

INSTALLATION MANUAL

CRUISE CONTROL & SPEED LIMITER

AP900Ci SL900Ci Series



Dealer address details:



FOREWORD:

This installation manual is written for installers with knowledge of modern vehicle technology and experience in working on these vehicles.

The AP900Ci Cruise Control is a modular product that has been designed and produced with great care and precision.

Read the Installation Manual and User Guide carefully. Always leave the User Guide with the vehicle for the end user after completing the installation.

In the text boxes the following safety instructions are printed:



Pay extra attention to the text behind the exclamation mark.

NOTES:

The LED does not flash with a TACH signal input

Incorrect TACH signal. Check the signal using either a voltmeter or an oscilloscope. Make certain that the peak voltage of the signal is between the limits of 6v to 250V and in the frequency range of 6Hz-488Hz.

Once you have checked that the TACH signal is correct, test the signal again at the cruise control electronic module. Place the Red voltmeter lead or oscilloscope lead on the Yellow wire of the electronic module connector and the other lead to earth. Make certain you have the same signal at the electronic module.

If not, check over your connections and check if the Yellow wire is damaged or broken.

The LED does not flash with a speed signal input

Incorrect Speed signal. Check the speed signal using either a voltmeter or an oscilloscope. Make certain that the peak voltage of the signal is between the limits of 1.5v to 24v and is in the frequency range 6Hz to 8.5KHz.

Once you have checked that the Speed signal is correct, test the signal again at the cruise control electronic module. Place the Red voltmeter lead or the oscilloscope lead on the Blue wire of the electronic module connector and the other lead to earth. Make certain you have the same signal at the electronic module. If not, check over your connections and check if the Blue wire is damaged or broken.

Cannot enter the Setup mode

Repeat the setup procedure and press the ON key quickly (2 Lo beeps follow) to switch the Cruise Control ON. Pressing the ON key longer (1 Lo beep + 2 Hi beeps follow) will activate the Speed Limiter. The setup cannot be done in speed limiter mode

The car give error codes on the dashboard

Check the CAN-High and CAN-Low connections on CAN settings can be faulty. Follow the WIRING CONNECTIONS in chapter 6.2.

The pedal setup can be faulty. Follow the manual pedal learning mode of setup procedures in chapter 7.2.

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INTRODUCTION

CAN bus is dominated in most modern vehicles because it provides more flexible and robust signalling in the vehicle system. This is causing extreme difficulty for a universal cruise control system that fits to virtually each car model since there is a wide variety in different signal definitions. To overcome this difficulty and provide convenient and instant service we take advantage of cloud computing to provide the service to download vehicle specific CAN-bus data and vehicle specific Cruise Control settings fit the AP900Ci easily and quickly.

This document offers a guideline to program the AP900Ci module with vehicle specific CAN-bus data and Cruise Control settings. It requires an AP900Ci module, USB programming cable and the capability to access the internet through Microsoft Internet Explorer running in the Microsoft Windows environment. Further provides the programming application an instruction for the Switched power supply and the CAN-bus connection points.

Further does the programming application offer the possibility to adjust the AP900Ci settings before and after the installation. Settings such as Engage timing (INIT), Speed adjustment timing (GAIN), Command Module options and Throttle Position Switch (TPS) settings. The Diagnostic function offers the possibility to monitor the in- and outputs visually.

Chapter 3 gives the overview of the entire system including the hardware and software requirements to program the Cruise Control. Chapter 5 guides the installer through the programming procedure step by step. **Chapter 6 gives a guideline to fit the Cruise Control in a vehicle and instructions to use the setup menu to change settings without using a computer.** At last chapter 12 provides the trouble shooting

TROUBLE SHOOTING GUIDE:

This section of the manual includes a list of potential problems and a list of recommended checks to perform to solve these problems.

The LED on the electronic module does not light when the command module buttons are pressed.

Check the 8-pin command module connector from the electronic module and make certain that it is connected correctly to the command module.

Check the colour code on the command module connector and make certain that you have inserted the terminals into the command module correctly. If these are inserted correctly then check the main electronic module power supply and earth connection. The Orange wire should have the battery voltage (+12V) when the ignition is switched on and the Green wire should have earth at all times.

The LED on the electronic module does not illuminate when the brake is depressed.

Check if the LED on the electronic module illuminates when the command module buttons are pressed. If not, check the main electronic module power supply. The Orange wire should have the battery voltage (+12V) when the ignition is switched on.

Use a Voltmeter to check the connections to the brake switch. One Brown wire from the electronic module should be connected to a brake light switch wire, which is either permanent feed, or an ignition switched feed. The other Brown wire should be connected between the brake light bulb and the brake light switch. You will therefore read earth through the brake light bulb when the brake pedal is not pressed and the battery voltage (+12V) when the brake pedal is pressed. The two Brown wires are interchangeable. Some brake light circuits will have an ignition switched feed, so test the wires with the ignition switch in the ON position.

For safety purposes, the Cruise Control will not work if you have a problem with the vehicles original brake light circuit. Therefore, test the brake lights and make certain they are operating correctly.

ROAD TEST:

Start your vehicle and turn the speed limit or cruise control on using the command module ON/OFF button.

To switch the Cruise Control on Press the ON key on the command module for less than 1 second. The cruise control will respond with 2 low tone beeps and the light on the command module will illuminate green.

Then driving at around 40 Km/Hr (25MPH) press and release the SET/ACC button and you should feel the cruise control take over. The lowest speed that your cruise control will operate is the minimum engage speed, this should be around 40 Km/Hr (25 MPH). The cruise control should now engage smoothly and maintain a stable vehicle speed.

To switch the Speed Limiter on Press the ON key on the command module for more than 1 second. The speed limiter will respond with 1 low and 2 high tone beeps and the light on the command module will illuminate green.

When the ON/OFF button is pressed more than 1.2 seconds, it sounds three tone beeps and lights up the green led, which enables the variable speed limit mode. Then driving at around 40KM/H (25MPH) press and release the SET/ACC button and you should feel the speed limit control take over. The lowest speed that your speed limit control will operate is the minimum engage speed, this should be around 40 KM/H (25 MPH). The speed limit control should now engage smoothly and let you not over the variable limit speed.

Sensitivity adjustments:

If the cruise control does not engage smoothly or if the cruise control gains or loses speed while cruising you can make adjustments to the sensitivity settings of the cruise control. When the cruise control is engaged and gains speed, acts erratically or seems too responsive, you can decrease the GAIN factor. If the cruise control loses speed or seems to be sluggish in response you can increase the GAIN factor.

All the sensitivity settings can be adjusted in SET UP MODE, please refer to the flow chart (Fig. 7.1)

SAFETY DIRECTIONS

The following safety instructions apply for the AP900Ci Cruise Control & Speed Limiter:

- ▲ Only use the AP900Ci for the purpose of Cruise Control and Speed Limiter.
- ▲ The installer should have technical knowledge of modern vehicle technology and being experienced working on them.
- ▲ Incorrect and/or ignorant installation, connection, adjustments and/or diagnostics can lead to vehicle and/or Cruise Control/Speed Limiter malfunctions and indirectly affect road safety.
- ▲ Never alter or manipulate a AP900Ci. Alterations or technical manipulations made to the product can affect its safety adversely.
- ▲ Connections made without plugs need to be soldered properly. Insulate the connection carefully preferably with vulcanizing tape.
- ▲ Always install the Electronic Module in a position where heat, vibration and moisture are minimized, such as underneath the dashboard.
- ▲ Undo the negative battery terminal before working on the vehicle. Los volatile data is possible (audio, board computer, clock, ect.).
- ▲ Always use a digital multimeter when measuring on the vehicle.
- ▲ Cut wires without connectors to size, keep them as short as possible.
- ▲ CAN-bus wires are twisted pairs to assure a reliable operation. Make sure that the twisting remains the same when the CAN-wires are shortened.
- ▲ As the AP900Ci is programmed vehicle model specific it is not needed to learn the speed signal.

