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Vehicle Harness Connectors Get Smarter

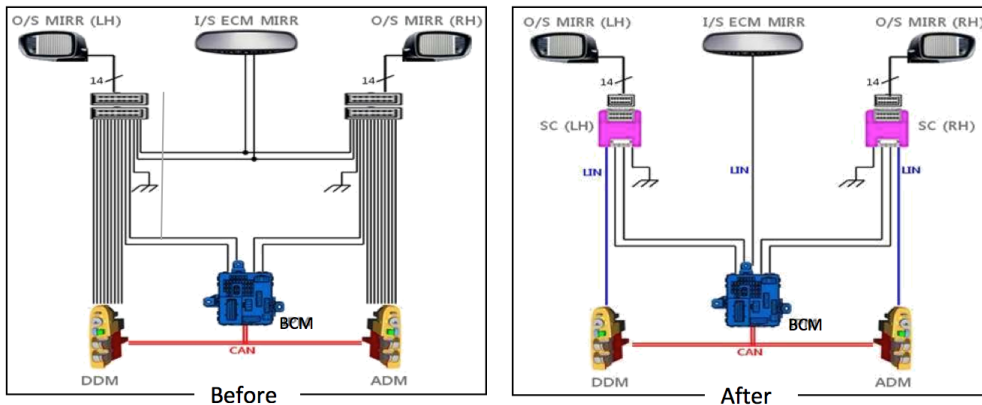
Module communications have transformed the automobile electrical system into a network of modules all talking to one another. What was once a bundle of wires, all wrapped up and color coded, stretching from one end to the other, is now reduced to a pair of wires (CAN) or even one wire (LIN). We still need the traditional wires from the module to the component, provided the module is not part of the component. The more modules you have the less multi-wire harnesses are needed. Modules come in many varieties for all kinds of applications. Some are larger than others but all process information in one form or another.



The Smart Connector communicates via LIN communication to control the mirrors and is equipped with a new semiconductor component called the Mirror IC. The mirror control logic is located in the IC CPU.

By now you may have heard of Kia's next Premium vehicle the K900. This technologically advanced vehicle will come with what's being called a "Smart Connector". The Smart Connector is a newly developed electronic module for controlling the outside mirrors, which were previously controlled by the Door Module (DDM-Driver Door Module, ADM-Assist Door Module).

This Semi-conductor technology eliminates the need for fuses and relays to power the mirrors. The Smart Connector operates only by a BCM command through the DDM or ADM. It features load and Smart Connector circuit protection from any short-circuit on the output terminal wire.



With the use of the Smart Connector, wiring from the BCM and DDM/ADM is reduced from 20 wires to 4 wires thus reducing vehicle weight and increasing fuel economy. Don't get fooled by less wire, communication is the key to a smarter wire connector.

Tech Line FAQs

Model/ Year	Question	Answer
All Models	Customer states vehicle keeps having a dead battery. Where should I connect the test light to check for a draw?	Use a DVOM connected in between the NEG battery cable and the NEG battery post. Set DVOM to read in milliamps (mA). Spec is 50 milliamps maximum after all the modules go into final sleep mode. Please refer to Shop Information under Engine Electrical System > Charging System > Battery.
All Models	There is vibration felt around 50 mph translating through the floor. What could be the cause of this?	Thoroughly check drive shafts for run out. If out of spec, replace as needed.
2006 - 2013 VQ Sedona	Customer states the Power Sliding Door is not operational. The drive motor has already been replaced but the PSD still does not operate. Should I replace the module next?	No. Check for DTC's in the module first. If DTC's are found, follow diagnostic procedure for the DTC. Next check the door switch status in current data. Compare the readings from the operational door to the defective door. If the readings are abnormal, inspect the wiring and connections at the switch. If wiring and connections checks okay, replace the defective switch as needed and recheck operation.
2012-2013 XM Sorento	Sorento with a noise coming from the dash with the blower motor on medium or high speed. Do you know what may be causing this?	The noise may be coming from the evaporator core drain tube area. When the fan is on high speed, it puts a vacuum on the drain tube and when water is trying to drain out, it will suck air back (air bubbles through the water) and make a noise. Please refer to Pitstop PS 151 for more information.

Latest Technical Service Bulletins, Service Actions and Campaigns

SC 098r1	Stop Lamp Switch Replacement
BOD 101	Front Door Glass Run Channel Replacement
SST 032	GDS – Audio Update Module (AUM)
FUE 027	ECM Upgrade – MIL On With DTC P0461
ENG 137r1	Data Collection: Extract California Emissions Data From ECU (DC005)
CLI 022	HVAC control Unit Logic Improvement
ACC 008	Service Action: Gap Between Forte Spoiler And Trunk Lid (SA 154)
ENG 118r2	ECM Upgrade – MIL On With DTC's P0456/P0461/P050A/P2188/P2192/P0128 (SA 152)

⚠ CAUTION

VEHICLE SERVICING PERFORMED BY UNTRAINED PERSONS COULD RESULT IN DAMAGE TO THE VEHICLE.

⚠ WARNING

- Vehicle servicing performed by untrained persons could result in injury to those persons or to others.
- The Kia technician newsletter (Tech Times) is intended for use by professional Kia automotive technicians only. It is written to inform technicians of conditions that may occur on some vehicles. Trained Kia technicians have the equipment, tools, safety instructions, publications and expertise to perform the job correctly and safely.

*NOTICE

The topics covered in this newsletter are designed to assist you with the diagnosis and repair of specific vehicle conditions. Just because a condition is described in this newsletter, do not assume that it applies to your vehicle, or that your vehicle will have that condition. In all cases, the procedures in the applicable Service Manual and/or Electrical Trouble-shooting Manual or on KGIS should be performed first.



