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CAI ToolBox Software V2.19

User Manual

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Note: We are continually working to improve our software. If you encounter any issues or missing features, please let us know at support@c-a-i.net.

1. Installing the Software

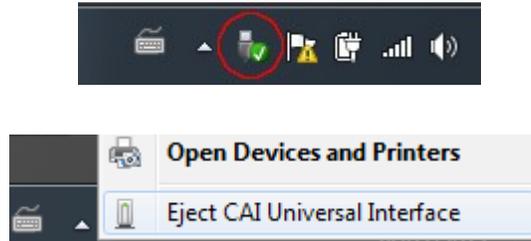
Download the CAI ToolBox installer from <http://c-a-i.net/customers/toolbox.html>. Use the access code provided to you by CAI (if you do not have an access code, or have lost yours, please phone us or send us an email at support@c-a-i.net to receive a new one).

Run the installer and follow the on-screen instructions.

2. Connect to the device's USB port to your PC

Connect the device to your PC using any standard USB-A to USB-B cable. Windows will take time to set up the device when it is plugged in for the first time.

To check if your device is connected, find and click on the USB icon on the right side of the task bar. You should find “CAI Universal Interface” listed in the popup menu.



3. Startup and the Welcome Screen

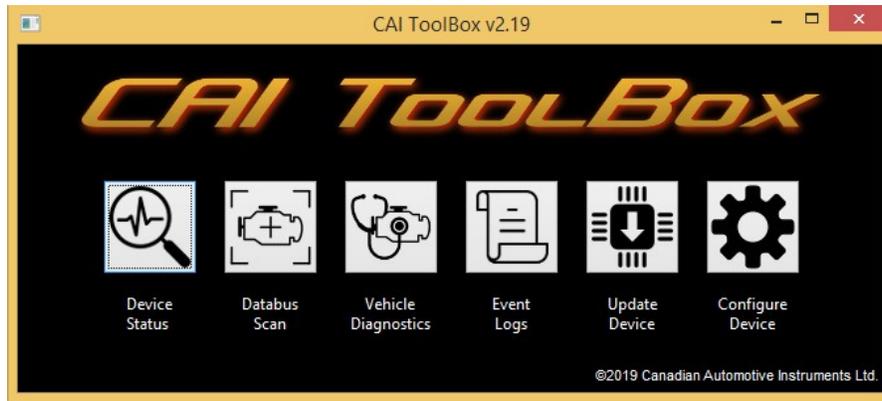
Find the CAI ToolBox icon either on your desktop or in the Start Menu to start the application.



Desktop Icon

Five different tools are available from the Welcome Screen:

- **Device Status** Shows running device parameters
- **Databus Scan** Scan the databus for a list of available parameters and devices
- **Vehicle Diagnostics** View any logged diagnostic trouble codes
- **Event Logs** View any logged errors and events
- **Update Device** Flash the device with a CAI-provided update file
- **Configure Device** Set configuration options of compatible products

