Autoplugin Key-V2

Version 9.8

User Manual

Rev. D

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Glossary

CAN - Control Area Network (digital network for data transfer in vehicles)
CIP - Combined Instrument Panel
PCC – Personal Car Communicator
LED – Light Emission Diode (indicator)

Description

The **Autoplugin Key-V2** is an electronic module designed to add a remote control ability to the fuel-fired heater (parking heater, fuel operated heater, pre-heater), factory installed in **Volvo S60** (2010-2018), **V60** (2010-2018), **V70** (2007-2016)**, XC70** (2007-2016), **S80** (2007-2016) or **XC60** (2008-2016). The device is plugged into the diagnostic socket, placed on the dashboard, and controls the heater via CAN-bus.

Module Possibilities

- Immediate start of the heater with Volvo car's key. The remote control key with 5 buttons or the PCC with 6 buttons can be used for heater control
- Immediate stop of the heater with Volvo car's key
- Indication of the heater autonomous operation with direction indicators flashing in rearview mirrors.
- Additional main battery protection from discharging by inspecting of voltage level and time of the heater autonomous operation

Package Content

1. Autoplugin Key-V2 cartridge
2. User Manual brochure

Connection

The module needs that 2 timers and direct start / stop function for the heater control are present in the CIP. Therefore it may be necessary to load special software to the CIP at first by the means of Volvo dealer's equipment.
Check the "Lamp" button of the remote control key switches on the "Approach lighting". Activate the "Approach lighting" in the MY CAR menu if necessary.

Autoplugin Key does not need professional installation. Find the diagnostic socket at the left lower point of the dashboard. The socket is placed closer to the bonnet opening handle. Take the module to your hand in such manner, that the LED is placed closer to the driver's door side, and then gently push the module to the socket. LED starts flashing for approximately 10 seconds, waiting for information from CAN-bus. Wait until the LED stops flashing before the operation. Turn the ignition on if the LED continues flashing after 10 seconds period expired.

Basic Functions

1. A special combination of buttons presses is used to start the heater with a remote control key. Firstly press “Lamp” button on the key to switch on the car’s lighting. Then press “Lock” button two times within 30 seconds, while lighting is on. Every “Lock” button’s pressing should be confirmed with direction indicators flashing.
2. To stop the heater by using a remote control key, twice switch on and then switch off car’s lighting from the key. Intervals between “Lamp” button presses should not exceed 20 seconds.
3. It is possible to disable remotely startups of the heater, programmed in the CIP. Use a remote control key to send stop command when the heater is idle. Starting the heater any way or turning the ignition to “on” position enables CIP timers again.

Additional Functions

By default the module is adjusted to perform only basic functions, such as start and stop of the heater by using a remote control key. To turn on additional functions such as flashing with direction indicators in rearview mirrors, etc. enter the module into Setup mode and activate corresponding setup item (see settings table 3).

The buttons of the left-hand stalk switch and the brakes pedal are used to enter Setup mode and to change the settings. It is necessary to stop the engine and the heater before. Turn the ignition on by holding the engine start button for at least 2 seconds, then press and hold the brakes pedal. Next press and hold for at least 5 seconds “Read” button (also can be marked as “OK” button in some cars), while module’s LED flashes once a second. Both direction indicators in the CIP confirm entering to the setup mode with 2 flashes*. Release the brakes pedal and “Read/OK” button finally.

Each setup item in the settings table is a 3-digit code. To enter a digit of a code, shortly press “RESET” button so much times, as corresponds to a digit. The LED and the direction indicators symbols in the CIP confirm each button press: the LED briefly goes off, the left direction indicator flashes one time when the first or the third digit of code is entered, the right direction indicator - when the second digit of code is entered. To complete a digit entering, press and release “Read/OK” button. The CIP confirms it with one flash of both direction indicators simultaneously. When all three digits entered, the module checks the code for validity and confirms it with the direction indicators flashing. The both direction indicators flash twice simultaneously in case of valid code and flash twice alternately in case of invalid code.

If the entered digit is not correct, press and release "Read/OK" button until the module indicates an error. Enter the code once more in that case. Several codes can be entered without exit of setup mode.
Turn the ignition off to exit from the Setup mode. New settings are saved in the non-volatile memory of the module and stored there regardless of whether the module is connected or not. **Note:** start the engine inside the Setup mode if you want to exit without saving of new settings.
To reset the module to the factory settings, enter the code 8.1.1. Both direction indicators in the CIP should flash three times, confirming command execution. Then the module exits Setup mode and restarts.

* Direction indicators flash in Setup mode only in cars with analogue instrument panel. For cars with digital instrument panel use LED's indication of the module for settings change.

