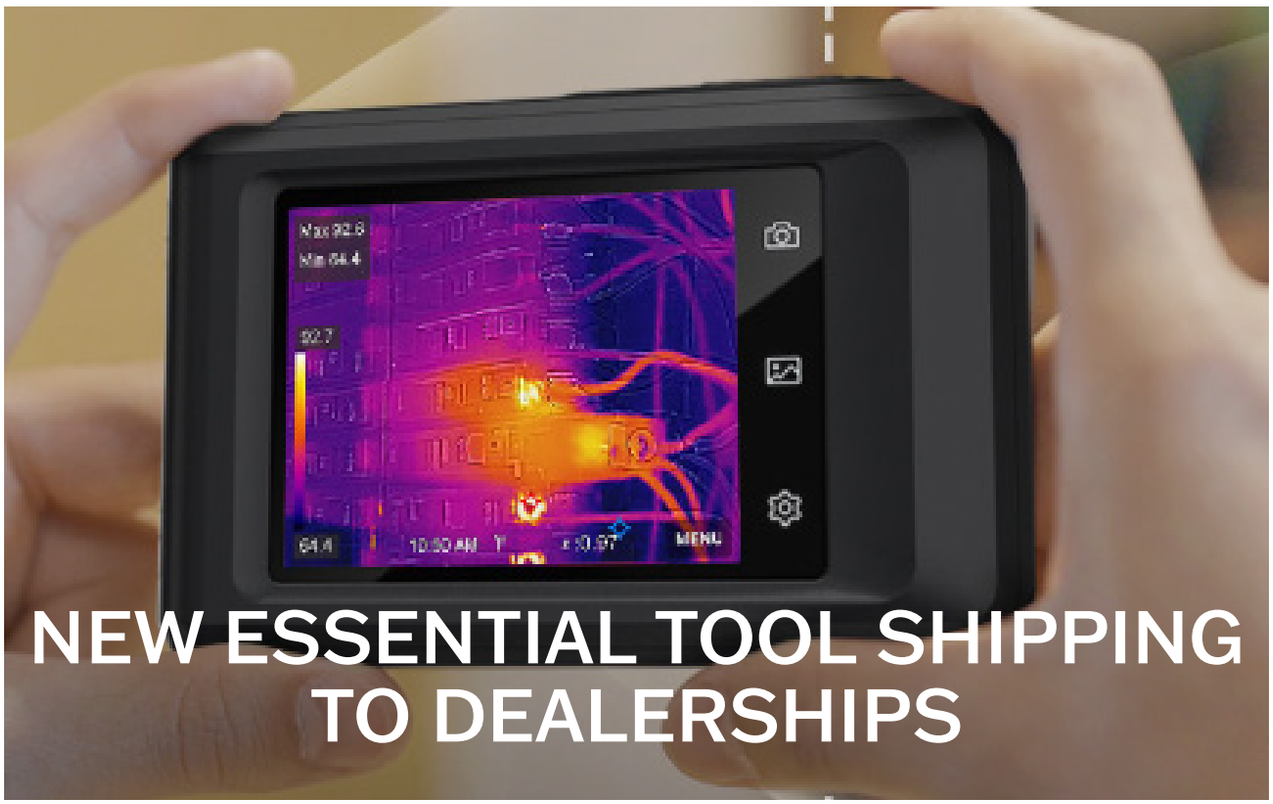
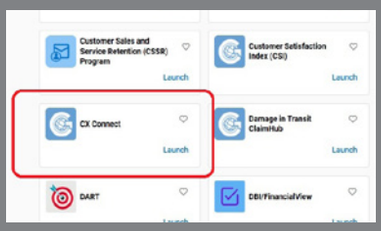
TECH LINK

Mid-August 2025, Volume 27, No. 16

Enhancing Diagnostic Accuracy with Thermal Imaging



Thermal imaging was once reserved for specialty diagnostics, but it's now becoming an accessible and valuable tool in dealership service bays.



CX Connect Case Creation Tips

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Enhancing Diagnostic Accuracy with Thermal Imaging

NEW ESSENTIAL TOOL SHIPPING TO DEALERSHIPS

Thermal imaging was once reserved for specialty diagnostics, but it's now becoming an accessible and valuable tool in dealership service bays. The GM-60503 Thermal Imaging Camera, a new GM Essential Tool that is being shipped to all dealerships now through the end of the year, offers fast, non-intrusive insights into a wide range of vehicle systems. The added visibility the thermal imaging can provide will help confirm issues before beginning intrusive repairs as well as verify repairs after completion.