KIT CONTENTS:

ITEM	PART NO	QTY	DESCRIPTION
1	A10.2014940	1	ELECTRONICS MODULE
2	190.5000400	1	MAIN WIRING HARNESS



2



3	A90.9114940	1	Hardware kit AP900	
3.1		1	Double sided tape	
3.2		1	Grommet	
3.3		10	Wire tie	
3.4		2	Screw 8x1/2	
3.5		1	Fuse 3A	
3.6	180.9970400	2	Tap connector (AP900C/SL900C only)	
3.7	231.0004530	1	Installation manual	

Abnormal disengagement error tone beeps:

Follows the safety feature, while the Electronic Module detects the abnormal situation, the cruise control will disengage and sound numbers of Hi tone beeps to identify the error one time.

Beeps	Description
1	Any command module key is held over 20 seconds
2	Acceleration speed is over 9 Km/Hr per second abnormally
3	Speed drops down below 33 Km/Hr
4	Speed runs up over 250 Km/Hr
5	Speed drops down below 75% of existing setting speed
6	Speed runs up over 150% of existing setting speed
7	Pedal signals error
8	RPM increases abnormally

SAFETY FEATURES:

The cruise control is fitted with numerous safety features, which will disengage the cruise control in the following situations:

1. When pushing the brake pedal.
2. When pushing the command module COAST or CANCEL key.
3. When pushing the command module OFF key.
4. When pushing the clutch pedal.
5. When the automatic gearbox is placed in Neutral or Park.
6. When pressing any command module key over 20 seconds.
7. When turning the ignition OFF.
8. When engine revs increase over 150% of the set value.
9. When decelerating to 75% of the set speed (up-hill).
10. When accelerating to 150% of the set speed (down-hill).
11. When the brake fuse blows.
12. Minimum engage speed 33 km/hr.
13. Automatic disengages at less than 33 km/hr.
14. Maximum engage speed 240 km/hr.
15. Automatic disengages over 250 km/hr.

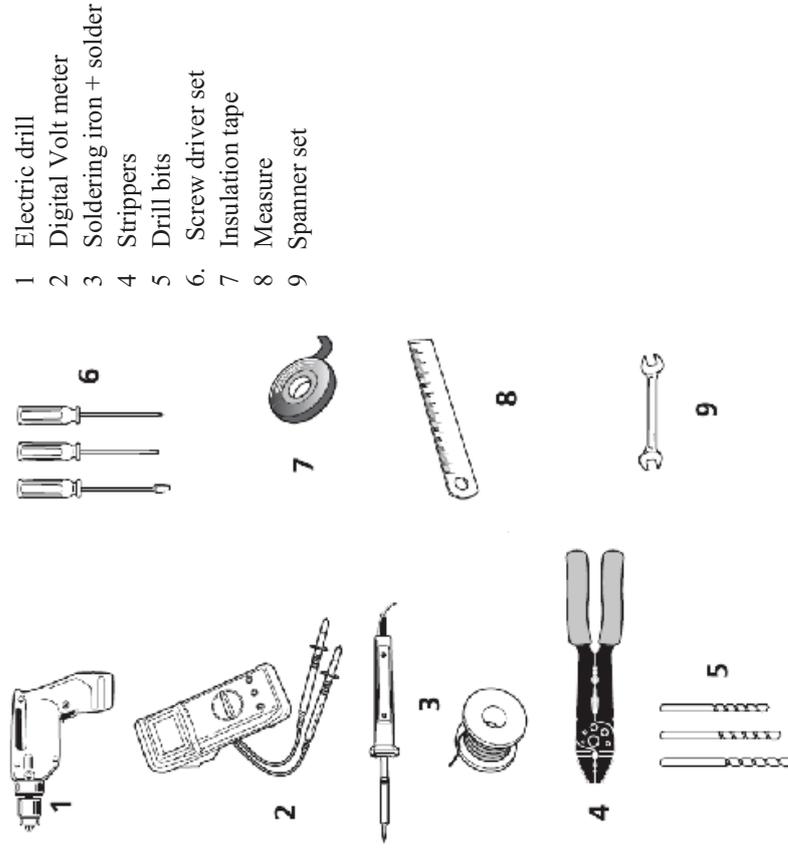
For a safe and economical operation, NEVER operate the Cruise Control in congested traffic or on wet or slippery roads.

▲ SAFETY NOTE: Should a situation ever arise where action 1 through to 4 above will not disengage the cruise you can always turn the ignition OFF (action 7).

If your vehicle has a steering lock, be sure it cannot be activated when the ignition key is in the ignition lock or the car is in gear.

TOOLS REQUIRED:

For connections where a plug does not apply it is strongly recommended to solder all electrical connections ensuring a reliable installation.



SOFTWARE PROGRAMMING

▲ Always program AP900Ci prior to the product installation.

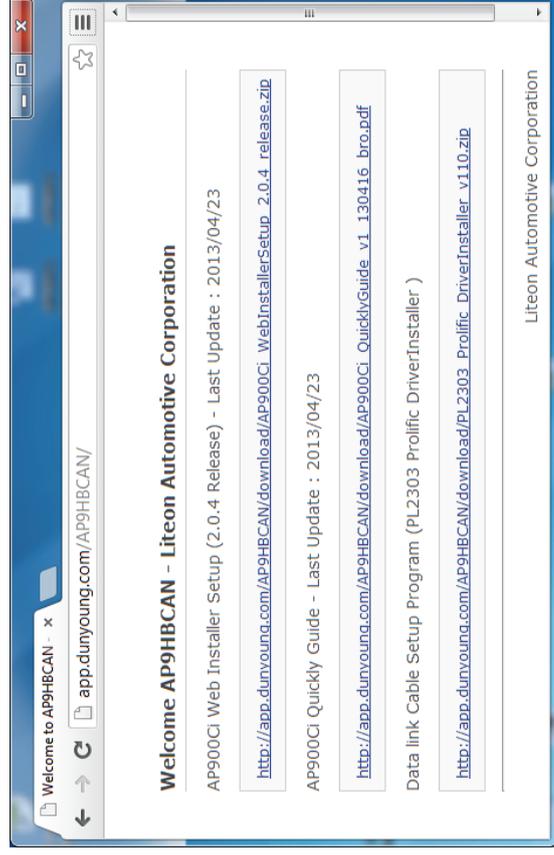
AP900Ci requires a specific application (freeware) to program the vehicle specific data.

Requirements:

- Microsoft Windows system XP/Vista/7/8 + Internet Explorer
- Internet connection
- Programming software and USB driver
- USB programming cable (part number LTK.0900090)

5.1 DOWNLOAD AP900Ci Web Installer

Programming software and the USB driver can be freely downloaded from the following website: <http://app.dunyoung.com/AP9HBCAN/>



To exit the genuine command module initialization mode and to save the learning parameters, press and hold the SW1 key located on the side of the electronics Module PC Board for 4 seconds. The Electronic Module will respond with one Long tone beep.

▲ NOTE: If there is no CANCEL or ON/OFF button(s) on the command module, skip the step 3.4 and 5. And exit the genuine command module initialization mode directly.

Usually genuine command modules are analog types, which have two wires or three wires. Refer to chapter 5.4 for the connections.

▲ NOTE: Standard (LITE-ON) supplied command modules can only be programmed via 8.1 standard command module initialization procedure.

9.3 GENUINE (OE) COMMAND MODULE INITIALIZATION

The genuine command module initialization mode is only required if you prefer to use a genuine command module instead of one of the standard available controls.

Enter the command module initialization mode: Press and hold the SW1 key located on the side of the electronics Module PC Board for 4 seconds while pressing the brake pedal. The Electronic Module will respond with 6 Hi tone beeps. Release the brake pedal and SW1 key, and the Electronic Module will respond with one Long tone beep.

Step 1 : Learn the DECEL / SET Key. Press and hold the brake pedal and the Electronic Module will respond with one Hi tone beep. Then press and hold **DECEL/SET key** to set DECEL/SET parameters. Release brake pedal to confirm the setting and the Electronic Module will respond with one Hi tone beep. Release DECEL/SET key.