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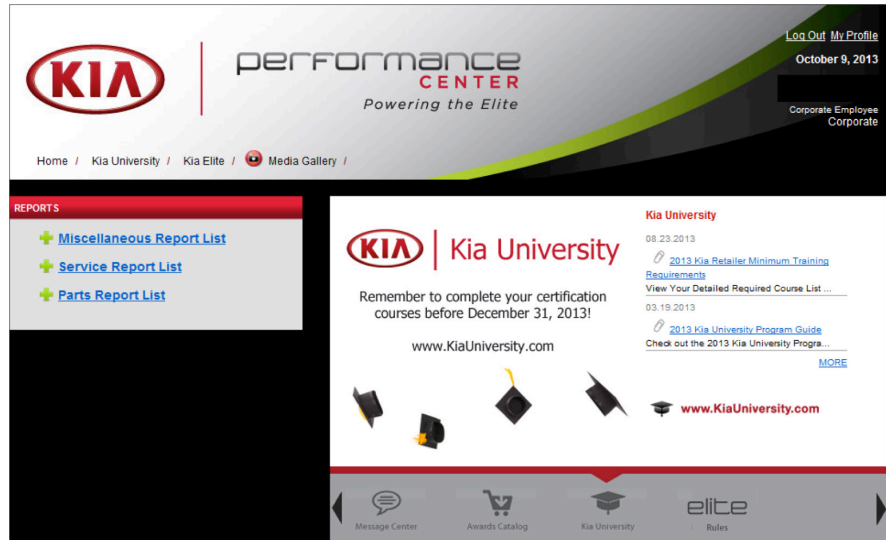
Mario Garcia

Are You Kia Elite Certified?

To become certified for 2014, you must complete all your requirements by December 31, 2013. Are you on track to attain your Elite Certification? Many Kia professionals are only one or two courses away from attaining certification completion!

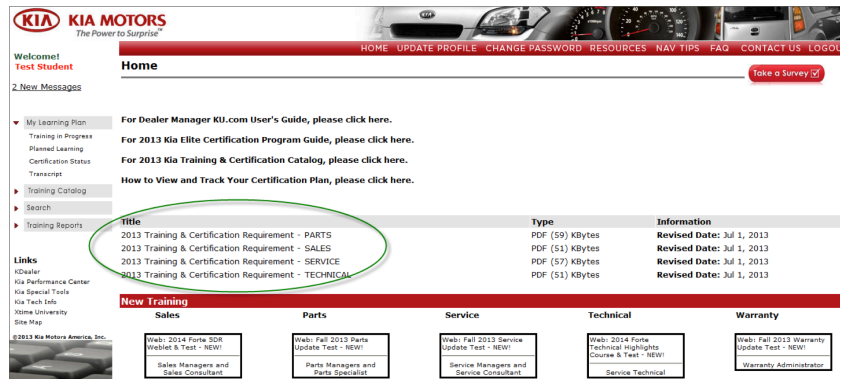
So don't wait! The time to complete your Elite Certification requirements is NOW!

Becoming certified not only gives you the knowledge you need to help advance your career, but you also acquire the prestige of being an important asset to your dealership, and to the Kia brand! Attaining your Certification will allow you to participate in the Kia Elite programs, and is a qualifier for the annual Service Elite programs. Please refer to the Kia Elite Program List Guides available on myKiaPerformanceCenter.com



Besides the advantages Elite Certification provides in improving your technical skills and growing your career, it will also better enable you to fix your customers' Kia vehicles correctly the first time. By doing this, you'll improve their loyalty to Kia, and help earn their future service business at your dealership.

Required certification web courses are on the KiaUniversity.com website 24/7, and they're available for you to take at your convenience, according to your own schedule – ***Just remember that you have to complete your certification requirements by December 31, 2013!*** Log in to KiaUniversity.com today to check your progress.