GM-60503 Thermal Imaging Camera

The GM-60503 Thermal Imaging Camera features a 3.5-inch touchscreen with one-tap level and span modes. Up to 60,000 images or 15 hours of video can be recorded with the built-in 16 GB flash memory. Plus, images can be shared through its Wi-Fi and hotspot capabilities.

NEW DIAGNOSTIC TOOL

As a new diagnostic tool, thermal imaging can be used to assist in diagnosing and verifying issues in multiple areas:

- **Parasitic Drains:** Identify components drawing power with the vehicle off by spotting minor temperature increases in fuses or modules.

The GM-60503 Thermal Imaging Camera records images and video.

- **Wheel Bearings:** Spot excess heat caused by friction and early bearing failure by comparing side-to-side temperature differences.
- **Tires:** Detect underinflation, leaks, or misalignment by observing uneven heat distribution after a road test.
- **Brakes:** Identify stuck calipers or cables by spotting abnormal heat on one rotor or wheel.
- **Engine Misfires:** Misfiring cylinders often show cooler exhaust manifolds due to incomplete combustion.
- **HVAC System:** Confirm proper function by checking vent temperatures and inspecting surface temperatures of high- and low-pressure lines for insulation damage.
- **Cooling System:** Spot issues like faulty thermostats, clogged radiators, or blocked coolant lines through uneven heat dissipation.
- **Engine Belt and Pulleys:** Detect overheating caused by pulley misalignment or belt strain.
- **Drivetrain and Suspension:** Locate excessive friction or underperforming components through inconsistent heat patterns.

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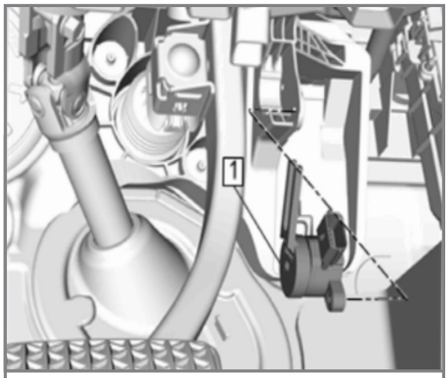
Incorrect Brake Pedal Position Sensor Signal Input

Some 2012-2019 Cruze; 2012-2020 Regal; and 2012-2025 Malibu, Equinox and Terrain models may experience low or reduced power under acceleration. DTCs P057B (Brake Pedal Position Sensor Performance), P057C (Brake Pedal Position Sensor Circuit Low Voltage) or P057E (Brake Pedal Position Sensor Circuit Erratic) may be set.

These conditions may be caused by an incorrect Brake Pedal Position (BPP) sensor signal input to the Engine Control Module (ECM), which may cause the ECM to read that the brake pedal is being applied when it is not. It may be necessary to adjust or replace the Brake Pedal Position sensor.

View the BPP data in the ECM to help determine the value the ECM has learned for the brake pedal learned released voltage as well as the actual BPP voltage. With the brake pedal released, the actual BPP voltage should be equal to or close to the BPP Sensor Learned Released Position voltage.

- BPP Sensor (%) = 0% to 100% (should read 0% with brake pedal released)
- BPP Sensor (Voltage) = Voltage (typical voltage with pedal released is approximately 1 volt +/– 0.3 volt)



Brake Pedal Position sensor

CONTINUED ON PAGE 4

THERMAL IMAGING TOOL, FROM PAGE 2

- **Exhaust System:** Identify leaks, cracked manifolds, failed gaskets, or clogged catalytic converters.
- **Heated Components:** Quickly pinpoint failed seat heaters or broken rear defroster gridlines.

BENEFITS OF THERMAL IMAGING

Thermal images offer non-intrusive verification of vehicle conditions, providing visual evidence without disassembling components, which saves time and reduces misdiagnosis. As a result, diagnostics can be completed faster with problems highlighted with a glance at the camera image, which can help cut down on unnecessary part swapping and other diagnostic procedures.

Afterward, validation of the repairs is easily confirmed by comparing before/after thermal images. The thermal images even can be shown to customers to provide clear, visual explanations to support service recommendations or completed work.

