and ▼ can be used to jump to the next or previous data screen.

The format of the main screen has the following structure:



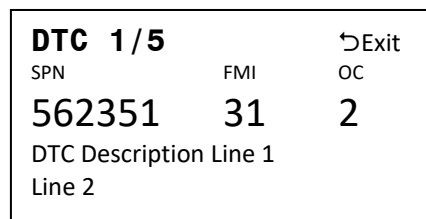
Data with bargraph



Data without bargraph

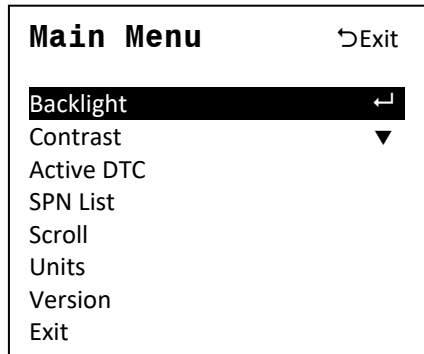
3.2. ACTIVE DTC SCREEN

In the event of receiving Active Diagnostic Trouble Codes in the J1939 DM1 message the Active DTC screen will come up. If several errors are present the user can navigate using the arrows ▲ and ▼. To exit the screen and go back to the main screen one a long press to the ↵ Exit key is required. If the user wants to check this screen again the access is through the main menu (see 3.3.3).



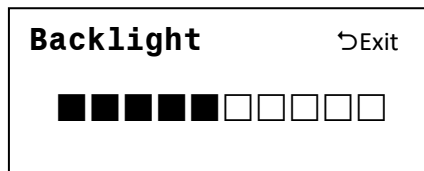
3.3. MAIN MENU

While the instrument is in the main screen, with a long press at the key ↵ we can access the main menu.



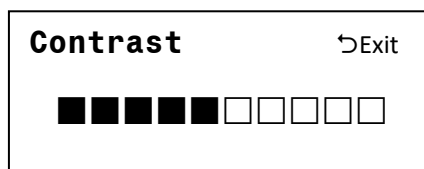
Use the arrows ▲ and ▼ to move through the menu items. A long press to the key ← will enter in the option selected. A long press to the ↵ Exit key can be used to go back to the previous screen

3.3.1. BACKLIGHT MENU



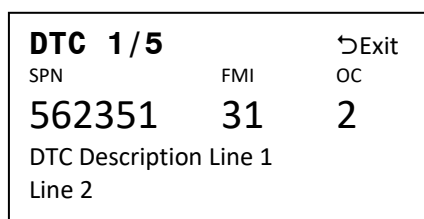
Use the arrows ▲ and ▼ to adjust to the desired backlight intensity. A long press to the key ← will set the backlight. Also a long press to the ↵ Exit key can be used to go back to the previous screen.

3.3.2. CONTRAST MENU



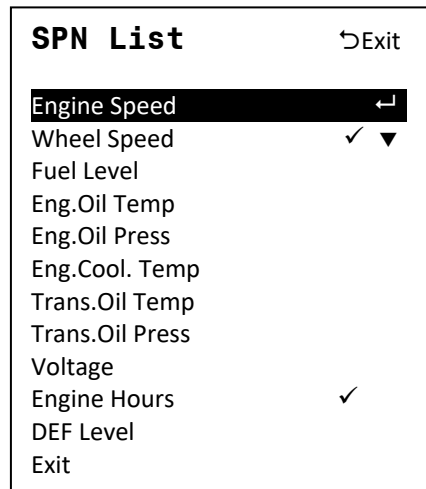
Use the arrows ▲ and ▼ to adjust to the desired contrast. A long press to the key ← will set the contrast. Also, a long press to the ↵ Exit key can be used to go back to the previous screen.

3.3.3. ACTIVE DTC MENU



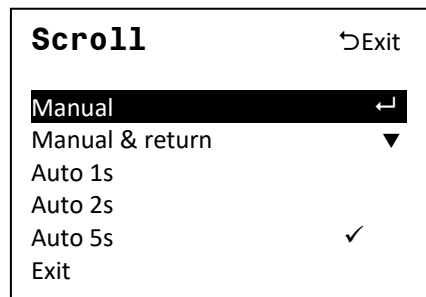
This screen will show the Active Diagnostic Trouble Codes if present on the bus. If several errors are present the user can navigate using the arrows ▲ and ▼. To exit the screen and go back to the previous one a long press to the ↵ Exit key is required.

3.3.4. SPN LIST MENU



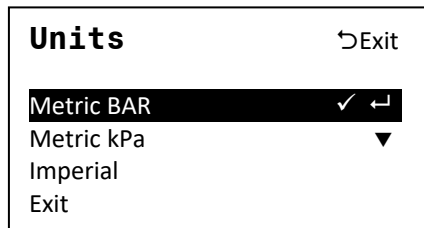
This screen allows the user to choose what of the available J1939 SPNs will be shown in the main screen. If the selected SPN has the tick ✓ on the right it will be displayed, otherwise it will be ignored. The arrows ▲ and ▼ move through the items. A long press to the key Intro ↵ toggles the status of the selection tick. A long press to the ↵ key returns to the main menu.

3.3.5. SCROLL MENU



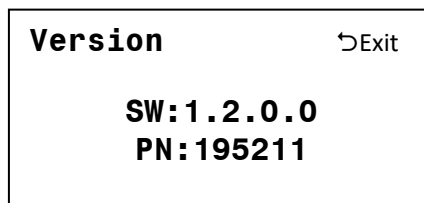
This screen allows the user to choose the desired scroll mode for the data items in the main menu. If Manual scroll is selected the information will be switched with the ▲ and ▼ keys. The Manual & return mode will allow the navigation with the keys, but after 15 seconds without change, it will return to the first screen. If Auto mode is selected the information will change at the selected rate. The active selection is indicated by the tick ✓ on the right. The arrows ▲ and ▼ move through the items. A long press to the key Intro ↵ selects the desired option. A long press to the ↵ key returns to the main menu.

3.3.6. UNITS MENU



This screen allows the user to choose the desired units for the data items in the main menu. Three options are available, metric with pressure in Bar or in kPa and Imperial. The active selection is indicated by the tick ✓ on the right. The arrows ▲ and ▼ move through the items. A long press to the key Intro ↵ selects the desired option. A long press to the ↵ key returns to the main menu.

3.3.7. VERSION SCREEN



This information only screen shows the software version and the part number of the instrument. A long press to the ↵ key returns to the main menu.