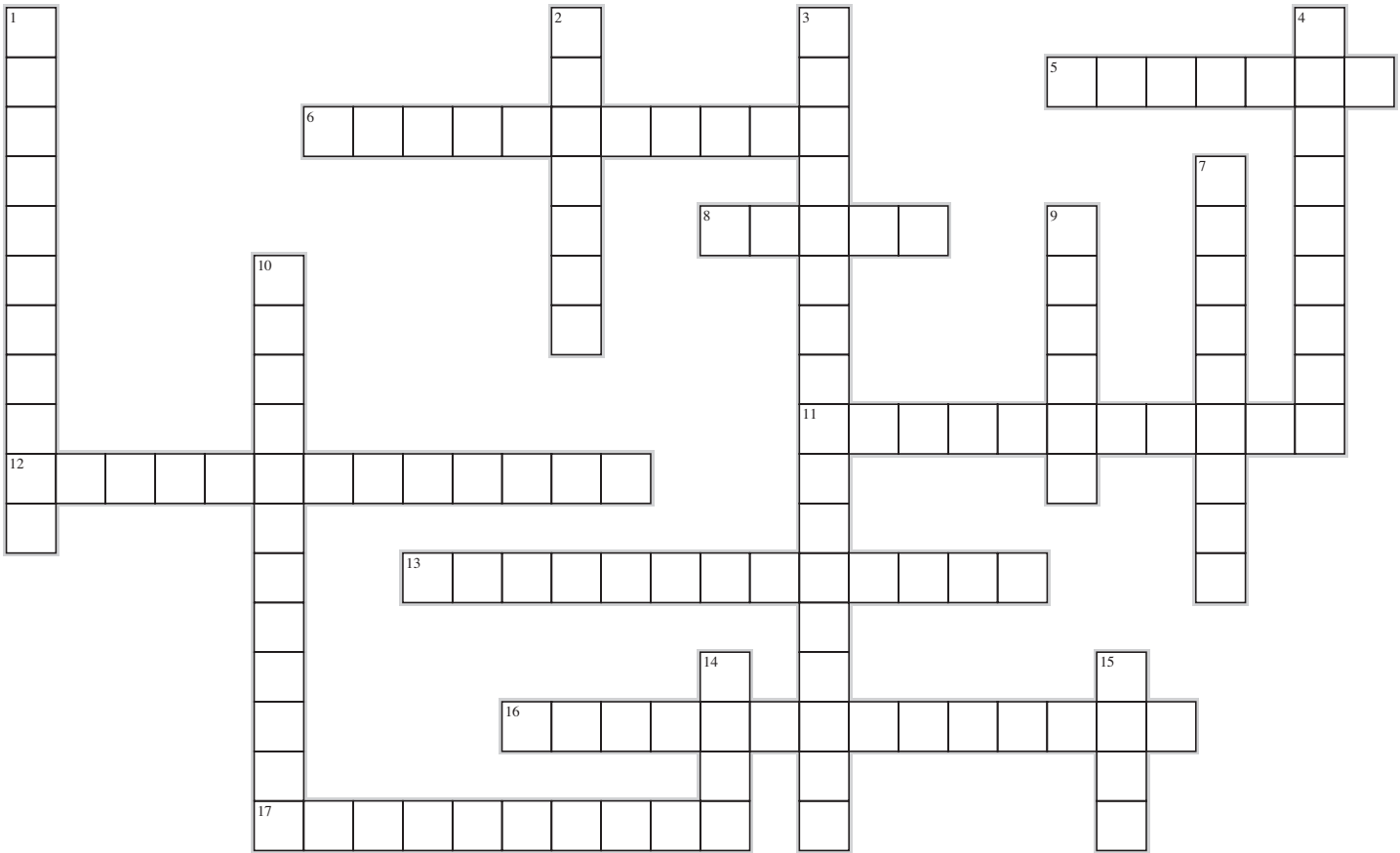


YOU HAVE LESS THAN 2 MONTHS LEFT TO GET CERTIFIED! →



Crossword Puzzle

Test your knowledge of the articles in this issue of TechTimes by completing this crossword puzzle. The solution to this month's puzzle can be found on page 12.



Across

5. Module communications have transformed the automobile electrical system into a network of modules all _____ to one another.
6. Remote Rescue can be used for assisting in setting of _____ on SRS modules. (Two Words)
8. Attaining your certification will allow you to participate in the Kia _____ programs.
11. A software version ending in 0002 tells us that the software has been updated 2 times via _____ after the last DVD.
12. Some iPod models might not support the _____ protocol and files may fail to play.
13. The _____ technology eliminates the need for fuses and relays to power the mirrors.
16. With the use of the _____, wiring from the BCM and DDM/ADM is reduced from 20 wires to 4 wires. (Two Words)
17. A replacement head unit with an improved _____ is now available and is installed on all 2014MY Sedona vehicles.

Down

1. If a slight drop or pit in the glass is present, this indicates a _____ caused the crack. (Two Words)
2. It is used to monitor _____ for the automatic climate control system. (Two Words)
3. Never use _____ to clean discs, only use a clean, dry, soft cloth. (Two Words)
4. Locate the trim cover release catch on the _____ of the door handle.
7. With Techline agent's help, data may be _____ to determine what problems are present and help technicians.
9. When the fan is on high speed, it puts a _____ on the drain tube and when water is trying to drain out.
10. The sensor can be checked when removed from the vehicle using an _____ light and DVOM.
14. A bull's-eye crack can turn into a larger crack or a _____ break.
15. The medium speed class B-CAN is used for _____ related communications.

How to Use Remote Rescue

As of last year, Techline has a new tool to help technicians diagnose vehicle problems, called Remote Rescue. With remote rescue, Techline agents can access vehicle data by linking up to the dealer's GDS, via the internet. Viewing "LIVE" data from the vehicle can help determine various problems that may not be known or immediately apparent. With Techline agent's help, data may be evaluated to determine what problems are present and help technicians to not have to make repetitive contacts into Techline.

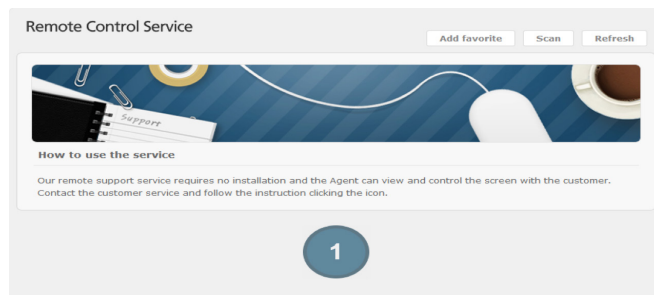
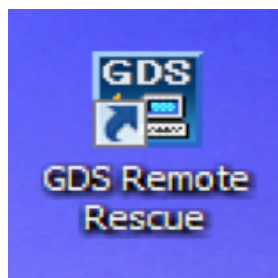
In order to use Remote Rescue, the GDS must be free of dealer installed firewalls which may not allow Techline agents to access their GDS. Wireless GDS may be used as long as there is a wired internet hook up to the docking station. All GDS units have a Remote Rescue icon located on the Desktop screen which is used to open the program when prompted by a Techline agent. By following verbal instructions the setup is easy and takes very little time to link up. NOTE: When contacting Techline for remote rescue

assistance, use a cellphone or wireless phone to call from the vehicle you are working on.

