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Title: Switch Pack Programming Troubleshooting Information

Applies To: Horizon Vehicles

CHANGE LOG

Please refer to the change log text box below for recent changes to this article:

04/29/2025 - Initial Article Release

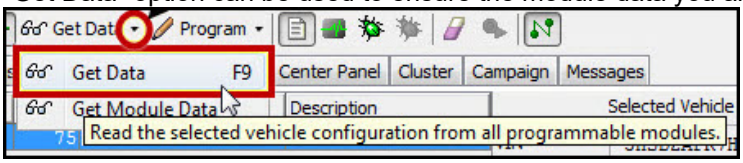
DESCRIPTION

This document provides:

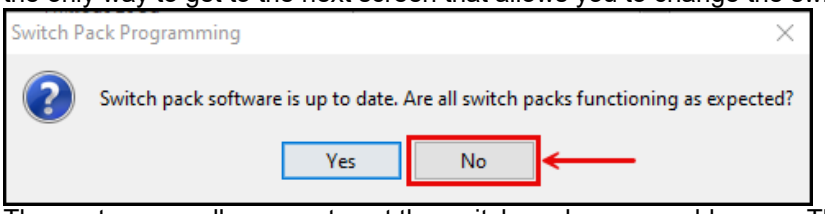
- Steps to take when switch pack programming fails
- Scenarios
- Additional information to assist readers in understanding DLB switch pack programming

Switch Pack Programming Troubleshooting Steps

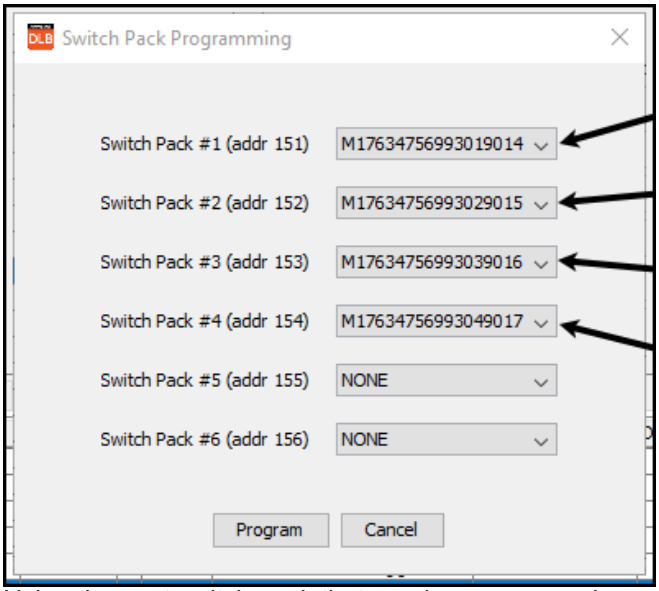
1. First follow the standard switch pack programming instructions found in IK0800590. If problems are encountered, proceed to the following troubleshooting steps. All steps outlined below are available to dealer technicians. No special access is needed from tech support.
2. Disconnect door pod #1 (driver's door pod), then attempt switch pack programming again. If this doesn't fix issues experienced during switch pack programming, move on to step 3.
3. Remove all switch packs from the vehicle. (Make sure you know the serial number of each switch pack.)
4. Install the suspect switch pack in the first switch pack position in your vehicle (be sure to connect both the input and output harnesses), then program that switch pack.
   - "Get Data" option can be used to ensure the module data you are seeing is accurate.



5. Once programming is successful and DLB asks you if all switch packs are working correctly, select "No". Selecting "No" is the only way to get to the next screen that allows you to change the switch pack's source address.



6. The next screen allows you to set the switch pack source addresses. The drop down menu presents the serial number for all connected switch packs. Make sure you select the correct serial number on the correct line, then click the "Program" button.



7. Using the next switch pack that needs programmed, repeat steps 2-5.
8. Once all switch packs that need programmed have been programmed, install them all in the correct locations in the center panel as shown in DLB.