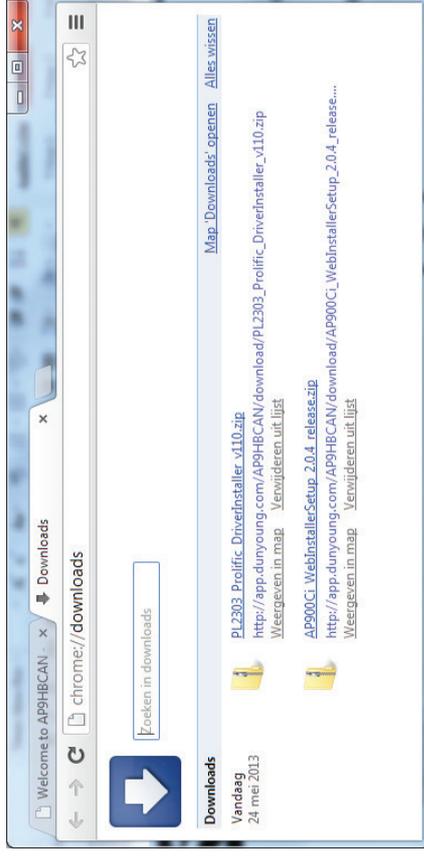
Step 2 : Learn the ACCEL / RES Key. Press and hold the brake pedal and the Electronic Module will respond with 2 Hi tone beeps. Then press and hold the **ACCEL/RES key** to set ACCEL/RES parameters. Release brake pedal to confirm the setting and the Electronic Module will respond with 2 Hi tone beeps. Release ACCEL/RES key.

Step 3 : Learn the CANCEL Key. Press and hold the brake pedal and the Electronic Module will respond with 3 Hi tone beeps. Then press and hold the **CANCEL key** to set CANCEL parameters. Release brake pedal to confirm the setting and the Electronic Module will respond with 3 Hi tone beeps. Release CANCEL key.

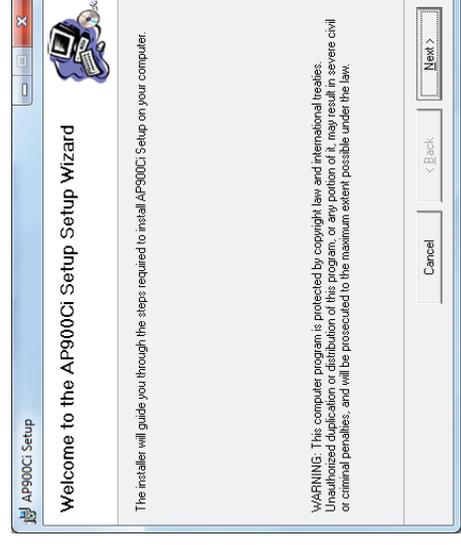
Step 4 : Learn the ON/OFF Key. Press and hold the brake pedal and the Electronic Module will respond with 4 Hi tone beeps. Then press and hold the **ON/OFF key** to set ON/OFF parameters. Release brake pedal to confirm the setting and the Electronic Module will respond with 4Hi tone beeps. Release ON/OFF key.

Step 5 : Learn a second ON/OFF Key (Speed Limiter). Press and hold the brake pedal and the Electronic Module will respond with 5 Hi tone beeps. Then press and hold the **ON/OFF key** to set ON/OFF parameters. Release brake pedal to confirm the setting and the Electronic Module will respond with 5Hi tone beeps. Release ON/OFF key.

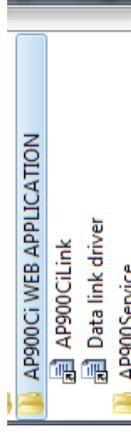
5.2 WEB INSTALLER SETUP



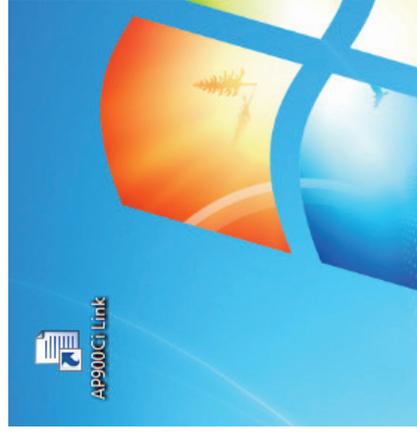
Extract (unzip) the down loaded files. Double click on setup.exe and the Setup Wizard will guide you through the installation procedure.



In the windows startup menu the AP900Ci WEB APPLICATION folder will be added. It consists of the AP900CiLink and the Data link driver as shown below.



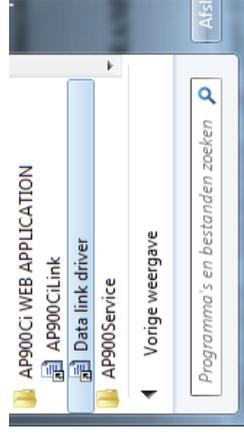
A short cut icon of AP900CiLink will also be added on your desktop.



Install the Prolific data link driver

! - It is required to install the data link drive before starting the AP900CiLink application.

Click on the Data link driver in the windows startup menu to accomplish the installation:



9

COMMAND MODULE INITIALIZATION MODES

The command module initialization mode is only required if you change the command module from the factory supplied unit to a genuine type or if you wish to restore the factory default values or if you like to switch the default ACCEL/SET type to DECEL/SET type command module.

9.1 STANDARD COMMAND MODULE INITIALIZATION

To enter the Standard Command Module Initialization Mode, press and hold the SW1 key located on the side of the Electronics Module for 4 seconds. The Electronic Module will respond with 5 Hi tone beeps.

Press the **SET** key on the command module to instruct the Cruise Control to operate in the ACCEL / SET mode. The Electronic module will respond with 2 Hi tone beeps and exit the Command Module Initialization mode. Press the **RES** key on the command module to instruct the Cruise Control to operate in the DECEL / SET mode. The Electronic module will respond with 2 low tone beeps and exit the Command Module Initialization mode.

9.2 GENUINE (OE) ON/OFF KEY INITIALIZATION

Some genuine command modules use a Toggle (a.k.a. Rocker or 2-Way) ON/OFF switch. The standard Cruise Control Command Module setting is to operate with a Momentary (a.k.a. normally-open or push-to-make) switch. Execute next procedure to change the ON/OFF key settings:

Step 1 : Enter the Standard Command Module Initialization Mode, press and hold the SW1 key located on the side of the Electronics Module for 4 seconds. The Electronic Module will respond with 5 Hi tone beeps. Release SW1.

Step 2 : Press SW1 subsequently once to change the ON/OFF type setting:

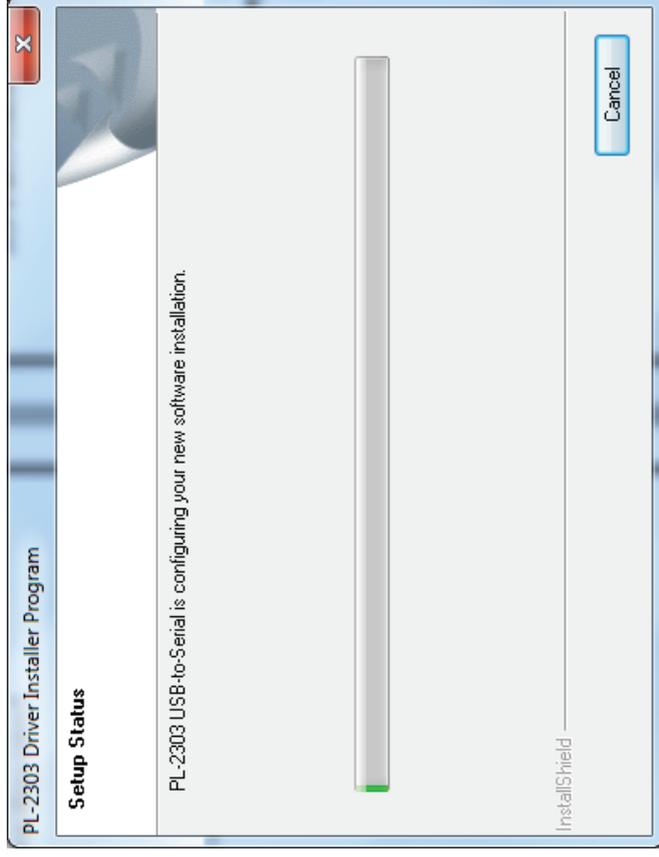
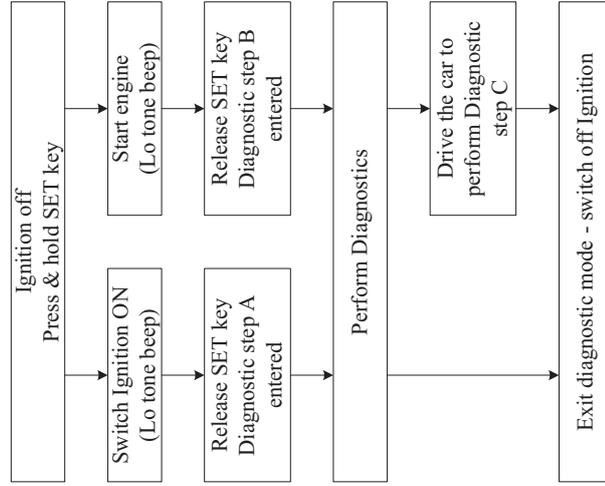
- 1 tone: Momentary ON/OFF switch selected
- 2 tones Toggle ON/OFF switch selected

Step 3 : Press the SET or RES key once to store the settings. The Electronic Module will respond with 3 Low tone beeps.

Diagnostic step C

This test is to check the speed signal input. When driving the car on the road, the speed signal can be checked by the GREEN LED and sounding of the BUZZER of the electronic module. The GREEN LED will flash and the buzzer will sound at a rate determined by the pulse frequency of the speed. While driving around 50 Km/Hr, the GREEN LED should flash once per second. Turn the ignition key off, after the car is stopped, to exit the diagnostic mode.

Fig. 8.1

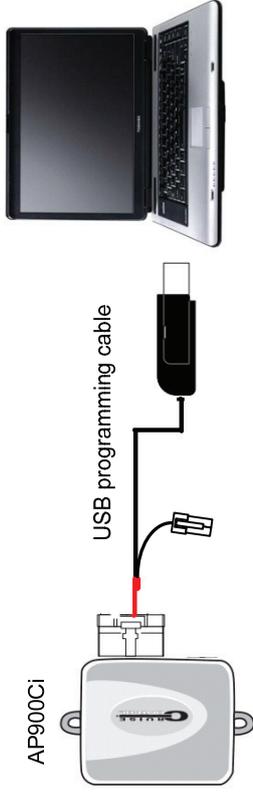


Note: it will uninstall or repair the driver if it already exist.

The installation of the AP900Ci Web Installer application is now finished. Check occasionally for updates on <http://app.dunyoung.com/AP9HBCAN/>. Remove the AP900Ci Web Application first from your computer before installing the update. It is not required to remove and update the Data Link Driver.

5.3 AP900Ci PROGRAMMING

Connect the AP900Ci module to the computer with the USB data link cable.



Windows will automatically detect the device if the driver is installed properly.

The screenshot shows the Dun Young LiteOn Automotive software interface. The main window has a menu bar with 'Application List', 'LicenseInfo', 'Program', 'Edit SVT', and 'Instruction'. Below the menu bar, there are fields for 'Manufacture' (set to 'Demo'), 'Model' (set to 'Model2012'), and 'Transmission' (set to 'Automatic'). A 'Confirm selection' dialog box is open in the foreground, displaying the same information: 'Programming Demo Model2012-'. The dialog box has 'Ja' and 'Nej' buttons. A callout box on the right lists the following steps:

1. Select Manufacture
2. Select car Model
3. Select Transmission type
4. Press on Programming
5. Confirm selection

When programming is finished a new screen will pop-up with the instructions for CAN-bus and Switched power supply connection points.

GREEN LED / HIGH tone beep (see diagnostic step B):

- Speed input when in Speed sensing mode
- Tach input when in Tach sensing mode

Any switch (control) input that is active for more than 10 seconds is automatically locked out to prevent that input from over-riding the detection of another switch input.

Diagnostic step B

! NOTE: Diagnostic step B can only be executed if installation step 'Manual Pedal Learning Mode' has been completed correctly!

After the connections and functions are tested successfully in diagnostic step A, the test of operating the throttle pedal can be continued in diagnostic step B.

To enter diagnostic step B switch the ignition off. Then press and hold the SET key and start the engine. Release the SET key as soon as the engine runs.

Turn the cruise control ON and tap the SET key. The cruise control should now start to operate/open the throttle valve and the engine revs should increase accordingly. The throttle can be released instantly by pressing the brake or clutch pedal, or by moving the automotive gearbox into neutral position or using the by operating the COAST or ON/OFF key.

Keep the engine running and continue with Diagnostic step C or turn the ignition key off to exit diagnostic mode.

! NOTE: For safety reasons the throttle cannot be operated for more than 66% of its full travel in diagnostic mode!

DIAGNOSTIC MODE:

The Cruise Control has an integrated self-diagnostic mode. The self-diagnostic mode includes three steps test all connections and functions of the Cruise Control. Check your installation one to verify all connections are secure. Engage the handbrake and place the gearbox in neutral or park.

To activate the diagnostic mode press and hold the SET key while turning the vehicle Ignition switch ON. The buzzer will beep as long as you hold the SET key down. Release the SET key and the buzzer will stop sounding.

If the buzzer comes back ON again within one second, this indicates that one of the other control inputs is active when it should not be. By process of elimination, you can determine which control input is not functioning properly and repair the connection to that input.

Diagnostic step A

The diagnostic mode is provided to test the electrical connections to the Cruise Control module.

A bicolor diagnostic LED on the Electronic Module functions in this mode all of the time.

Since visual access to this Module is inconvenient once the module is mounted under the dash, a temporary diagnostic mode is provided that echoes the operation of the LED through the audio buzzer.

The LED and buzzer will activate whenever one of the following inputs is detected:

RED LED / LOW tone beep:

- Set Key
- Res Key
- Coast Key
- ON/OFF Key
- Memory buttons
- PCB button

ORANGE LED / LOW tone beep:

- Brake Pedal
- Neutral Safety Switch



- 1 Location for GPS antenna installation
- 2 Location for central unit installation
- 3 Switched power supply

Airconditioning
Brake
Clutch
DriverDoor
DriverSeatbelt
EngineRun
FrontFootLight
HighBeamLights

Version: 1.2
Date: 11/02/2011

Help

Printable version

Enginecompartment	Passengercompartment	Boot
CAN HIGH/SEED 1	DLC, position 5, grey (CAN High) and position 4, white (CAN Low)	
Switched power supply	Junction block, vertical connector with black locking clip (on the right), position 36, blue	
	or using BEI: see CAN High/Speed/CAN Low/Speed	



The bezel is clamped. The instrument panel itself is secured with 4 fasteners.

The standard windshield permits GPS communication. A GPS antenna can be installed under the bezel if required.

The Data Link Connector (DLC) is located on the left below the dashboard (see photo).

The panel in front of the junction block is only clamped (see photo).



The cruise control functions are locked from factory for security reasons. It is required to execute a simple test procedure to verify the programmed data with the data on the vehicle CAN-bus system!

Chapter 7.1 describes how to perform the test procedure.