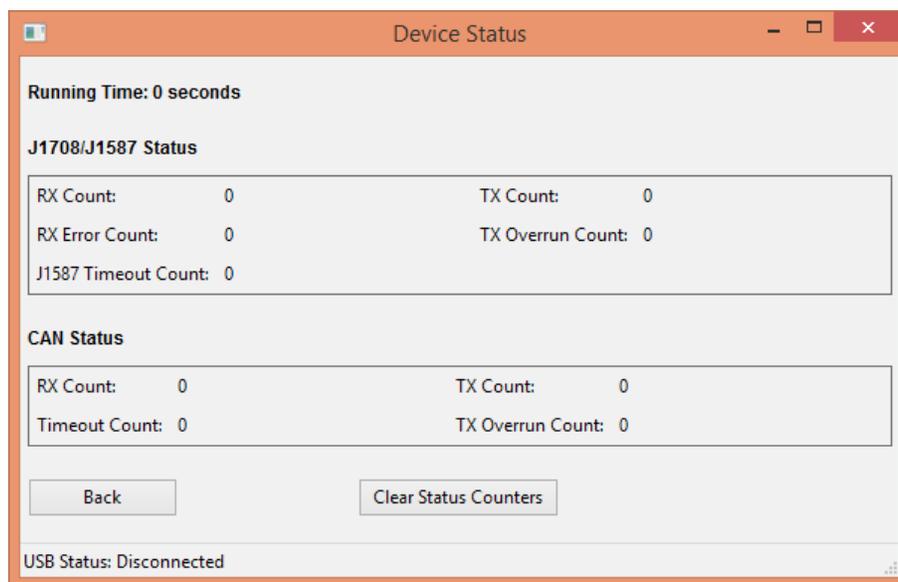


Welcome Screen

4. Device Status

The Device Status screen displays running parameters for the connected device. This includes the running time and databus counters. Information will vary depending on the type of product connected.

These counters can be reset any time by pressing the “Clear Status Counters” button.



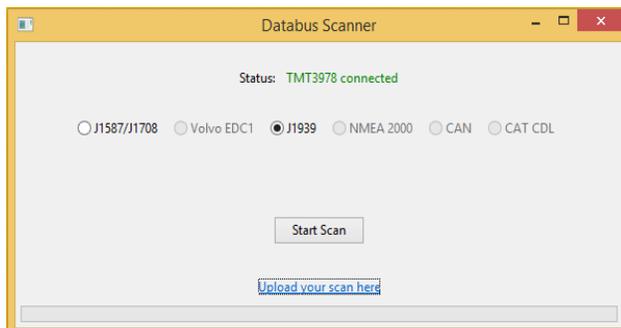
Device Status Screen

Running Time	Time since the last power cycle
RX and TX Count	The number of messages successfully received and transmitted on the protocol
Error Count	The number of invalid messages received on the protocol
Overrun Count	Number of messages that could not be transmitted due to bus errors, contention, or miswiring
Timeout Count	Number of times that expected data was not received on the given protocol

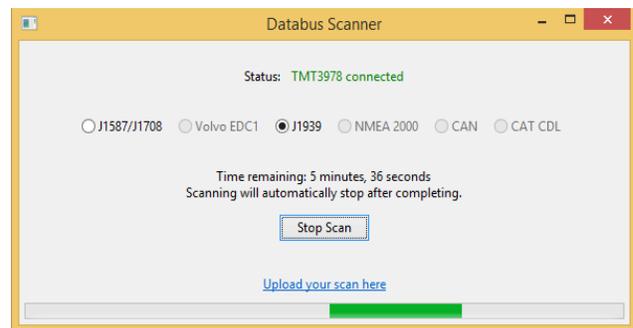
5. Databus Scanning

During a databus scan, the device searches the databus and compiles a list of all the connected devices and parameters available. This is useful for determining what information is and is not available on any given vehicle.

Depending on the connected device, one or two protocols may be available to scan. To start, click “Start Scan” and choose the name and destination of the output scan file.