USING THERMAL IMAGING

By enhancing repair accuracy and reducing repair time, while also increasing customer trust, thermal imaging can be a valuable diagnostic aid. Here are a few best practices to follow when using the thermal imaging camera.

- **Perform Indoors after Cool Down:** To avoid misleading results due to heat soak, allow the vehicle to return to room temperature before scanning.
- **Compare Known Good Components:** Side-by-side comparisons (left vs. right, front vs. rear) are especially effective.
- **Use as a Complementary Tool:** Thermal imaging should supplement, not replace service diagnostics using your scan tools and digital multimeters (DMM).
- **Conduct Scans after Use:** Run the vehicle briefly to generate heat patterns in active systems before scanning.

There are several updated Service Information documents and recently released Bulletins that call for using the GM-60503 Thermal Imaging Camera, including High Voltage Stability Preliminary Inspection for several EV models and Bulletin #25-NA-199.

Refer to the appropriate Service Information for more information.

▶ Thanks to Ryan Brown and Marco Salcedo

- BPP Sensor Learned Released Position = Voltage (should equal the BPP sensor voltage with pedal released)

When the ECM has learned the BPP sensor learned released position voltage, the voltage should not change. The ECM will continuously monitor the voltage for a lower-than-expected value.

If there is a wiring or connection condition or an internal issue with the BPP sensor that would cause the ECM to see a lower value, the ECM will learn the lower value as the new learned released position. As a result, when the faulted condition is no longer present and the BPP voltage returns to the previously learned voltage, the ECM will interrupt this as the brake is applied. BPP apply percentage will be greater than 0. Turn off traction control or perform an ECM BPP learn to confirm the condition and temporarily correct the reduced engine power concern.

CHECK WIRING AND CONNECTIONS

Any wiring or connection condition that can cause a loss of voltage or lower than expected voltage on the 5v reference to the BPP sensor or signal return circuit to the ECM, such as a short to ground, terminal fretting or an intermittent open in the circuits, should be addressed.

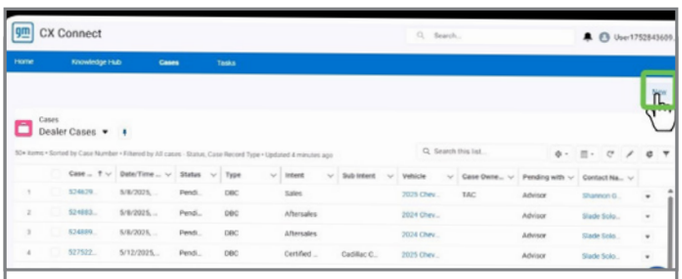
BPP SENSOR

To inspect, adjust, or replace the BPP, refer to Brake Pedal Position Sensor Replacement in the appropriate Service Information. If the BPP sensor is replaced, be sure to follow the procedure for the BPP sensor calibration.

Thanks to Jonathan Johnson, Kurtis Hoezee, Rob Smith

CX Connect Case Creation Tips

The new CX Connect platform (U.S. only), the dealer-facing case system that replaces Dealer Self-Service (DSS) and Advisor Workbench/Siebel, changes how technicians manage all case types to the Technical Assistance Center (TAC) and the Techline Customer Support Center (TCSC).



CX Connect

CX Connect can be launched through the app center on Global Connect.

CREATING A CASE

To help technicians with creating a case in the new system, a CX Connect Case Creating Help job aid is available on TechLink. It includes step-by-step instructions for creating a case, including entering vehicle information, completing the dealer instructions and filling out the assessment fields.

TIP: Be sure to check the dealer instructions at the top of the case creation page to ensure that all required fields are completed before submitting a case.

CX CONNECT HELP

A short online training course is available on how to open a new TAC case using CX Connect. Look for the Video on Demand course CX-WBT332-V on the Center of Learning.

CX Connect training and reference materials, including open office hour schedules, also are available in Global Connect under headline 13086: CX Connect Training Resources & Office Hours.

