Autoplugin Key-V3

Version 9.6

User Manual

Rev. A

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Glossary

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

Description

The **Autoplugin Key-V3** is electronic module designed to add a remote control function to the fuel-fired heater (parking heater, fuel operated heater, pre-heater), factory installed in **Volvo C30** (2006-2012)**, S40** (2004-2012), **V50** (2004-2012**)** or **C70** (2006-2013). The device is plugged into the OBD-II service socket placed on the dashboard, and controls the heater via CAN-bus.

Module Possibilities

- Immediate start of the heater with Volvo car's key. Both a key with 5 buttons and a PCC key with 6 buttons can be used for the 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 heater autonomous operation

Package Content

1. Autoplugin Key-V3 cartridge
2. User Manual brochure

Connection

The module needs that 2 timers and direct start / stop function for the heater control are present in CIP. Therefore it may be necessary to load the special software to the CIP at first by the means of Volvo dealer's equipment.

Autoplugin Key does not need professional installation. Find OBD-II service socket at the left lower point of the dashboard. The socket is placed near to the handle for bonnet opening. Take the module to your hand and gently push it to the OBD-II socket. LED starts flashing for approximately 10 seconds, waiting for information from CAN-bus. Wait until the LED stops flashing before operation. Turn the ignition on if the LED continues flashing after 10 seconds expired.

Basic Functions

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

Additional Functions

By default the module adjusted to perform only basic functions, such as start and stop of the heater by using remote control key. To turn on additional functions such as battery monitoring, 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. Switch the ignition on (turn the key to the position II), then press and hold the brakes pedal. Rotate the thumbwheel some steps to select blank display in the CIP. Then press and hold for at least 5 seconds “Read” button (“OK” button in some cars), while module’s LED flashes once a second. Both direction indicators in the CIP confirm entering 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 are entered, the module checks the code for validity and confirms it with direction indicators flashing. Both direction indicators flash twice simultaneously in case of valid code and flash twice alternately in case of invalid code.

If 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 setup mode. New settings are saved in nonvolatile memory of the module and stored there regardless of whether the module is connected or not. **Note:** If you start the engine without exit Setup mode, new settings will not be saved in memory.
To reset the module to 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.

Settings table (1)

Settings Group	**Settings Item**	**Possible Values**
1. Heater's operation time	**1.1.** Limitation of heater total operational time 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 heater 1-cycle operational time 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** 60 minutes **1.2.9** ******70 minutes*
2. Heater control with remote control key	**2.1.** "Lock" and "Lamp" buttons functions for heater control	**2.1.1** *"Lock" button for heater start, "Lamp" button for heater stop **2.1.2** "Lamp" button for heater start, "Lock" button for heater stop
	2.2. Number of sequential "Lamp" button presses for heater control	**2.2.1** Two presses **2.2.2** ******Four presses* **2.2.3** Six presses **2.2.4** Combination is disabled
	2.3. Number of sequential "Lock" button presses for heater control (when perimeter lighting is on)	**2.3.1** One press **2.3.2** ******Two presses* **2.3.3** Three presses **2.3.4** Combination is disabled

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 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 starting source is a remote control	**6.3.1** *Off **6.3.2** On
	6.4. Indication of heater operation, when starting source is the CIP (direct start)	**6.4.1** *Off **6.4.2** On
	6.5. Indication of heater operation, when starting source is other than specified in 6.3,6.4	**6.5.1** *Off **6.5.2** On
	6.7. Flashing frequency for 6.3-6.4 Setup items	**6.7.1** One flash within 3 sec **6.7.2** One flash within 5 sec **6.7.3** * *One flash within 10 sec* **6.7.4** One flash within 15 sec

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 heater operation, Autoplugin Key informs about the error code with embedded LED flashing. The number of flashes corresponds to the error code. See table 2 for the 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 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 is blocked after 3 unsuccessful starts	Try to start the heater in the CIP menu. If it doesn't start up, make diagnostics of the heater.
3	Battery low	The module has determined that the battery voltage is below the specified by settings items 3.1 or 3.2	Charge car's battery with special charger (or start 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 starting	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 of the module to CAN-bus	Check for the module connection
9	Settings error	Settings have been stored in module's memory incorrectly	Reset the settings (8.1.1), readjust the module
11	Heater no connection	The heater is unplugged or out of order	Make diagnostics of the heater