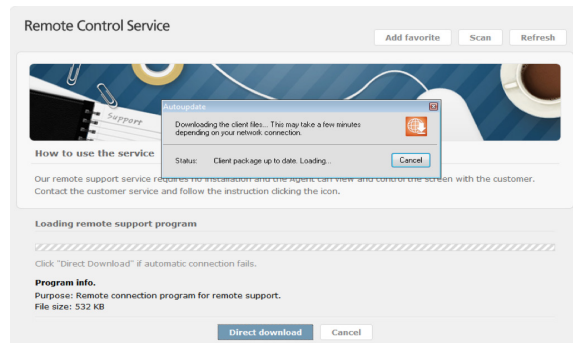
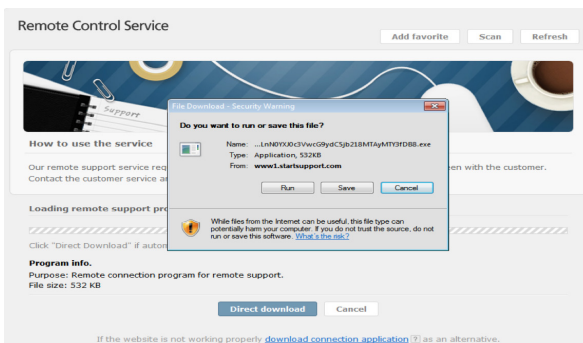
Remote Rescue can be used for assisting in ECU upgrade issues, testing actuation of components, programming RKE fobs, setting variant coding on SRS modules and numerous other testing procedures. If you are diagnosing a concern and feel a remote rescue session would be helpful, request by noting it in the Techline web case. The Techline agent will evaluate your request and will let you know how to proceed by opening remote rescue on the desktop or by providing alternative advise in cases where Remote Rescue is not considered beneficial.

NOTE: Remote Rescue is not a substitute for basic checks that technicians should be doing on vehicles before opening a Techline web case.

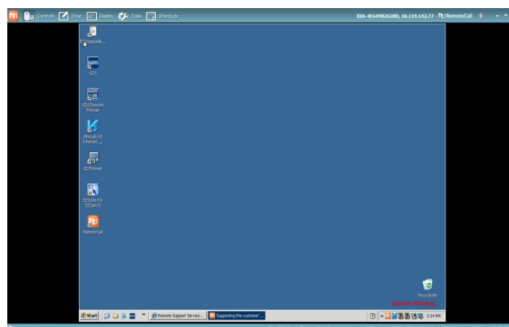
Please refer to Pitstop PS 277.



1. First, click on GDS Remote Rescue icon on Desktop. Then, click on the Blue circle.



2. Run two files when prompted. Then, wait until progress bar completes so agent can take over the dealer's GDS.



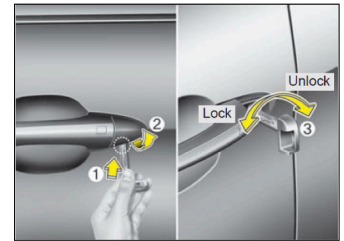
3. The Techline agent now has taken control over the dealer's GDS.

Locating The Driver's Door Lock Cylinder and Trunk Lock Cylinder

This article provides information about the location of the driver's door lock and trunk lock cylinders on 2014 Cadenza vehicles.

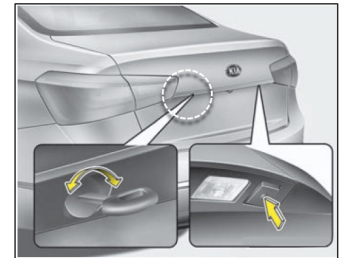
I. To access the driver's door lock cylinder:

- Remove the key from the fob.
- Locate the trim cover release catch on the underside of the door handle.
- Depress the release catch using the key (1) and pull the trim cover up and away from the door handle (2), to expose the door lock cylinder.



II. To access the trunk lock cylinder:

- Look in the area to the left of the rear view camera location, as shown.



Please refer to Pitstop PS 272.

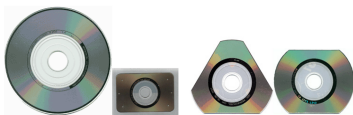
Compact Disc Basic Care

This article provides customer information about basic care and best practices when using compact discs (CDs) and CD players.

- Always place a disc back in its original case or a CD holder to prevent damage or scratches.
- If a CD does not play properly, inspect the CD and confirm that the disc is free of scratches, damage, pits, dust, finger prints or deformation.



- Never use chemical solutions to clean discs, only use a clean, dry, soft cloth.



- The recommended size is a 5 inch, non-shaped disc. CDs created with CD recording devices or personal computers may not play properly. Small discs (3 inch) and shaped discs are not recommended. Insert Shaped CD picture.

- Do not place any foreign objects into the disc insert/eject slot of the CD player.
- The CD player may not operate properly in extreme cold or hot temperatures (operating temperature range is between 14°F to 150°F). You may have to wait a few minutes for the device to reach the proper operating temperature if the outside temperature is too low or open the windows to cool down the vehicle if the interior temperature is too high, before playback occurs.
- High humidity conditions or moisture on the disc surface may cause the disc to be misread by the CD player. Remove the disc and wait until the moisture dries.
- Some players will show "CD Error" when the disc cannot be recognized or if there is an issue with the disc.
- Some players will show "Reading CD" when the system is attempting to read the information from the CD.
- Skipping may occur while driving on a bumpy road or if the disc is scratched.
- Do not disassemble the head unit to remove a CD which cannot be ejected. A pre-addressed envelope can be included when the audio unit is replaced and the CD can be removed at the audio repair facility and then shipped back directly to the customer or the dealer. Make sure the envelope is large enough to fully enclose and protect the CD when in transit.