Thanks to John Sauer

CX Connect Case Creation Help

EV Reduced Acceleration Conditions

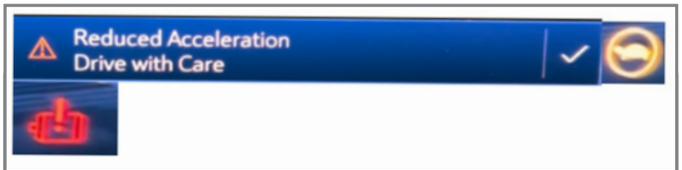
A reduced acceleration message may be displayed along with limited propulsion power under certain operating conditions on some 2022-2026 HUMMER EV, BrightDrop models; 2023-2026 LYRIQ; 2024-2026 Blazer EV, Silverado EV, Sierra EV; 2025-2026 CELESTIQ, ESCALADE IQ, OPTIQ; and 2026 ESCALADE IQL and VISTIQ models. Propulsion Limited MILs also may be illuminated. No propulsion-related DTCs will be set.

These conditions may be the result of the vehicle being exposed to extreme temperatures while parked unplugged for extended periods of time or due to a low high-voltage battery state of charge (SOC) that limits maximum power delivery.

The propulsion power messages — Reduced Acceleration, Drive with Care or Propulsion Power Reduced Due to Temperature — and limited propulsion power lights are normal vehicle operating responses when High Voltage (HV) battery pack power capability is limited by state of charge (SOC) and/or temperature.

TEMPERATURE EXTREMES

The high-voltage battery SOC level at which reduced power occurs varies based on battery temperature. When SOC is low or the battery pack temperature is too cold or too hot, the high-voltage battery pack may not be capable of meeting minimum expected power output. The temperature of the high-voltage battery pack will dictate the SOC percentage at which reduced propulsion may occur. At a moderate battery temperature of approximately 68°F (20°C), reduced propulsion typically occurs around 5-10% SOC. At colder battery temperatures of approximately 14°F (-10°C), reduced propulsion may occur with SOC at 45% and lower or 90% and higher. At very warm battery temperatures, such as immediately following a DC Fast Charging session in extreme ambient temperatures, reduced propulsion may occur at any SOC. The Reduced Acceleration, Drive with Care message will display under any of these conditions.



Power propulsion message and limited propulsion power lights

In addition, the Propulsion Power Reduced Due to Temperature message displays at any SOC with battery temperatures at or below -13°F (-25°C), 5°F (-15°C), or 14°F (-10°C), depending upon vehicle model.

STATE OF CHARGE LIMITATIONS

In hot temperatures, with the high-voltage battery pack at 20% SOC or higher, it's recommended to reduce cabin cooling to allow the system to provide more cooling to the battery pack. Precondition the high-voltage battery about 30 minutes prior to DC Fast Charging.

In cold temperatures, with the high-voltage battery pack at 20% SOC or higher, the vehicle should be kept plugged in once fully charged to maintain the high-voltage battery temperature for the next drive. This is important when outside temperatures are extremely cold.

In all temperatures, with the high-voltage battery pack at 20% SOC or less, charge the vehicle to regain normal power limits.

The following charging messages will be displayed if the high-voltage battery SOC continues to drop:

- Charge Vehicle Soon – illuminates between 6 and 12% SOC.
- Charge Vehicle Now – illuminates at less than 6% SOC.
- Vehicle Out of Energy – illuminates at 0% SOC. Critical 12V systems may continue to operate until the 12V battery is discharged.

TIP: Law enforcement vehicles cannot enter Protected Idle mode once the Charge Vehicle Soon message is displayed. If already in Protected Idle mode, the vehicle will shut down and sound the horn. If the Charge Vehicle Now message is displayed, law enforcement vehicles will maintain all functionality.

Customers should be directed to their vehicle owner's manual for additional information and guidance.

Refer to Bulletin #25-NA-222 for more details.

▶ Thanks to Scott Lewiston and David Rainey

TCSC Top Issues This Week

The Techline Customer Support Center (TCSC) is available to help dealerships with diagnostic and programming issues related to Techline Connect (TLC) and the Service Programming System (SPS).

TCSC has now released their latest tips to help technicians when using Techline Connect applications. Look for the latest tips on TechLink each week.

To get the most out of Techline Connect, be sure to review the following items before making a call to the TCSC.

The following information covers current issues and trends facing dealerships as of August 28, 2025.

WEEKLY ISSUES

1. 2024 Colorado ZR2 Front View Camera Programming Failure

There is currently a known issue with the Front View Camera involving ONLY 2024 Colorado models built with ZR2 and UHY, and without UWI, UKW, or ULV.

The Front View Camera may fail to program or set loss of communication codes such as U0265.

A VCI is required to correct this problem. Please reach out to TCSC for this fix.