INSTALLATION AND WIRING CONNECTIONS

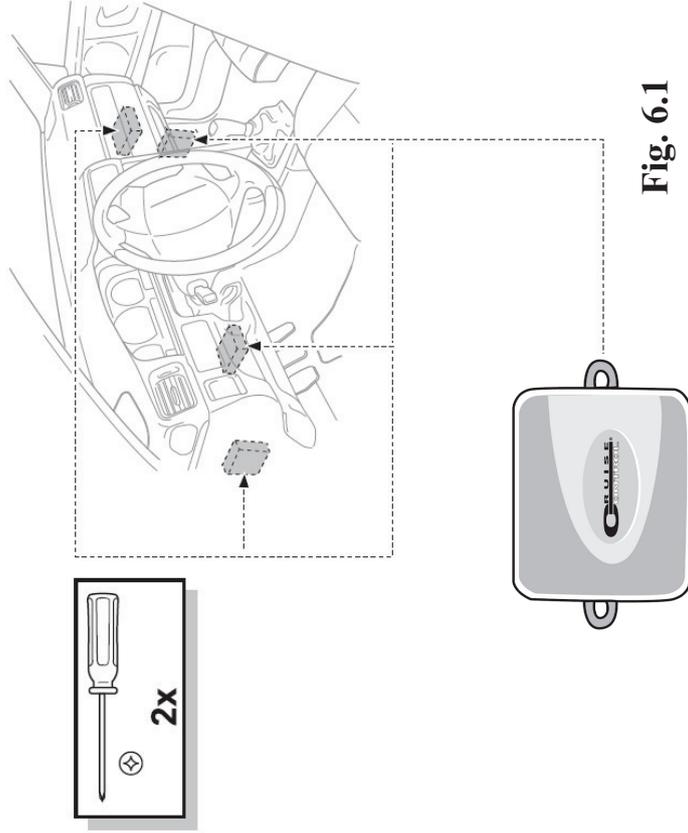
6.1 ELECTRONICS MODULE LOCATION:

Always mount the electronics module in the passenger compartment of the car. Avoid places with excessive heat, dampness and high-tension leads.

Common mounting locations are under the dashboard behind the glove compartment or the drivers- or passenger-side kick panels (Fig.6.1). Do not mount the electronics module in the engine compartment.

Temporarily install the electronics module in the selected position.

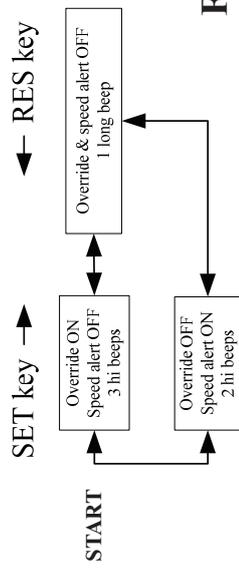
DO NOT firmly screw the electronic module down unless you have easy access to the electronics module. Once the installation has been finished, the electronics module can be screwed down in the selected position.



pressing the **RES key 6 times** in quick succession. The Electronic Module will respond with one Low tone beep for each press of the RES key. Release the BRAKE pedal and the Electronic Module will respond with 6 Hi tone beeps confirming the manual option adjustment mode. If you hear the incorrect number of Hi tone beeps, repeat the BRAKE pedal and RES key sequence.

Step 2: Press the SET or RES key to change the options. Please refer to the flow chart (Fig.7.3).

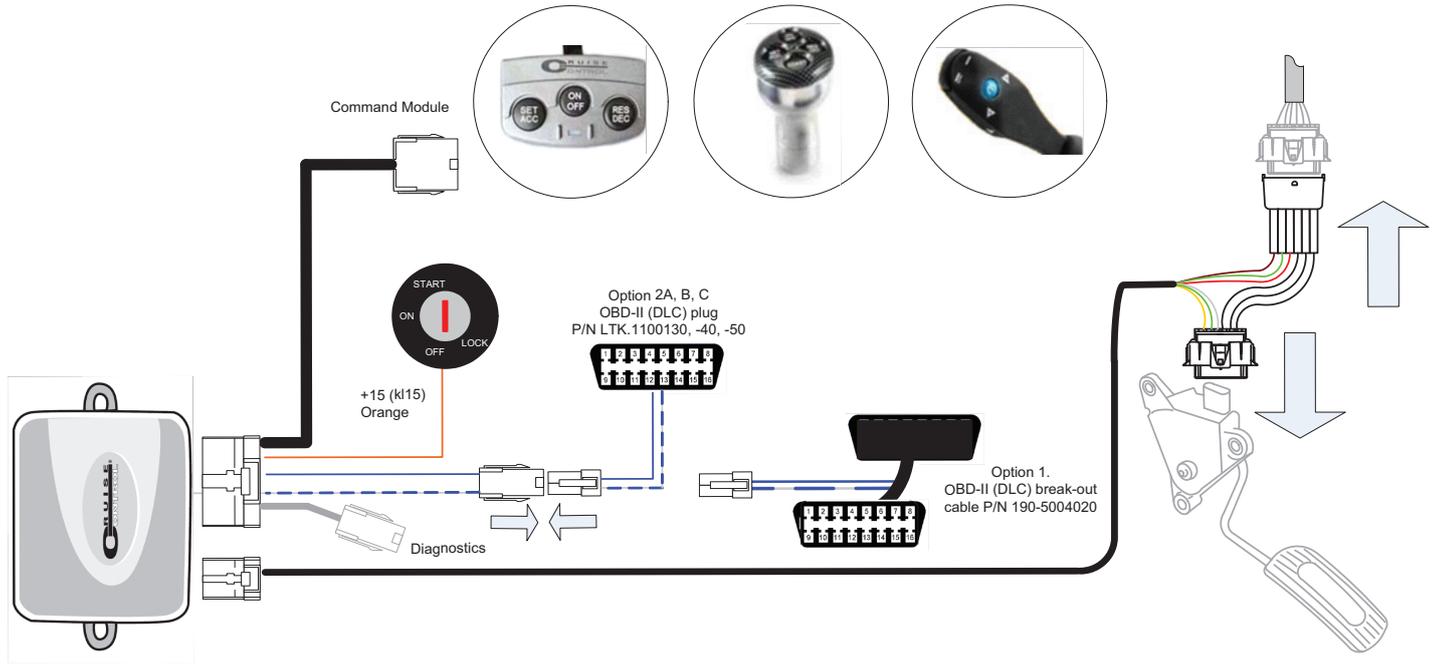
Step 3: Press the BRAKE pedal to save the chosen option and the Electronic Module will respond with 6 Hi tone beeps. See section **Exit SET-UP mode**.



Exit SET-UP Mode

To exit the SET-UP mode, press and hold the BRAKE pedal while pressing the SET key 4 times. The Electronic Module will respond with one long Hi tone beep to confirm the SET-UP mode has been terminated.

WIRING DIAGRAM



Speed Alert Value Setup (optional)

The Speed Alert Value Setup procedure allows programming of speed value for the acoustic Speed Alert. This fixed speed alert will warn the driver when exceeding the programmed speed in all circumstances (Cruise Control ON and OFF).

Step 1: Enter the manual speed alert setup mode: Press and hold the BRAKE pedal while pressing the **RES key 5 times** in quick succession. The Electronic Module will respond with one Low tone beep for each press of the RES key. Release the BRAKE pedal and the Electronic Module will respond with 5 Hi tone beeps confirming the speed alert setup mode. If you hear the incorrect number of Hi tone beeps, repeat the BRAKE pedal and RES key sequence.

Step 2: To set the ALERT in this mode, press the **SET** key to increase the speed or press the **RES** key to decrease the speed. The speed setting range is between 80 Km/Hr and 150 Km/Hr or No Alert. Refer to flow chart (Fig.7.2).