- Some radios include a reset button which can be used to reset the radio when a system lock-up occurs. Consult the appropriate owners' manual, digital navigation guide, or UVO guide to confirm if your radio is equipped with a reset button.
- Supported disc formats and compatibility can be confirmed by referring to the appropriate owners' manual, digital navigation guide, or UVO guide.

Please refer to Pitstop PS 275.

USB Port and SiriusXM® Satellite Radio Inoperative On VQ Sedona With BASE Audio

When diagnosing a customer concern related to multiple head unit replacements with a complaint related to an inoperative USB port and/or SiriusXM® Satellite Radio continuously showing "Sirius loading", check to make sure the customer is not improperly using the USB port to charge devices such as iPad®. The head unit in the Sedona was developed prior to the creation of many media devices and using the USB port to charge these may damage the circuits that control the USB port and satellite radio operation. A replacement head unit with a new transistor is now available as a remanufactured part and this newer design is also installed on all 2014MY Sedona vehicles.



When connecting iPod® and other media devices to the USB port, keep the following in mind:

- Some iPod® models might not support the communication protocol and files may fail to play.
- Supported iPod® models include: iPod® Mini, iPod® Classic (4th~6th generation), iPod® Nano (1st~4th generation) and iPod® Touch (1st~4th generation). If an iPod® model is not on this list, it was not tested at the time of system development and may or may not function correctly.
- The Kia iPod® Power Cable is needed in order to operate an iPod® with the audio buttons on this audio system.
- iPad® and some other media devices draw a higher current when charging and should not be plugged into the USB port. The recommended method of charging for these devices is through a 12-volt outlet.
- Always disconnect iPod® and other media devices from the USB port when not in use or when turning the vehicle "ON" or "OFF".

Note: Check the appropriate owner's manual for more information regarding USB and iPod® Use. Please refer to Pitstop PS 276.

iPod® is a registered trademark of Apple Inc. iPod® mobile digital device sold separately. iPad® is a registered trademark of Apple Inc. iPad® mobile digital device sold separately.

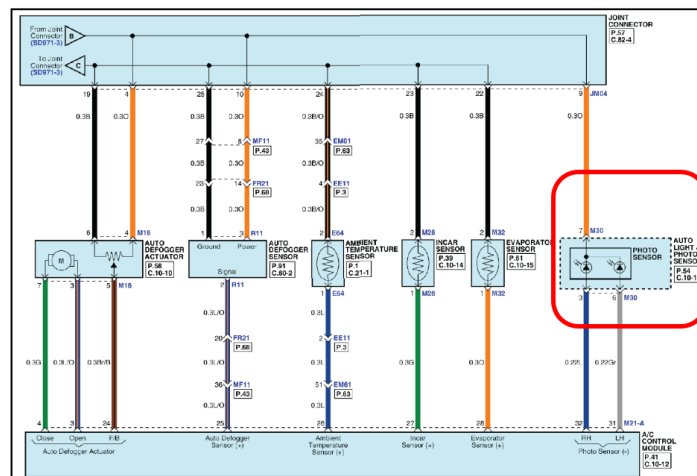
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Photo/Light Sensor

Two types of photo/light sensors are used on Kia vehicles. Photo Diode and Auto Light

The Photo Diode type is a 2-wire photovoltaic diode. It is used to monitor sun load for the automatic climate control system.



2014 Forte DATC

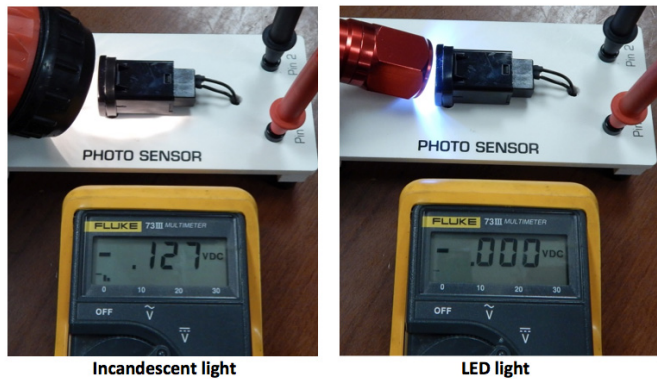
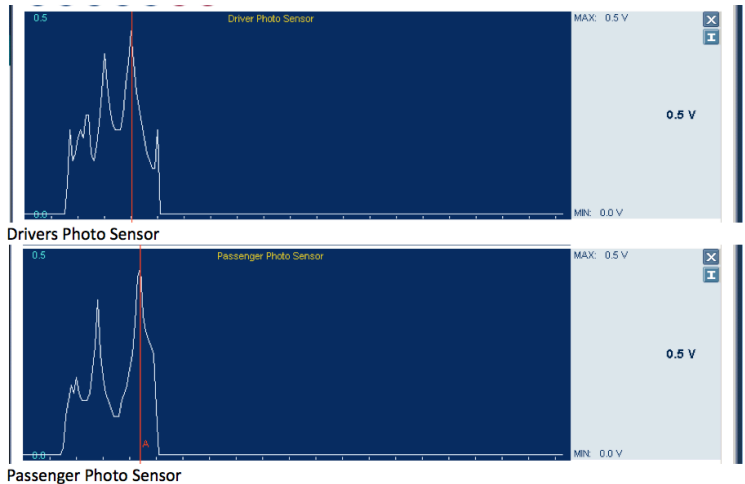
Continued next page.