2. 2022 Silverado 1500 and Sierra 1500 – RPO IOR Radio Programming Failure

When attempting to program the Radio (non-USB) through SPS2 on light-duty 2022 Silverado and Sierra trucks, error E-4491/E-4423 may appear that shows an unknown reprogramming error 1 at step 0, as seen below:

- E4491: Reprogramming Error! Check all connections and reset Programming Interface!
- E4423: Unknown reprogramming error 1 at step 0

This is a known issue. If you are receiving this error, please contact TCSC for a VCI to correct this problem.

A bulletin is being developed for this issue. This document will be updated with the bulletin number once available.

3. 2024+ T1XX Pickup (LD/HD) Wireless Keypad Accessory Kit Learn Failures

There is currently an issue with the Wireless Keypad Accessory kits for 2024 and later model year Silverado 1500, Sierra 1500, Silverado 2500HD/3500HD and Sierra 2500HD/3500HD where the keypad may fail to learn to the vehicle. An error message "Communication Could Not Be Established" and/or "Write Failure" may be seen.

This is a known issue, and engineering is currently researching a solution. There is no ETA for resolution.

4. 2025 T1 Truck Extended Idle (SK4) Now Available

Calibrations for Extended Idle (SK4) have now been released for 2025 Silverado 1500, Sierra 1500, Silverado 2500HD/3500HD and Sierra 2500HD/3500HD models.

Please reach out to TCSC to have this reconfiguration completed.

Calibrations have not yet been released for 2025 Tahoe, Suburban, Yukon and Escalade models. The expected release for the calibrations for the full-size SUVs is late August 2025.

5. 2025 T1 Truck Manual Regeneration (FPF) Not Yet Available

Calibrations for Manual Regeneration (FPF) have not yet been released for 2025 Silverado and Sierra trucks. These vehicles are planned to be supported but no ETA is available yet for when the calibrations will be released.

6. DTC U3000 Set After One or Both Side Blind Zone Modules Replaced on 2023+ Colorado, Canyon, Corvette, CT4 and Envision

Engineering is tracking down the cause of this concern. Please answer the following questions to the best of your ability and provide them in your DCM case to TCSC for the quickest possible service:

- Do the replacement SBZ module(s) have a green dot/line on the part label?
- Where did you obtain the new service parts from?
- Were these parts ordered? If so, from where?

CONTINUED ON PAGE 7

- Is there currently a SPAC case set up for this issue?
- Were these parts obtained from another dealer?

7. Vehicle-Wide Programming Failures Related to SDGM Memory Issues

There is a known issue with the SDGM that may cause Vehicle-Wide Programming (VWP) to fail on any vehicle currently enrolled in VWP. The error may appear as a failed VWP event, or multiple modules losing communication after failed VWP.

To correct this issue, pull the fuse for the SDGM for 2 minutes, or disconnect the 12-volt battery and re-attempt VWP after re-connecting.

8. 2025 Full-Size SUV 24-Inch Tire (QKN) Support

Currently, Service Information Document: 6791277 shows that the upsizing of the 24-inch tire (QKN) is not supported from a smaller size (20/22-inch tire) on 2025 Escalade, Tahoe, Suburban and Yukon models.

The 24-inch tires are supported only on vehicles built with 24-inch tires from the factory. At present, there are not any calibrations that will allow a reconfiguration to 24-inch tires from a smaller tire size.

The reason behind this is that there are differences between how the vehicles are built when they are produced at the factory with 20-inch or 22-inch tires and when the vehicles are built with 24-inch tires.

9. 2025 T1 Series (Full-Size Trucks and SUVs) Tire Downsizing Not Supported

Downsizing tires of any kind is not supported on any 2021 to current T1 Series vehicle. This includes Silverado and Sierra trucks and Tahoe, Suburban, Yukon and Escalade SUVs.

COMMON ISSUES

1. Bulletin #24-NA-098: SPS Best Practices and Programming Error Troubleshooting

Document ID: 6662319 has been published to assist with common programming errors, descriptions and recommended helpful/general troubleshooting for SPS errors. Please refer to this page if you encounter a programming error within SPS2/TLC.

2. TLC Restricted Access

The following message may be seen when attempting to access Techline Connect:

The message indicates that the current ID is blocked from accessing Global Connect. This can be for several reasons but typically is due to a counterfeit MDI device.