Step 3: To save the ALERT setting, press the BRAKE pedal and the Electronic Module will respond with 5 Hi tone beeps. **See section Exit SET-UP mode.**

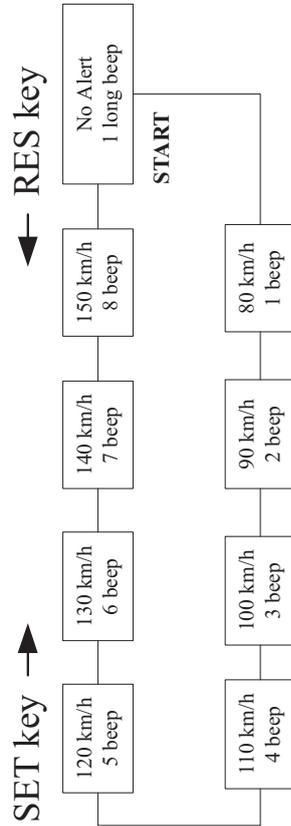


Fig 7.2

Override / Speed Alert Activation Setup (optional)

The Override and Speed Alert Activation setup allows enabling the Override or Speed Alert function. The override function enables the driver to 'override' a voluntary set speed limit (set by command module).

The Speed Alert will only warn the driver if the programmed speed limit is exceeded, but will not limit the vehicle speed. The speed alert can be programmed following the procedure as described in figure 5.3

Step 1: Enter the manual setup mode. Press and hold the BRAKE pedal while

6.2 WIRING CONNECTIONS

Once you have the location for the electronic module, it is possible to mount the main wiring harness of the Cruise Control. Use a voltmeter to find the right connections point in the car.

Orange wire (kl.15/+15)

Connect the ORANGE wire to a fused Ignition Switched +12V Feed. (kl.15/+15). It is recommended to the connection point given in the instruction that is launched after completing the programming.

▲ NOTE: Make sure that the ignition key is in the off position before making the connection of the ignition feed.

▲ NOTE: Check with a Voltmeter that the ignition switch feed you select supplies a full battery voltage. Other suitable locations are usually found at the fuse box. It is not recommended to connect this orange wire to vehicle accessory (ACC) power wire.

Blue + Blue/White (twisted pair, CAN-bus connections)

The CAN-bus connection points are vehicle specific. Connect the CAN-bus wires in accordance with the connection points given in the instruction that is launched after completing the programming!

OBD-II connector (On-Board Diagnostic- a.k.a. Diagnostic Link Connector). The connection can be simply established using the specific Cruise Control OBD-plug or Break-out Harness. See pictures below.

(LTK.1100130, LTK.1100140, LTK.1100150)

(190-5004020)



Alternatively the CAN-bus connections can be made by soldering the Cruise Control CAN-bus wires, Blue and Blue/White, to the specified locations at the

Step 2: To set the INIT in this mode, drive the car at a convenient speed over 40K/m/Hr and press the SET key to engage the cruise control.

Step 3: The INIT setting range is between 1 and 15. Pressing the SET key to increase the INIT will be responded by one Hi tone beep per count. Pressing the RES key to decrease the INIT will be responded by one Low tone beep per count.

Excessive throttle motion indicates the init is too high. Excessive overshoot of the beginning set speed indicates the init is too high.

Step 4: When the Cruise Control's response has been adjusted to a satisfactory level, press the brake pedal to save the INIT settings. The electronic module will respond with 3 beeps to confirm the saved settings. **See section Exit SET-UP mode.**

Manual GAIN Adjustment Mode (optional)

Low system gain is distinguished by sluggish throttle response when traveling up or down a hill. The result is excessive speed loss when climbing a hill or cresting the top. High system gain is distinguished by overactive adjustments and continuous surging.

Step 1: Enter the manual GAIN adjustment mode. Press and hold the BRAKE pedal while pressing the **RES key 4 times** in quick succession. The Electronic Module will respond with one Low tone beep for each press of the RES key. Release the BRAKE pedal and the Electronic Module will respond with 4 Hi tone beeps confirming the manual GAIN adjustment mode. If you hear the incorrect number of Hi tone beeps, repeat the BRAKE pedal and RES key sequence.

Step 2: To set the GAIN in this mode, drive the car at a convenient speed over 40K/m/Hr and press the SET key to engage the cruise control.

Step 3: The GAIN setting range is between 3 and 14. Pressing the SET key to increase the GAIN will be responded by one Hi tone beep per count. Pressing the RES key to decrease the GAIN will be responded by one Low tone beep per count.

Excessive throttle motion indicates the gain is too high. Excessive overshoot of the final set speed indicates the gain is too low.

Step 4: When the Cruise Control's response has been adjusted to a satisfactory level, press the brake pedal to save the GAIN settings. The electronic module will respond with 4 beeps to confirm the saved settings. **See section Exit SET-UP mode.**

Step 1: Turn the gear in neutral or park position. Start the engine and enter Set-up mode again within 50 seconds after turning ignition on. Enter the AUTO PPM adjustment mode: Press and hold the BRAKE pedal and press the RES key 2 times. The Electronic Module will respond with one Low tone beep for each press of the RES key. Release the BRAKE pedal and 2 Hi tone beeps will confirm that the AUTO PPM set-up mode is entered. If you hear the incorrect number of Hi tone beeps, repeat the BRAKE pedal and RES key sequence.

Step 2: Drive the car at a speed of 72 Km/Hr or 45 MPH. Press the SET key. The cruise control will give 1 beep and will engage. If the cruise control is maintaining the speed accurate and fluently on the programmed speed then continue with step 3.

If the cruise control is losing the set speed then adjust the INIT value with the SET and RES keys. SET will increase and RES will decrease the initial value of the cruise control. The INIT setting range is between level 1 and 15. Pressing the SET key to increase the INIT will be responded by one Hi tone beep per count. Pressing the RES key to decrease the INIT will be responded by one Low tone beep per count.

Step 3: To save the PPM and INIT and GAIN settings, press the BRAKE pedal. The Electronic Module will respond with 2 Hi tone beeps. Exit the SETUP mode by pressing the BRAKE pedal while pressing the SET key 4 times. See section Exit SET-UP mode.

If required the following setup/learn procedures can be followed to adjust the main Cruise Control gain manually to optimize the Cruise Control performance.

Manual INIT Adjustment Mode (optional)

Low system init is distinguished by sluggish throttle response when pressing SET key to engage in cruise control mode on a normal road. The result is excessive speed loss from the beginning to engage. High system init is distinguished by overactive adjustments.

Step 1: Enter the manual INIT adjustment mode. Press and hold the BRAKE pedal while pressing the **RES key 3 times** in quick succession. The Electronic Module will respond with one Low tone beep for each press of the RES key. Release the BRAKE pedal and the Electronic Module will respond with 3 Hi tone beeps confirming the manual INIT adjustment mode. If you hear the incorrect number of Hi tone beeps, repeat the BRAKE pedal and RES key sequence.

vehicle wiring system (contact your Cruise Control dealer for details).

Soldering: Attach the BLUE wire of the twisted pair to an existing vehicle CAN High line. Attach the BLUE/WHITE wire of the twisted pair to an existing vehicle CAN Low line. Often the vehicle CAN lines are present at the OBD-II connector: pin 6 – CAN HIGH, pin 14 – CAN LOW. Soldering (recommended) or use the enclosed two tab-connectors (chapter 3, item 3.6) for the connections to the vehicle CAN lines.

Purple wire (Neutral Connection)

⚠ NOTE: Optional the purple wire can be connected for vehicle if the clutch signal is not present on the CAN-bus! Only fit the purple wire when instructed by the AP900Ci Web Programmer

The PURPLE wire can be connected at 3 different locations:

- A - Original Clutch switch.
- B - Neutral or Park lamp (**automatic** gearbox only). Locate the switch which detects when the vehicle is in Neutral or Park.
- C - Hand Brake on lamp. Locate the hand brake switch.

Connect the PURPLE wire to the wire that:

- switch to ground or
 - lose ground or
 - switch from ground to positive or
 - switch from positive to ground
- when the clutch pedal is depressed.

⚠ WARNING: CHECK THIS CONNECTION CAREFULLY AS AN INCORRECT CONNECTION COULD RESULT IN ENGINE DAMAGE.

⚠ The cruise control will **operate** normal if the PURPLE wire is not connected. If no connection is required cut and tape the PURPLE wire.

Command Module (Fig.6.2)

A range of command modules is available to offer the most convenient (operating) solution for each application.