Photo/Light Sensor (Continued)

The Photo Diode type operates in the photoconductive mode, when an external reverse bias voltage is applied. When it is supplied with 5.0vdc, voltage flow through the circuit indicates the amount of light entering the sensor to adjust the amount of cooling required for the additional heat load.

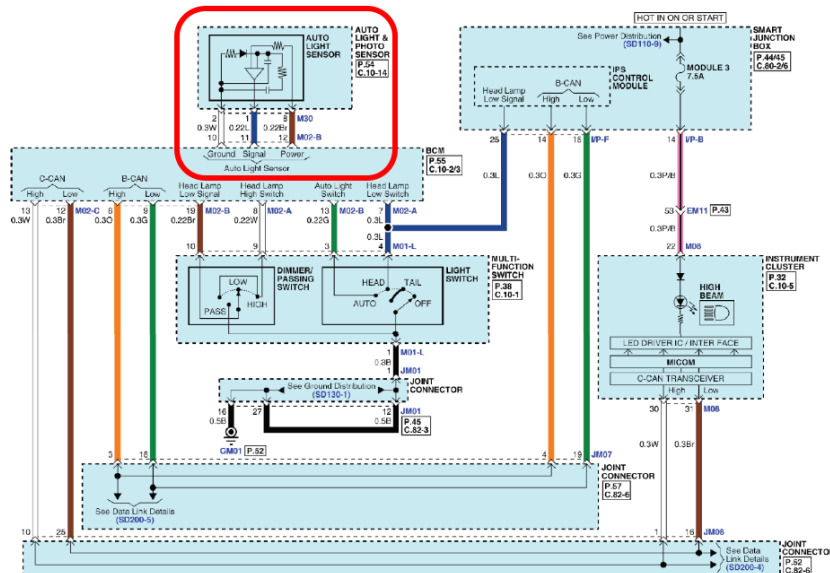
The sensor can be viewed with A/C Current Data on systems that have Fully Automatic Temperature Control (FATC) and Dual Automatic Temperature Control (DATC) Air Conditioning systems.

On the right are examples of GDS Current Data for the Driver and Passenger Photo Sensor using an incandescent flashlight.



The sensor can also be checked when removed from the vehicle using an incandescent light and DVOM, using millivolts (mV). Do not use an LED flash light or florescent drop light for testing. Connect the DVOM across the diode, when the intensity of the light is increased, the diode will increase the amount of voltage it can produce. There are no specifications for measuring voltage. This procedure will only determine if the photo diode can produce a voltage and it is not shorted or has an open.

The Auto Light Sensor is a 3-wire sensor that varies a voltage signal to the Body Control Module, which in turn controls the head and tail lamps.



2014 Forte Auto Lamp Control

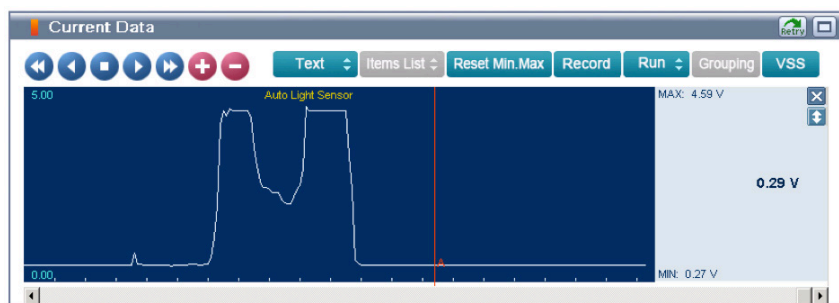
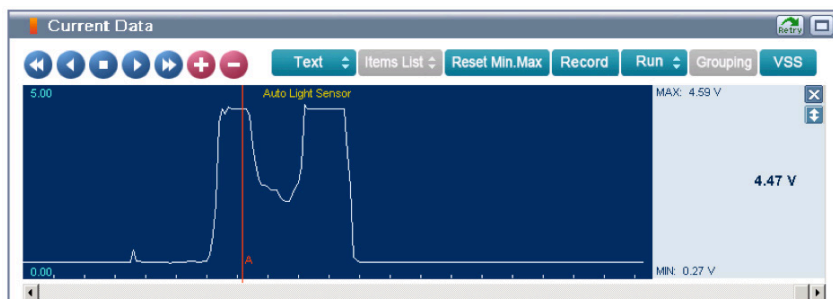
The 3-wire sensor type is supplied with a 5.0vdc and ground. It supplies a signal to the Body Control Module based on the amount of sun light hitting the sensor. The signal is used by the Body Control Module to turn ON the head and tail lamps when light levels are low and turn them OFF when light levels are high.

The Auto Light Sensor can be monitored by using Current Data. Locate the module that the Auto Light Sensor is connected to (use the ETM wiring diagram) select Auto Light Current Data and place in Graph Mode. Move the flashlight beam ON and OFF the sensor and monitor the voltage level. A LED flashlight or florescent droplight may not give off the correct type of light to properly monitor the output of the sensor. The specifications can be found in the Component Section of the service manual.

Continued next page.

Photo/Light Sensor (Continued)

The Auto-Light Sensor shows high voltage indicated at "Cursor A" when a (bulb type) incandescent flashlight shines directly on the sensor.



When the flashlight is removed, the voltage at "Cursor A" shows low voltage.

As you can see, the voltage output of the sensor is easy to monitor using the Current Data in the Graph Mode.

Some Kia vehicles have both the Auto Light and Photo Diode sensors mounted in one unit. Other Kia vehicles have the Auto Light sensor mounted separate from the Photo Diode sensor. Always check the ETM for the component location.