To unblock the account, reach out to TCSC via Dealer Case Management (DCM) with the following information:

The message indicates the current ID is blocked from accessing Global Connect.

- User ID in Global Connect
- Email of User
- First and Last Name of User
- BAC/Dealer Code and Name of Dealership

TCSC will be able to reach out to the Cybersecurity team that will be able to determine the cause of the block and may be able to unblock the account. In the case of a counterfeit MDI, the counterfeit tool must be destroyed, and a legitimate Bosch device must be used to ensure the ID is not blocked again. Repeat offenders may not be unblocked from access.

3. E-9111/E-9113 TCM/MCVM Operation Errors

An E-9111 or E-9113 error may occur when programming the TCM, or after replacing the transmission assembly/valve body, and entering the TUN/PUN under MCVM Operations in SPS2.

The error is caused by a mismatch in data between the vehicle's TUN/PUN and the TUN/PUN uploaded in the GM database. Please ensure the complete TUN/PUN number is entered correctly, and that the TUN/PUN is in capital letters. Double check that the number zero (0) is not a letter "O" and that there are not any typos or extra characters.

If the TUN/PUN is correct, open a DCM case with TCSC and attach a clear picture of the replacement TUN/PUN in the case, as TCSC will require these to work with Engineering and have the issue addressed.

If you are receiving these errors via programming and the TUN/PUN was not replaced, TCSC may still require the TUN number.

4. Radio/IPC Part Missing from SPS2 Part Dropdown

When performing IPC Graphics programming or Radio USB programming, you may be prompted in SPS2 to select "Service Hardware." However, this is inaccurate.

For IPC Graphics programming, use the "Boot Software Part Number 1" found in GDS2 under Identification Information.

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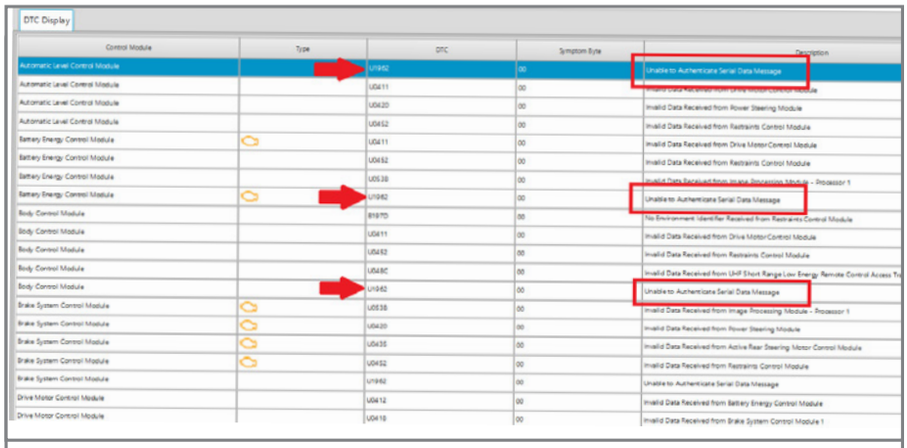
Serial Data Authentication Configuration After Programming a Control Module

After replacing a module on a GM model equipped with the Vehicle Intelligence Platform (VIP), several possible concerns may occur. These include:

- Serial Data Authentication Configuration fails to complete.
- DTC U1962 (Unable to Authenticate Serial Data Message) is a current code set in any module.
- No start condition.
- Invalid data codes (data still viewable in GDS2).
- Inability to perform theft relearn or remote pairing (VTD Secure Access Locked).
- Unable to perform the control module setup or learn.
- Airbag indicator may illuminate.
- VIN not auto-populating in GDS2.

These conditions may affect 2020-2026 CT4, CT5, Corvette; 2021-2026 Envision, Escalade, Tahoe, Suburban, Yukon; 2022-2026 BrightDrop models, HUMMER models; 2023-2026 LYRIQ, Colorado, Silverado 1500, Sierra 1500; 2024-2025 XT4, Blazer EV, Equinox EV, Acadia; 2024-2026 Corvette E-Ray, Silverado 2500HD/3500HD, Silverado EV, Traverse, Sierra 2500HD/3500HD, Sierra EV; and 2025-2026 Enclave, ESCALADE IQ, Equinox and Terrain.