Databus Scanner Screen



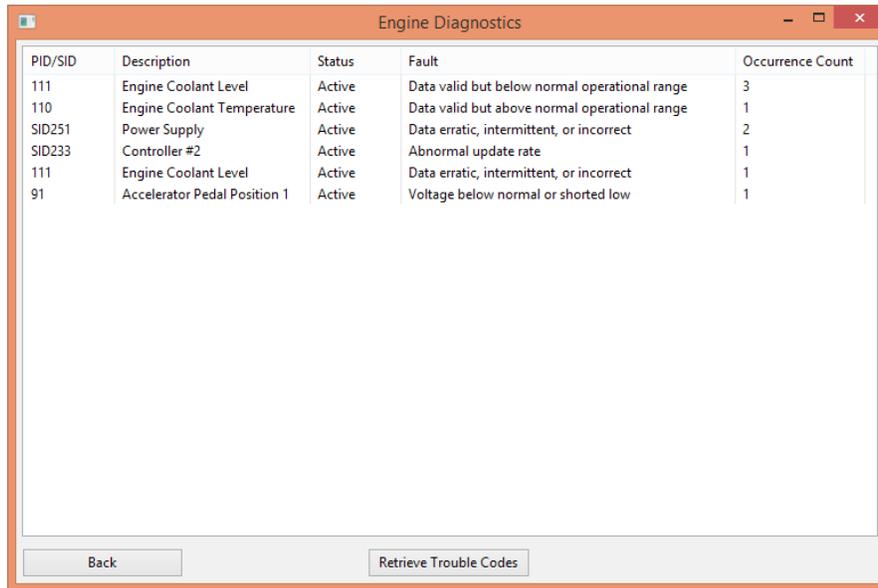
Databus Scan In Progress

Once the scan is started, the time remaining will be shown. The scan will stop automatically once the timer reaches zero, or it can be stopped early by pressing “Stop Scan.” Note that if the scan is stopped early, then the results will be incomplete.

After the scan is complete, click “Upload your scan here” or open a web browser and navigate to <http://c-a-i.net/scan/uploadScan.php> to analyze the scan file and receive the results. Scan files can also be emailed to support@c-a-i.net.

6. Diagnostics

The Diagnostics Screen is used to query the device for any logged trouble code information. Click “Retrieve Trouble Codes” to perform the query (this can take up to 45 seconds). Any trouble codes that are found will be displayed in the window.



The screenshot shows a window titled "Engine Diagnostics" with a table of fault codes. The table has five columns: PID/SID, Description, Status, Fault, and Occurrence Count. Below the table are two buttons: "Back" and "Retrieve Trouble Codes".

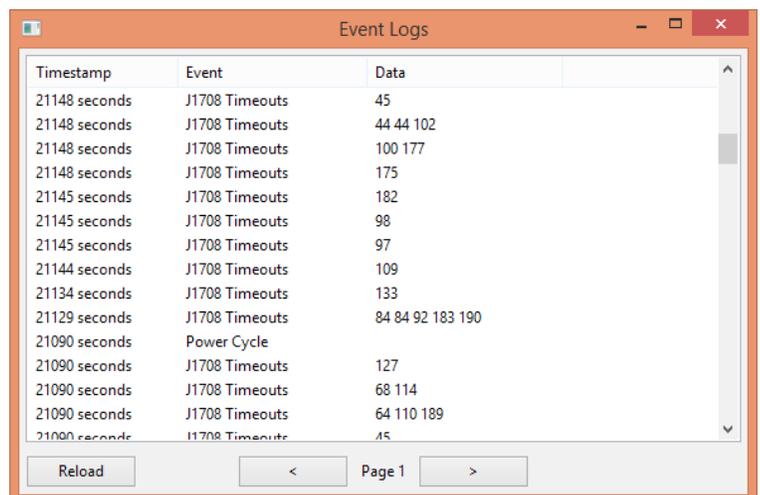
PID/SID	Description	Status	Fault	Occurrence Count
111	Engine Coolant Level	Active	Data valid but below normal operational range	3
110	Engine Coolant Temperature	Active	Data valid but above normal operational range	1
SID251	Power Supply	Active	Data erratic, intermittent, or incorrect	2
SID233	Controller #2	Active	Abnormal update rate	1
111	Engine Coolant Level	Active	Data erratic, intermittent, or incorrect	1
91	Accelerator Pedal Position 1	Active	Voltage below normal or shorted low	1

Engine Diagnostics Screen

7. Event Logs

During operation, the device will log certain events in memory to be viewed later. These events include power cycles, special vehicle information (Make/Model and VIN), and timeouts.

Timeout events provide additional information to the timeout count in the Status Screen. Specifically, events also provide when the timeout occurred and which parameter timed out. This is useful for diagnosing intermittent parameters.