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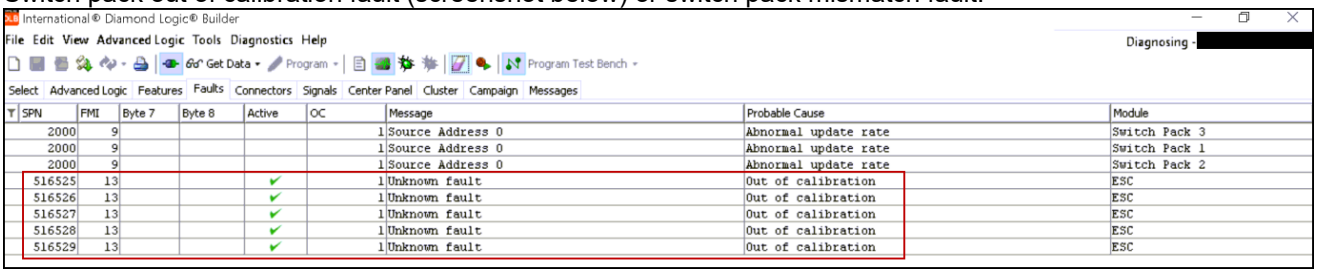
Scenarios

1. One or more of my switch packs does not show in DLB.
    - A switch pack has been replaced. Some switch packs show in DLB and others do not. (Possible causes: switch packs having different kernels, or they have duplicate source addresses.)
        1. Kernel mismatch - Example: Your truck has 4 switch packs. You are replacing switch pack #3. The replacement switch pack you get from Parts already has kernel 26 in it - but the rest of the switch packs in the truck have kernel 24. When you install the new switch pack, DLB does not detect it.
            - The fix is to program the old switch packs. This will update their kernels from 24 to 25. To accomplish this, follow Switch Pack Programming Troubleshooting Steps listed above. Once the kernels in the remaining switch packs are updated to 25, then install the new switch pack with kernel 26. Kernels 25 and 26 can coexist on the same vehicle without any issues.
        2. Duplicate Source Addresses - Example: your truck has 3 switch packs. They should each have their own unique source address (151, 152, & 153). If you are replacing the 2nd switch pack (source address 152) and you get a replacement switch pack from Parts that is already set to source address 151, when you install it you would have switch packs with source addresses 151, 151, & 153. Your body controller (and DLB) are not going to know what to do with 2 different modules broadcasting source address (151). So, in the DLB list of modules you would only see switch pack 1 and switch pack 3 - switch pack 2 would be missing.
            - The fix is to program the new switch to the correct source address (for this example, source address 152). To accomplish this, follow Switch Pack Programming Troubleshooting Steps (specifically steps 5 & 6) listed above.

2. Switch pack out of calibration fault (screenshot below) or switch pack mismatch fault.



T	SPN	FMI	Byte 7	Byte 8	Active	OC	Message	Probable Cause	Module
	2000	9				1	Source Address 0	Abnormal update rate	Switch Pack 3
	2000	9				1	Source Address 0	Abnormal update rate	Switch Pack 1
	2000	9				1	Source Address 0	Abnormal update rate	Switch Pack 2
	516525	13			✔	1	Unknown fault	Out of calibration	ESC
	516526	13			✔	1	Unknown fault	Out of calibration	ESC
	516527	13			✔	1	Unknown fault	Out of calibration	ESC
	516528	13			✔	1	Unknown fault	Out of calibration	ESC
	516529	13			✔	1	Unknown fault	Out of calibration	ESC

These faults are not typically caused by the kernels or source addresses. Instead, these faults are typically caused by switches being installed in different locations in the truck compared to what is shown in the DLB "Center Panel" tab. Switches and switch locations must match exactly between the vehicle and DLB. Examples of common issues are listed below.

- Example: DLB shows no switch installed in a specific location, but the truck has an unlabeled switch installed. An unlabeled switch can look similar to a blank cover plate.
  - Fix: Make sure switches match exactly between DLB and vehicle. Remove switches from vehicle or move/change switch programming in DLB.
- Example: All switches and switch locations match visually between DLB and the vehicle, but the switch packs have the wrong source addresses. If the switch pack programmed to source address 151 has different switches in it than what DLB shows, that will cause one of the faults from the screenshot above. This could happen with any of the switch pack source addresses (151, 152, 153, 154).
  - Fix: Make sure switches match exactly between DLB and vehicle. Remove switches from vehicle or move/change switch programming in DLB.

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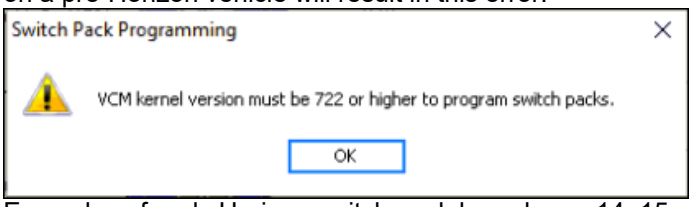
Continuing Education

