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ROADRELAY 4 CALIBRATION TOOL - RR4Dnld.exe  
HelpFile Version 2.5

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Compatible with INLINE, INLINE I (a.k.a. INLINE LC), and INLINE II data link adapters.

Also compatible using the RoadRelay 4 Extraction Harness (see information below.)

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Please contact the Cummins Help Desk if further assistance is needed:

1-800-433-9341

UK/Europe - 0800-286646

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STEP #1 - Making the Connections:

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Vehicle equipped with the 9-pin Service Port:

1. Connect a DB-9 serial cable from the PC serial communication port to the data link adapter DB-9 connector.
2. Connect the D25F-9 Pin Deutsch cable (P/N 3162848) from the data link adapter to the Vehicle 9-pin Service Port.

Vehicle equipped with the 6-pin Service Port:

1. Connect a DB-9 serial cable from the PC serial communication port to the data link adapter DB-9 connector.
2. Connect the D25F-6 Pin Deutsch cable (P/N 3824439) from the data link adapter to the Vehicle 6-pin Service Port.

Using the RoadRelay 4 Extraction Cable (no data link adapter required):

1. Determine if your RoadRelay 4 supports this download method by checking the hardware type (refer to Step #2). Only those units with a P/N of 40059xx or bootloader versions of 4.2L00B (or greater) support this feature.
2. Verify the RoadRelay Extraction Cable (P/N 4003775) is connected to the RoadRelay 4 10-pin connector.
3. Connect a DB-9 serial cable from the PC serial communication port to the Extraction Cable DB-9 connector.

Direct connection to RoadRelay 4 J1939 Connector:

1. Find the RoadRelay 4 J1939 Connector. It is the gray 3-pin Deutsch connector on the RoadRelay 4 pigtail harness.
2. Connect the J1939 terminator cable (P/N 3163096) to the RoadRelay 4 3-pin Deutsch connector.

3. Connect the D25F-3 Pin Deutsch cable (P/N 3162847) to the J1939 terminator cable and to the INLINE data link adapter.
4. Supply +12v power to the INLINE data link adapter via the cigarette jack of the Deutsch cable (P/N 3162847).

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STEP #2 - Determine RoadRelay 4 hardware type:

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Determine the hardware type by one of two ways:

Method #1 - Check the Part Number label on the back of the unit.  
Part Numbers 40059xx ARE Extended Memory  
Part Numbers 40032xx are NOT Extended Memory