The screenshot shows a window titled "Event Logs" with a table of event logs. The table has three columns: Timestamp, Event, and Data. Below the table are three buttons: "Reload", "<", and ">".

Timestamp	Event	Data
21148 seconds	J1708 Timeouts	45
21148 seconds	J1708 Timeouts	44 44 102
21148 seconds	J1708 Timeouts	100 177
21148 seconds	J1708 Timeouts	175
21145 seconds	J1708 Timeouts	182
21145 seconds	J1708 Timeouts	98
21145 seconds	J1708 Timeouts	97
21144 seconds	J1708 Timeouts	109
21134 seconds	J1708 Timeouts	133
21129 seconds	J1708 Timeouts	84 84 92 183 190
21090 seconds	Power Cycle	
21090 seconds	J1708 Timeouts	127
21090 seconds	J1708 Timeouts	68 114
21090 seconds	J1708 Timeouts	64 110 189
21090 seconds	J1708 Timeouts	45

Event Logs Screen

8. Update Device

The Update Device Screen allows a fast and convenient way to apply updates or changes to the device. Updates are provided by CAI in the form of “.bin” files.

To apply an update:

1. The device must be put into flash mode. To do this, ensure it is connected to your PC via USB and click “1. Enter Flash Mode.” In a moment the device information will be displayed.

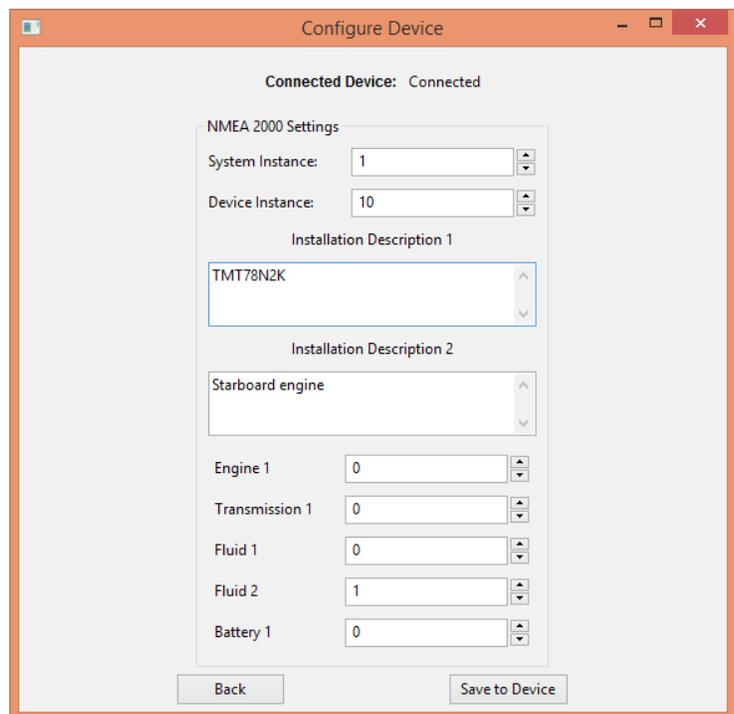
Note: While in flash mode, the device is non-operational! The only way to return to normal operation is to power-cycle the device.
2. Once the device is in flash mode, click “2. Open File” to open the “.bin” file to use for the update. The file will then be checked for integrity and a description of the file will be displayed.
3. Click “3. Program Device” to begin the update. This can take several minutes. Please do not remove power or unplug the USB cable while programming!
4. Once complete, cycle power to the device to resume normal operation.

9. Configure Device

The configure device screen is used to modify configuration variables in devices that support it (e.g. NMEA 2000 device instances).

Once connected via USB, any applicable configuration options will be automatically loaded, along with their current set values. These options can be reviewed and edited as needed.

Any modified options must be applied to the device by clicking “Save to Device” or else they will be lost. Depending on the product, a power cycle may be necessary for saved changes to take effect.



Configuration Options for a TMT78N2K

10. Contact and Technical Support

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