1. Switch packs contain two separate types of programming: a kernel and a source address.
   a. Kernel
   - When you hear the word "kernel", think "operating system". The kernel is the software that runs the switch pack's functionality.
   - Only Horizon vehicles (LT, MV, HV, RH…) have programmable switch packs (switch packs that have their own operating system that can be updated with DLB).
   - Pre-Horizon vehicles (Durastar, Prostar, Lonestar...) have switch packs, but they cannot be updated or programmed with DLB (because they do not have a kernel). Attempting to use DLB to program switch packs on a pre-Horizon vehicle will result in this error:



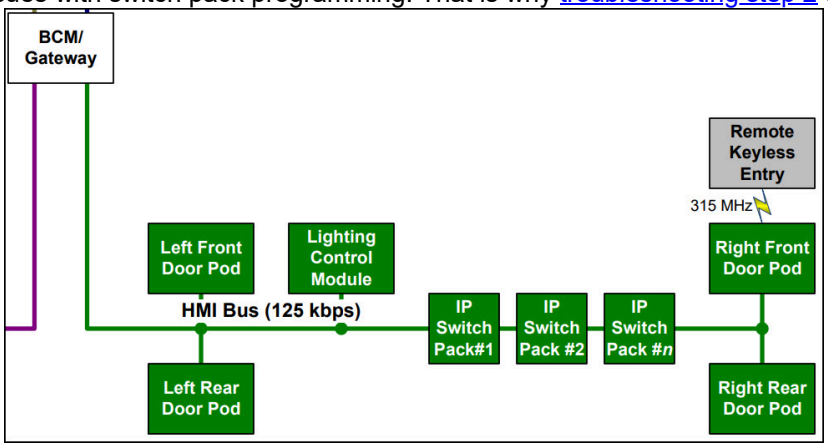
   - Examples of early Horizon switch pack kernels are 14, 15, or 16
   - Examples of current (05/03/22) switch pack kernels are 25 and 26.
   - The option to update the switch pack's kernel can be found here: DLB > Tools > Switch Pack Programming

   b. Source Address
   - The programming functionality to update switch pack source addresses can be found in DLB > Tools > Switch Pack Programming.
   - The source address is the module's unique identifier (name) on the data link. Each module on a vehicle has a unique source address that it includes in the data packets it sends out on the data link - that way other modules will know which module the data packet came from.
   - The source addresses available for switch packs are: 151, 152, 153, & 154
   - Switch packs with a newer kernel (24, 25, or 26 as of 1/1/25) have static source addresses - meaning each switch pack keeps the source address programmed into it (even if it disconnects/reconnects to the data link), unless DLB is used to manually and intentionally change the source address.
   - Switch packs with older kernels (23 and earlier) have dynamic source addresses. The first switch pack to connect to the data link would claim the first source address (151). The second one to connect to the data link would claim the 2nd source address (152). If a switch pack lost connectivity on the data link, it would also lose its source address. When it reconnected to the data link it would then claim a new source address (the new source address number would depend on how many other switch packs were already connected to the data link). Example: if a truck has 3 switch packs (source addresses 151, 152, & 153), and 151 (switch pack 1) and 153 (switch pack 3) lost connectivity, then the switch pack that used to have source address 153 was the first switch pack to reconnect to the data link, it would then claim source address 151. Then, when the switch pack

that used to have source address 151 reconnected to the data link it would claim source address 153, since that is the next available source address. If this happened, then when the driver activated the first switch in switch pack 1, the body controller would send the output signal for the first switch in switch pack 3. Essentially, the switch signals would get mixed up in the programming resulting in unexpected functions being activated.

- The last step of DLB switch pack programming is to set the source address for each switch pack serial number. So, you need to know which switch pack serial number is in which location in your truck - in order to be confident that all your switch packs are programmed correctly.

2. All switch packs installed on a vehicle must have the same kernel number. If one of them has kernel 17, the all must have 17. If one of them has 24, all must have 24. Having switch packs with different kernels on the same data link will typically cause DLB to see some switch packs, but not others. The only exception is that switch packs with kernels 25 and 26 can coexist on the same truck.
3. New switch packs from Parts (as of 05/03/22) come with kernel 26 pre-installed. It is not possible to get a new switch pack with kernel 25 pre-installed.
4. DLB will not update any switch pack from kernel 25 to 26.
5. If you obtain a replacement switch pack that has kernel 26, it cannot be revert back to kernel 25. However, kernels 25 and 26 can coexist on the same vehicle and will not cause any issues.
6. The switches and switch packs shown in the DLB "Center Panel" tab must match exactly with the switches and switch packs installed in the vehicle. Any differences will cause issues/faults - as is covered in Scenarios Step 2
7. Swich packs share their data link with door pods and the lighting control module. It is possible for door pods to cause issues with switch pack programming. That is why troubleshooting step 2 exists.



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