The command module must be mounted at a location, which guarantees safe operation in all circumstances. Suitable positions are on the dashboard or central console depending on the command module type.

For the SL900Ci the command module is required to perform the setup. Afterwards it can be used optional. See the user guide for further details.

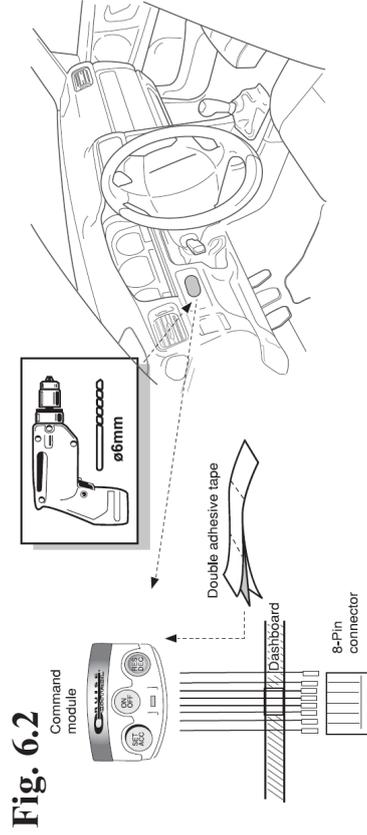


Fig. 6.2

NOTE: Place the 8-pole connector on the wiring harness after the command module is placed on its location and after the wiring harness is routed to the Cruise Control ECU.

Genuine command modules operating through two wires have to be connected (solder) to the command module wiring harness section of the main cruise control wiring harness (round 8-pole cable).

You must enter the above described SETUP mode first before selecting one of the following adjustment modes:

Manual Pedal Learning Mode (always required!)

Step 1: Enter the manual Pedal-learning mode: Press and hold the BRAKE pedal the press the **RES** key 1 time. The Electronic Module will respond with 1 Low tone beep for each press of the RES key. Release the BRAKE pedal and the Electronic Module will respond with 1 High tone beep confirming the manual Pedal-learning mode is entered. (If you hear the incorrect number of High tone beeps, repeat the BRAKE pedal and RES key sequence)

Step 2: Release the throttle pedal to idle position. Press the **SET** key 1 time to learn the throttle pedal idle position, the Electronic Module will respond with 1 High tone beep.

Step 3: Press and hold the throttle pedal to full travel position. Press the **RES** key 1 time to learn the throttle pedal at full travel position, the Electronics Module will respond with 1 High tone beep. If the throttle pedal is learned correctly, the Electronics Module will keep sounding Low tone beeps, else it will keep responding with High-Low-High-Low- tone beeps.

Step 4: Test the throttle pedal. Press and release the throttle pedal slowly. The Electronic Module should keep sounding Low beep tones only.

If the beep tone changes from Low to High or if it sounds continuous High-Low-High-Low- then repeat the Pedal Learning Procedure.

Step 5: If the throttle pedal is learned successfully, press the BRAKE pedal to save and exit the manual Pedal-learning mode. The Electronic Module will stop beeping. **See section Exit SET-UP mode.**

⚠ Caution:

Some throttle pedals do not have consistent signal values near the full travel area. (presence of full-throttle switch). Therefore the learning procedure may not succeed. For this occasion repeat the learning procedure but press the throttle pedal not further than 95% of its full travel at step 3.

Auto PPM Adjustment Mode (optional)

The AUTO PPM adjustment mode allows a single procedure to set the speed pulse signal. This procedure is usually not required but may be followed by any of the manual adjustment modes at a later date to fine-tune the parameter settings.

MANUAL TEST & SETUP PROCEDURE:

7.1 TEST PROCEDURE

▲ The cruise control functions are locked from factory for security reasons. It is required to execute a simple test procedure to verify the programmed data with the data on the vehicle CAN-bus system!

Follow the next system test procedure to unlock the software:

0. Start engine
1. press ON/OFF key 1 time
2. press and hold SET key
3. press and release brake pedal 4 times (buzzer sounds 4 low tones (test starts))
5. release SET key and wait for 3 seconds
6. press brake gently (brake lights should illuminate) when buzzer sounds
7. release brake while buzzer stops
(step 6 & 7 will be repeated 3x)
8. Buzzer will sound 4 hi tones if tested passed
Buzzer will sound hi-lo tones if test not passed. Check if the right vehicle is selected for programming and repeat the test.

7.2 SETUP PROCEDURES

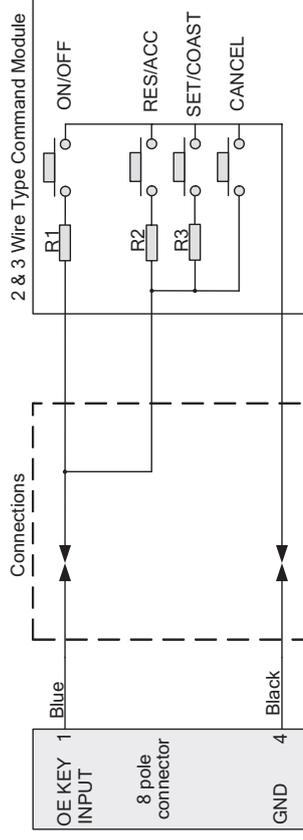
The next setup (learn) procedures are to program the throttle pedal (vehicle specific), to adjust the Cruise Control sensitivity parameter and to setup the Speed Limiter or Speed Warning features.

SETUP Mode Entry

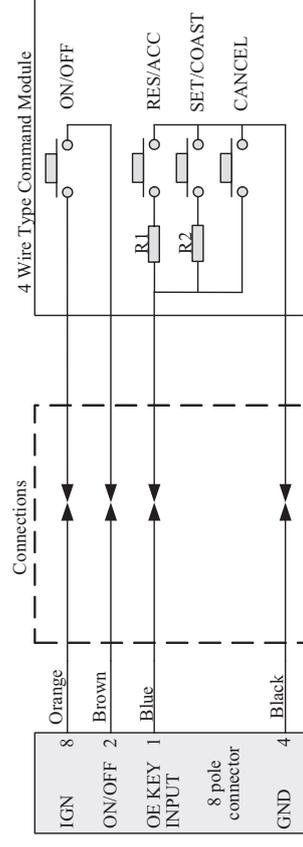
To enter the SETUP mode, turn the vehicle ignition switch OFF, then ON again. Within 50 seconds, switch the cruise control ON, press and hold the BRAKE pedal while pressing the SET key 4 times in quick succession. The Electronic module will respond with 4 High tone beeps. See also the set-up flow chart on page 19-20 (Fig.7.1).

Fig. 6.3

2 Wire Type OE C/M



4 Wire Type OE C/M



Some genuine command modules use a Toggle (a.k.a. Rocker or 2-Way) ON/OFF switch. The standard Cruise Control Command Module setting is to operate with a Momentary (a.k.a. normally-open or push-to-make) switch. Follow the instruction in chapter 9.2 to adjust the setting for a 'toggle type' command module..