If the Serial Data Authentication Configuration (SDAC) — a security handshake between vehicle modules — fails and DTC U1962 sets, it will disable several features. Failure typically happens when SDAC is not completed properly after programming a replaced module, often due to mismatched security codes.

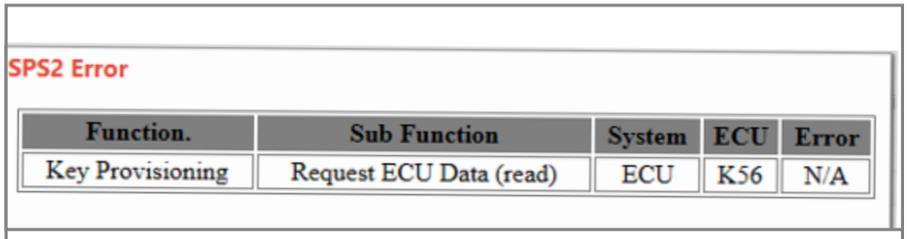


If SDAC fails, DTC U1962 will set.

TIP: SDAC does not run automatically unless "Replace and Program" is selected when needed. If that step is missed or SDAC fails, the procedure must be run manually.

When SDAC fails, SPS will display an error message. Bulletin #25-NA-192 provides additional information about the possible causes for SDAC failure and recommended actions to take based on the specific failure observed.

The SDAC will run up to 3 times before it fails. If a vehicle will not complete the SDAC, a pop-up box will display with information about what is causing the concern.



If SDAC does not complete, a pop-up box will display with more information.

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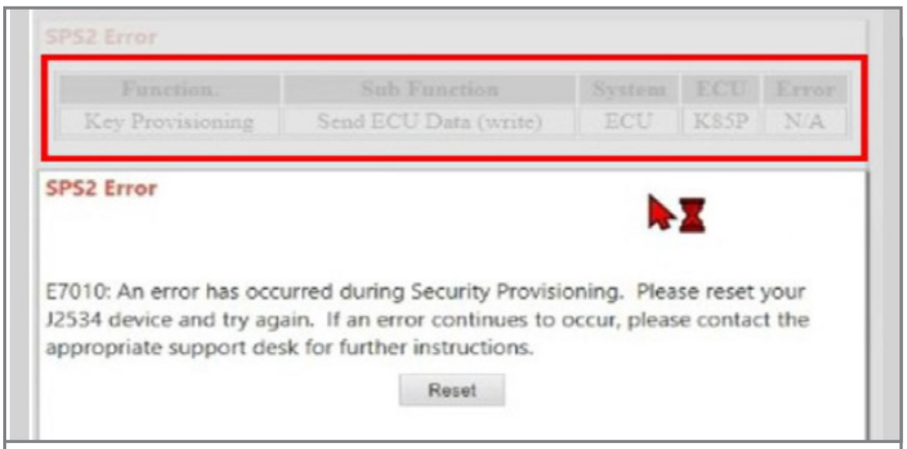
SERIAL DATA, FROM PAGE 8

There are 5 areas in the pop-up box that include the Function, Sub function, System, ECU, Error. Record the information or take a photo of the pop-up box and review the error types for the symptom with the chart in Bulletin #25-NA-192. The chart provides remedies for issues related to programming, communication and the control module.

▶ Thanks to Matt Bunting and Kurtis Hoezee



Error code E7010

TOP ISSUES, FROM PAGE 7

Similarly, for Radio USB Programming, use the "Calibration Part Number 1" (also may be called "Application Part Number 1") found in GDS2 under Identification Information.

5. 2024-2025 Silverado 2500HD/3500HD and Sierra 2500HD/3500HD Adding ZW9 (Bed Delete) Built with UV2 (HD Surround Vision Camera)

Engineering has confirmed that there are not any compatible calibrations that support both RPO ZW9 (Bed Delete) and RPO UV2 (HD Surround Vision Camera).

Please be advised that ZW9 cannot be added to vehicles with UV2 regardless of trim level.

HOW TO CONTACT TCSC

- **U.S. ONLY:** Assistance can be provided by using the CX Connect portal on Global Connect. If additional support is needed once the case is created, contact TCSC at 1-800-828-6860. For U.S. only, a case is required for phone support.
- **Canada:** Contact TCSC at 1-800-828-6860 (English) or 1-800-503-3222 (French).
- **All other regions:** Contact your regional Technical Assistance team for Global Techline Support.

▶ Thanks to the Techline team

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