In the next issue, we will discuss Humidity Sensors.

Windshield Crack Inspection

Windshield cracks caused by an impact from a foreign object; (i.e. stone) are often difficult to identify.

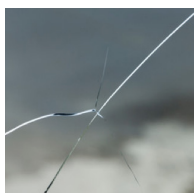
The following assessment should be used to verify the presence of an impact chip on the crack.

If no obvious impact chip is present, run a ball point pen along the crack and feel for a slight drop or pit in the glass. If a slight drop or pit in the glass is present, this indicates a small impact caused the crack. If the molding contains a witness mark or dent from an impact, inspect under the molding for an impact chip in the same manner. Another good way of checking, is by using a power magnifying glass. It will enable better evaluation of crack inspections.

Note – Prior to performing the assessment it is always best to make sure the windshield is clear of dust and/or debris when inspecting for stone chips.

Description of various types of cracks

Crack - A crack is a line that forms on windshield. It can consist of a straight line or an uneven one. Cracks sometimes form from a point of impact or from unequal distribution of pressure. If it's a stress crack, it probably starts around the edge

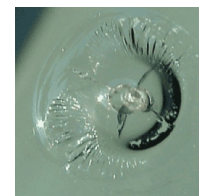


of your windshield. A crack can spread across the windshield.

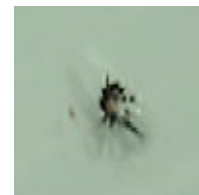
Star Break - Star breaks occur when an object hits your windshield. Long cracks branch off from the center, where the impact occurred. The star-like appearance gives this type of crack its name. Like a regular crack, it can continue to spread.



Bull's-Eye - This type of crack is circular and has the appearance of a dartboard bull's-eye. It has concentric circles with multiple fractures. A bull's-eye crack can turn into a larger crack or a star break.



Chips - A chip can occur when an object hits your windshield. It usually consists of a small indentation that doesn't go through both layers of the glass. The simplest type of windshield damage, it can still turn into a crack if not repaired.



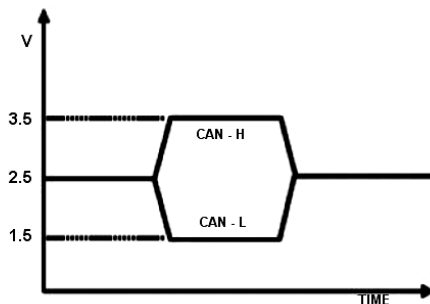
Brushing up on CAN

Kia vehicles are growing fast in complexity, with all the new features such as the Lane Departure Warning System, Adaptive Smart Cruise Control, and Blind Spot Detection System, they all need to share information and be able to do it fast. Control Area Network or CAN is used to share this information.

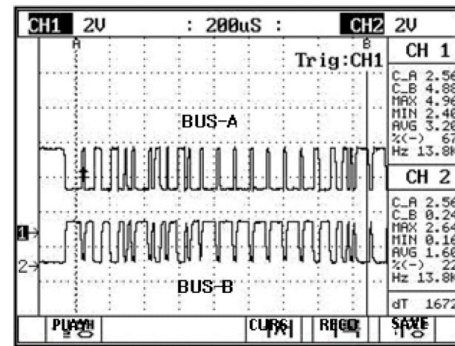
There are three basic types of CAN, Kia uses only two types at this time, a high speed and a medium speed. This article will be discussing only the high speed or 'C' CAN which includes the ECM/TCM, ABS, SRSCM and TPMS just to name a few modules. The medium speed class or 'B' CAN is used for Body related communications.

On Kia vehicles that support C-CAN, the access points for communications will be the OBD II connector and Kia's 20 pin connector in the engine compartment. On the OBD II connector, pin 3 of the connector is CAN signal high and pin 11 is CAN signal low. On the Kia 20 pin connector, pin 9 is CAN high and pin 17 is CAN low.

The CAN high signal at rest is about 2.5 volt and is pulled high to 3.5 volts. About a one volt difference high. The CAN signal low at rest is about 2.5 volts and is pulled low to about 1.5 volts. Again, about a one volt difference. Between the two legs there is about a 2 volt difference, this makes up the signal of two volts. This difference is important for the modules to validate the information being sent.

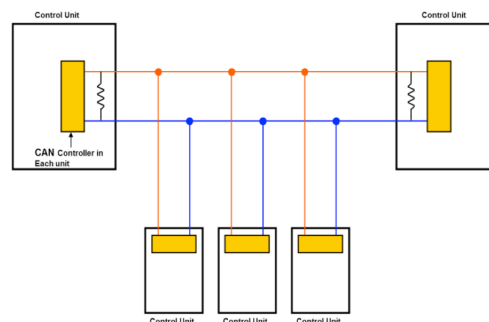
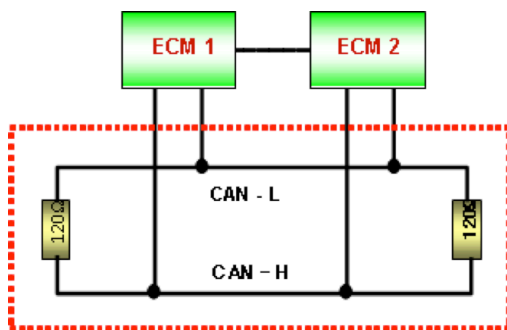


The pictures show the combined high and low signals.



This picture is showing the individual signals when using an oscilloscope to view the signals. Notice that the signals are mirror opposite. This is necessary for reliability of the message being sent.