Method #2 - Check the Bootloader Version

1. Press the "5" (Configuration) key
2. Press the "1" (Up Arrow) key.
3. Select Software Version.

The Software Version screen will look similar to the example below:

```
*****
* Software Version *
*   4.2L00B   *   <= This number is the Bootloader Version Number
*   4.5L02E   *   <= This number is the Application Version
Number
*
*****
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Bootloader Versions 4.2xxxB ARE Extended Memory  
Extended Memory units use the 4.xxxxE calibration.

Bootloader Versions 4.1xxxB are NOT Extended Memory  
Non-extended Memory units require the 4.xxxxA calibration.

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STEP #3 - RUN RR4Dnld.exe

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1. Turn the vehicle keyswitch On.
2. Run RR4Dnld.exe
3. Select the correct COM port, data link, and protocol  
Note 1: If you are using the INLINE or INLINE I adapter, you must choose J1587 as your protocol.

The INLINE II data link adapter can use either protocol.

Note 2: If you are using the RoadRelay 4 Extraction Harness, you must choose

RS-232 as your protocol and RS-232 as your adapter.

4. Choose a calibration file (\*.cal).
5. Select Start

The RoadRelay 4 will "beep" twice and the display will go blank.  
It will take approximately 5 minutes to calibrate on J1939.  
It will take approximately 25 minutes to calibrate on J1587 and RS-232.

Verify the calibration by checking the Software Version Screen:

1. Press the "5" (Configuration) key
2. Press the "1" (Up Arrow) key.
3. Select Software Version.

The bottom number is the Application Version.

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#### STATUS BAR INFORMATION

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COM 1	J1939	INLINE II	<status message>
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COM 1 = Current Com port selected (Options = COM 1,2,3,4)  
J1939 = Current protocol selected (Options = J1939, J1587, RS-232)  
INLINE II = Current data link adapter selected (Options = INLINE, INLINE I, INLINE II, RS-232)

status message = Current state of the download:

    Reading Firmware File = Loading selected calibration into memory  
    Sending Run from bootloader command = Preparing RoadRelay 4 to receive new calibration  
    Sending Erasing Memory command = Erasing current application from RoadRelay 4 memory  
    Sending Firmware to RoadRelay = Sending the new calibration

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#### TROUBLESHOOTING

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The calibration process started, but for some reason the calibration aborted/failed.  
Now the RoadRelay screen stays blank and beeps twice when the vehicle keyswitch is turned on, but nothing else happens. What do I do?  
The RoadRelay 4 is "ROM Booted" and must be successfully re-calibrated before it will function properly.  
Run the Calibration Utility again. Obey any error messages/troubleshooting tips that may be displayed. If trouble still persists, contact the Cummins Help Desk.

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The program displays an ERROR "RDL: RR 4.0 Firmware Image not read into memory",  
Occasionally, a calibration can become corrupt when downloaded from the Internet or from a floppy diskette.

Try to re-copy the file to the download directory. If the problem still persists, try a new/different calibration file.

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After pressing the Start button, nothing happens. After 1 minute, the following error is displayed:

"Unable to communicate with RoadRelay 4. Datalink Initialization Time Out"

1. Verify all data link connections.
2. Attempting to communicate with the wrong data link adapter selected.

Error is typically

displayed when connected to an INLINE II adapter, but the utility's "Adapter" option is erroneously set to "INLINE 1".

Verify the correct data link adapter is selected in the Datalink Menu.

3. If you are connected directly to the RoadRelay 4's J1939 connector, it is required that the data link

be terminated to 60 ohms using the J1939 terminator cable (P/N 3163096).

Verify this terminator cable is connected between the RoadRelay 4 and INLINE II adapter.

4. If still having problems after checking options 1-3, ROM boot the RoadRelay 4, then run the calibration utility. Refer to ROM Boot Instructions in this document under Supplemental Information.

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The program displays a status of "Sending Firmware to Road Relay. Please Wait",

but fails in the middle of execution (status = RR4 Firmware download FAILED!!)

Attempting to download an "E" cal in a type "A" unit. Verify the Part Number/Bootloader

version (refer to Step #2 above).

Select the correct calibration for the unit and retry.

Note: As long as the calibration file name is in the form of RR4xxxxE.cal or RR4xxxxA.cal, this

check is done automatically by the Calibration Download program.

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The program displays a status of "Sending RUN FROM BOOTLOADER Command -5" and quickly counts down (4,3,2,1) before displaying the status "RR4 Firmware download FAILED!!"

ROM boot the RoadRelay 4, then run the calibration utility. Refer to ROM Boot Instructions in this

document under Supplemental Information.

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The program displays a status of "Sending ERASE MEMORY Command" and then jumps to

a status of "RR4 Firmware download FAILED!!"

Attempting to calibrate using the RoadRelay Extraction Harness on a RoadRelay 4 that

does NOT support the Extraction Harness calibration method.

Try again using the INLINE, INLINE I, or INLINE II adapter.

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Error Window is displayed -> "Calibration File Error

Attempting to download an "E" calibration into RR4 hardware designed for only "A"

calibrations.

Select the equivalent "A" calibration and retry.