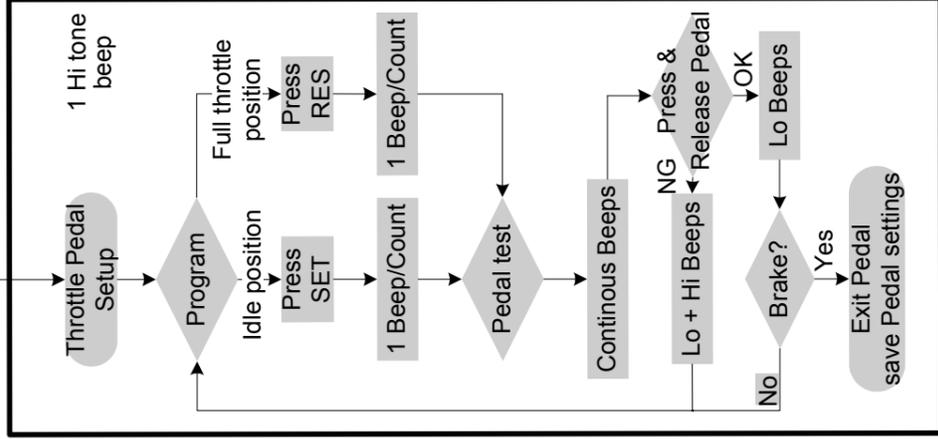
Fig 7.1

Normal operation

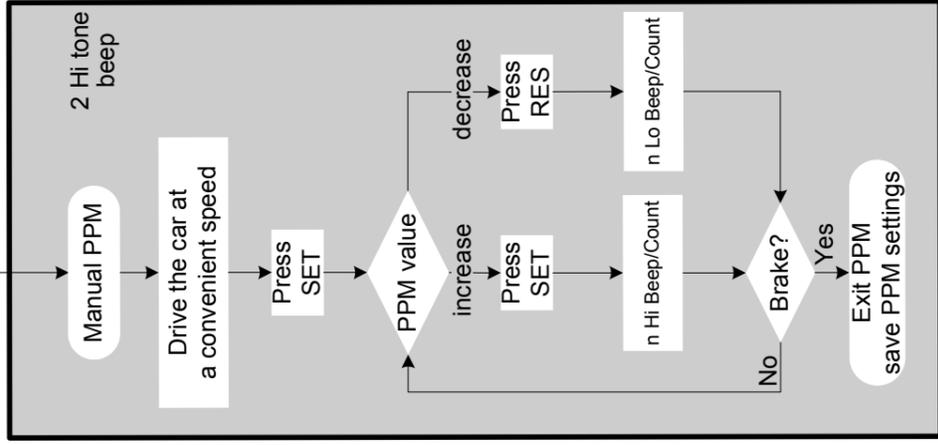
Ignition switch ON
 Press **ON** key **1x** (cruise control)
 Press & hold brake pedal
 Press **SET** key **4x** times

SETUP MODE

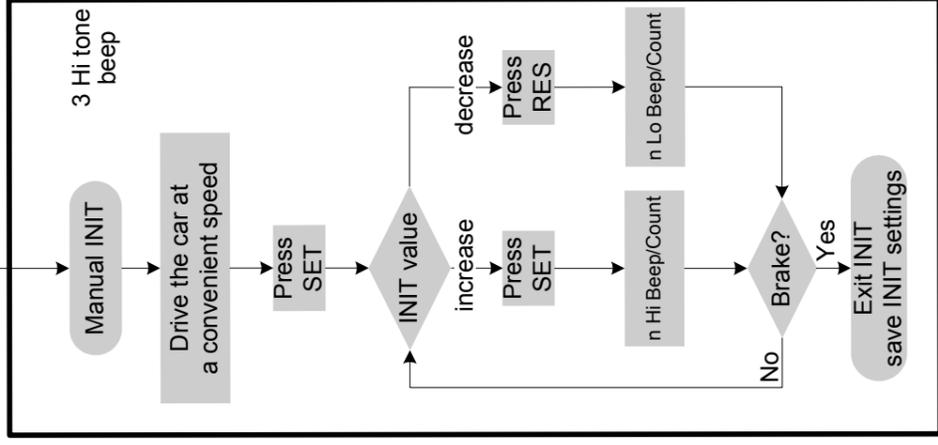
Press & hold brake pedal
 Press **RES** key **1x**
 Release brake pedal



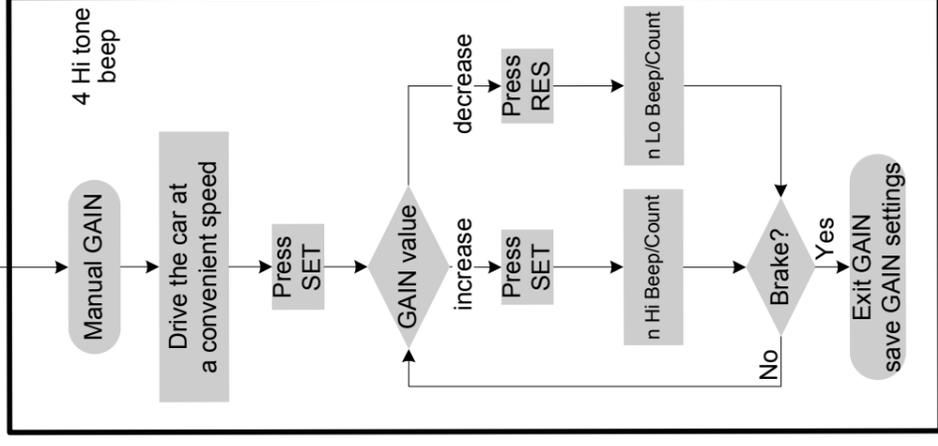
Press & hold brake pedal
 Press **RES** key **2x**
 Release brake pedal



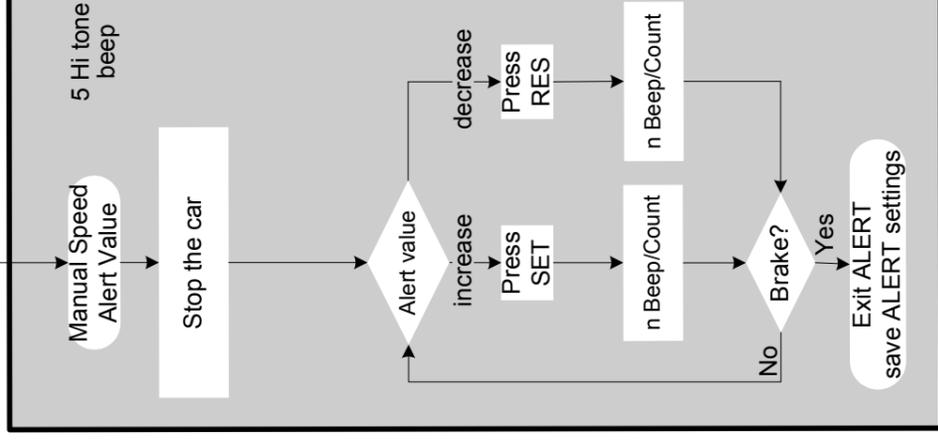
Press & hold brake pedal
 Press **RES** key **3x**
 Release brake pedal



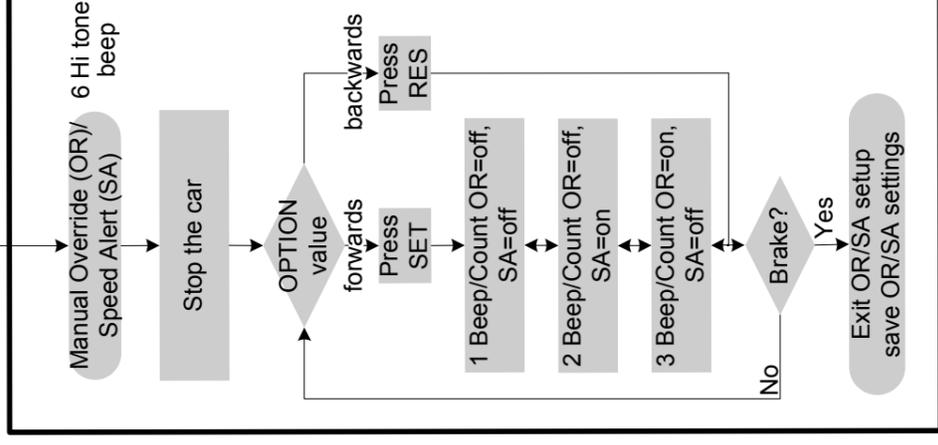
Press & hold brake pedal
 Press **RES** key **4x**
 Release brake pedal



Press & hold brake pedal
 Press **RES** key **5x**
 Release brake pedal



Press & hold brake pedal
 Press **RES** key **6x**
 Release brake pedal



EXIT SETUP MODE - press & hold brake pedal, press SET key 4 x (1 Long Beep)