To check the state of health of the communications wires, look at the resistance of the BUS. In the C-CAN system there are two terminating resistors, either inside two different modules or in the harness itself. The ohm value of each resistor is about 120 ohm +/- 10%. Being that the BUS is a parallel circuit, applying Ohms Law, the total resistance of the system will be about 60 ohms. (120 ohms/2 resistors = 60 ohms). If we measure the BUS resistance with an Ohm meter and get 60 ohms, then the BUS has proper continuity between all the modules. When we get readings near 0 ohms suspect a shorted wire between the two BUS wires or module, if you measure 120 ohms there is a break or open in one of the legs in the wiring. Checking the resistance to ground, the reading should be near infinity or very high resistance; if not, suspect the BUS is shorted to ground.



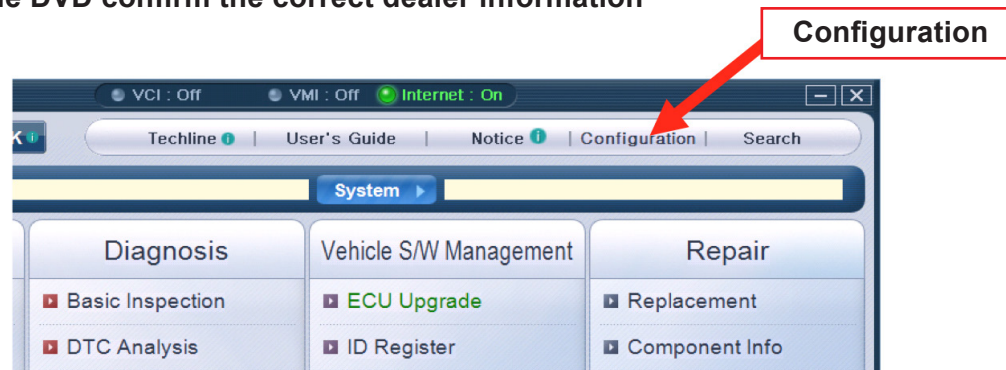
The pictures above show two different ways Kia has incorporated the 120 ohm resistance. They can be external in the harness, internal in different modules or both one external in the harness and one internal in a module.

Importance of GDS update

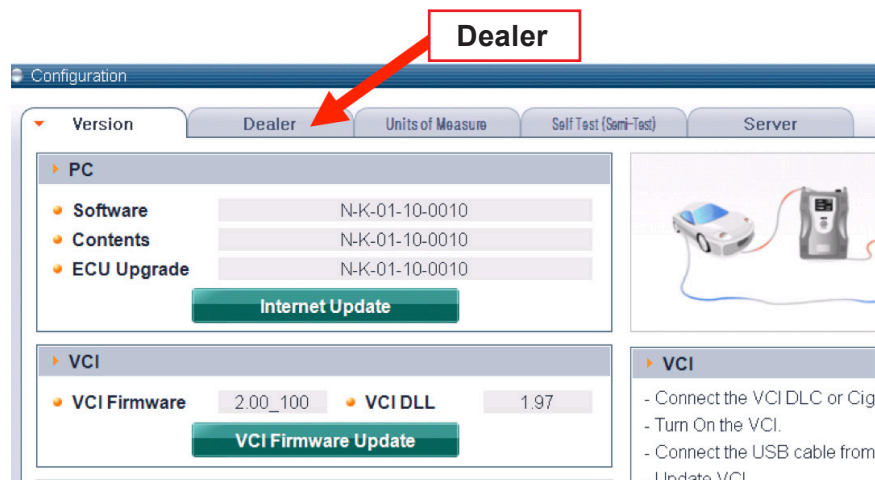
It is very important to keep the software in your GDS units up to date. Once the latest Update DVD is installed, the laptop should be hooked up to the internet every few days. The latest DVD is version N-K-01-13-0000 with a part number of GHDM-12120P-13A. As the software is updated via the internet (Smart Update) the last four digits of the version number will change. A software version ending in 0002 indicates that the software has been updated 2 times via Smart Update after the last DVD.

Please ensure that the correct Dealer information including your Dealer Code number is entered into the GDS. Below are the steps needed to enter the Dealer Information.

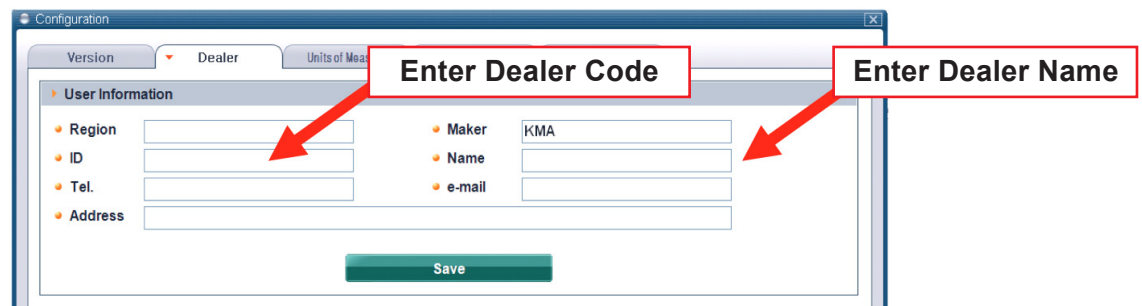
a. After installing the DVD confirm the correct dealer information



i. From the GDS home page, click on "Configuration"



ii. Click on the "Dealer" tab.



iii. Type in your dealer information. Enter your dealer code in the ID field then, click Save.

Crossword Puzzle Solution

We hope you gave this issue's crossword puzzle on page 4 a try. In case you need a little help, here are the answers to the puzzle clues.