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Error Window is displayed -> Calibration File Error".  
Attempting to use a calibration file that does not have the ".cal" file extension.  
The RoadRelay Calibration Utility is only compatible with files in the \*.cal format.

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Error Window is displayed -> "Error code from DCL = 9".  
Application can't connect to the COM port. Usually this error code is displayed  
when another application (HotSync, INSITE, INFORM, INSPEC, etc.) has control of the COM port.  
Close/disable application connected to the serial communications port and retry.

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Error Window is displayed -> "Error code from DCL = 22".  
Can't connect to the INLINE data link adapter through the serial cable.  
Verify that power is connected to the data link adapter.  
Verify other cable and COM port connections.  
Verify the correct COM Port is selected under the "Port" menu.  
If using an INLINE I adapter, verify the data link option is set to "INLINE I".

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Error Window is displayed -> "Unable to communicate with RoadRelay 4",  
"Datalink Initialization Time Out"  
The root cause of this problem is usually due to one of the following situations:  
1. Data link adapter is not connected to the RoadRelay.  
Verify cable connections.  
2. Attempting to communicate with the wrong data link adapter selected.  
Error is typically  
displayed when connected to an INLINE II adapter, but the utility's "Adapter" option is erroneously  
set to "INLINE" or "INLINE 1".  
Verify the correct data link adapter is selected in the Datalink Menu.  
3. If you are connected directly to the RoadRelay 4 J1939 connector, it is required that the data link be terminated to 60 ohms using the J1939 terminator cable (P/N 3163096).  
Verify this terminator cable is connected between the RoadRelay 4 and INLINE II adapter.  
4. If still having problems after checking option 1-3, ROM boot the RoadRelay 4, then run the calibration utility. Refer to ROM Boot Instructions in this document under Supplemental Information.

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SUPPLEMENTAL INFORMATION

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ROM BOOTING THE ROADRELAY 4

If you're having trouble calibrating, sometimes it's more successful to "ROM Boot"  
the RoadRelay before starting the RoadRelay 4 Calibration Utility:

1. Turn off the vehicle Keyswitch.
2. Simultaneously press and hold down the 2, 3, 4, and Enter Key.
3. Turn on the vehicle Keyswitch while keeping all four keys depressed.

4. Release all four keys

The RoadRelay 4 should beep twice and the screen should remain blank.  
Now, run the RoadRelay 4 Calibration Tool Utility.

Notes:

- a. You can return the RoadRelay 4 to normal operation by cycling the keyswitch.
- b. If the Calibration Utility fails in the middle of a calibration, the RoadRelay 4 will be left in the ROM booted state. A calibration must be loaded into the RoadRelay 4 before the unit can once again function.
- c. Two "beeps" and a "blank" screen signify that the RoadRelay 4 is ROM booted.

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Understanding the RoadRelay 4 Software Number scheme  
My RoadRelay 4 has an Application Version of: 4.3L09A.  
What does this mean?

- 4 - Hardware version level. This will always be a "4" for a RoadRelay 4.
- 3 - Major software revision level
- L - Release version (L = Limited Production; D = Development)
- 09 - Minor software revision level
- A - Market phase (A = Automotive; E = Automotive/Extended memory; B = Bootloader)

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What's the difference between an "E" calibration and an "A" calibration with the same base

Software Version Number (4.3L09E vs 4.3L09A)?

Functionally they are identical except for two differences:

1. The "E" cal contains support for two additional languages: Italian and Portuguese.
2. The "E" cal contains an Automatic Jurisdiction Pop-up Feature for units equipped with the optional GPS board.

"A" type calibrations can be installed into any RoadRelay 4.

"E" type calibrations can be installed in Extended Memory Units only.

Extended memory units (P/N 40059xx) contain 1 Megabyte of RAM.

Standard memory units (P/N 40032xx) contain 256 Kbytes of RAM.

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Since the RoadRelay 4 can operate on either a J1708/J1587 or J1939 data link, How can I determine which data link my RoadRelay 4 is connected?

The RoadRelay 4 can be connected to the vehicle data link(s) in one of three different configurations:

- a. J1587 only
- b. J1939 only
- c. Both J1587 and J1939 (J1939 data has higher priority)

To determine your configuration:

1. Turn the vehicle keyswitch on.
2. Press the "5" (Configuration) key.
3. Press the "1" (Up Arrow) key.
4. Select Software Version by pressing the Enter key.
5. While viewing the software version numbers, press and hold the Enter key until the Unit beeps (5 seconds).
6. Press the "8" (?) key.
7. Select Diagnostics by pressing the Enter key.
8. You will see the "PID" screen with the first line reading "PID 243 Component ID".
9. The second line will contain "1's" and/or "0's". If this line has more than one "1", then the  
RoadRelay 4 is  
connected to the J1587 data link.
10. Press the "7" (Down Arrow) key.
11. You will see the "PGN" screen with the first line reading "PGN FEEB Component ID".
12. The second line will contain "1's" and/or "0's". If this line has any "1's", then the RoadRelay is  
connected to the J1939 data link.

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Included Files:

HelpMe.txt - This file  
datalink.dll - INLINE II driver  
dcl.dll - Cummins Data Link Communications Library  
dclj1708.dll - Cummins Data Link Communications Library for INLINE adapter  
dpa4\_0x.dll - Dearborn Drivers  
dpa7\_0x.dll - Dearborn Drivers for Block Mode  
dpas32.dll - Dearborn Drivers  
rr4dnld.exe - The executable file