Settings table (1)

Settings Group	**Settings Item**	**Possible Values**
1. Heater operation time	**1.1.** Limitation of total operational time of the heater in pre-heat mode	**1.1.1** *Not adjusted **1.1.2** 40 minutes **1.1.3** 50 minutes **1.1.4** 60 minutes **1.1.5** 70 minutes **1.1.6** 80 minutes **1.1.7** *90 minutes* **1.1.8** 100 minutes **1.1.9** 120 minutes
	1.2. Limitation of one-cycle operational time of the heater in pre-heat mode	**1.2.1** 10 minutes **1.2.2** 15 minutes **1.2.3** 20 minutes **1.2.4** 25 minutes **1.2.5** 30 minutes **1.2.6** 40 minutes **1.2.7** 50 minutes **1.2.8** *Not adjusted
2. Heater control with remote control key	**2.1.** "Lock" and "Lamp" buttons' functions for heater control	**2.1.1** *"Lock" button for the heater start, "Lamp" button for the heater stop **2.1.2** "Lamp" button for the heater start, "Lock" button for the heater stop
	2.2. Number of sequential "Lamp" button presses for heater control	**2.2.1** Combination is disabled **2.2.2** **Four presses* **2.2.3** Six presses **2.2.4** Eight presses

	2.3. Number of sequential "Lock" button presses for heater control (with perimeter lighting turned on)	**2.3.1** Combination is disabled **2.3.2** ***Two presses*** **2.3.3** Three presses **2.3.4** Four presses
3. Battery Monitoring	**3.1.** Minimal battery voltage that lets the module start the heater in pre-heat mode	**3.1.1** * Not adjusted **3.1.2** 11.7V **3.1.3** 11.8V **3.1.4** 11.9V **3.1.5** *12.0V* **3.1.6** 12.1V **3.1.7** 12.2V **3.1.8** 12.3V **3.1.9** 12.4V
	3.2. Minimal battery voltage that lets the module keep operating the heater in pre-heat mode [1]	**3.2.1** * Not adjusted **3.2.2** 11.4V **3.2.3** 11.5V **3.2.4** 11.6V **3.2.5** *11.7V* **3.2.6** 11.8V **3.2.7** 11.9V **3.2.8** 12.0V
6. Indication with direction indicators in rearview mirrors	**6.1.** Indication of the heater startup	**6.1.1** *Off **6.1.2** Five flashes
	6.2. Indication of command reception from a remote control	**6.2.1** *Off **6.2.2** Three flashes
	6.3. Indication of heater operation, when start source is a car's key	**6.3.1** *Off **6.3.2** On
	6.4. Indication of heater operation, when start source is the CIP (direct or timer start)	**6.4.1** *Off **6.4.2** On
	6.5. Indication of heater operation, when start source is other than specified in 6.3,6.4	**6.5.1** *Off **6.5.2** On

8. Service menu	**8.1.** Default Settings	**8.1.1** Apply factory settings

* Factory setting
Recommended settings marked in Italics
[1] –The module turns off the heater if battery voltage lowers to the adjusted limit

Troubleshooting

If a run-time error occurs during the heater operation, Autoplugin Key informs about error code with LED flashing. The number of flashes in series corresponds to the error code. See table 2 for errors description and possible solutions.

Table 2

Error Code	Error Description	Possible Reasons of Error Appearance	Solutions
2	No answer from the heater followed the start command	Outer temperature displayed in the CIP is higher than +14 Celsius degrees	The heater operates only at temperatures below +15°C. It is heater manufacturer restriction
		Fuel level in the fuel tank is close to empty ("Fuel Low" warning indicator is illuminated in the CIP)	Refuel the car
		The heater was blocked after 3 unsuccessful starts	Try to start the heater from CIP's menu. If it doesn't start up, make diagnostics of the heater.
3	Battery low	The module has determined that battery voltage is below one specified by settings (items 3.1 and 3.2)	Charge the battery with special charger (or start the engine to charge) or cancel 3.1/3.2 module's settings
4	Time limits exceeded	Time limit for autonomous operation of the heater is achieved	Run the engine or cancel 1.1 module's settings
5	Unsuccessful start	The heater was switched off spontaneously at startup	Make diagnostics of the heater if the error appears again

6	Operation cycle too short	The heater was switched off spontaneously	Make diagnostics of the heater if the error appears again
8	CAN-bus error	There is a problem with connection to the CAN-bus	Disconnect the module from OBD-II socket and reconnect it
9	Settings error	Settings have been stored incorrectly	Reset the settings (with 8.1.1 code), readjust the module
11	Heater no connection	The heater is unplugged or out of order	Make diagnostics of the heater

The device is powered from the diagnostic socket. Therefore if there is no any indication on the module first of all check the car's fuse for the diagnostic socket.