

# **Autoplugin RCP-V1**

## **Installation Manual**

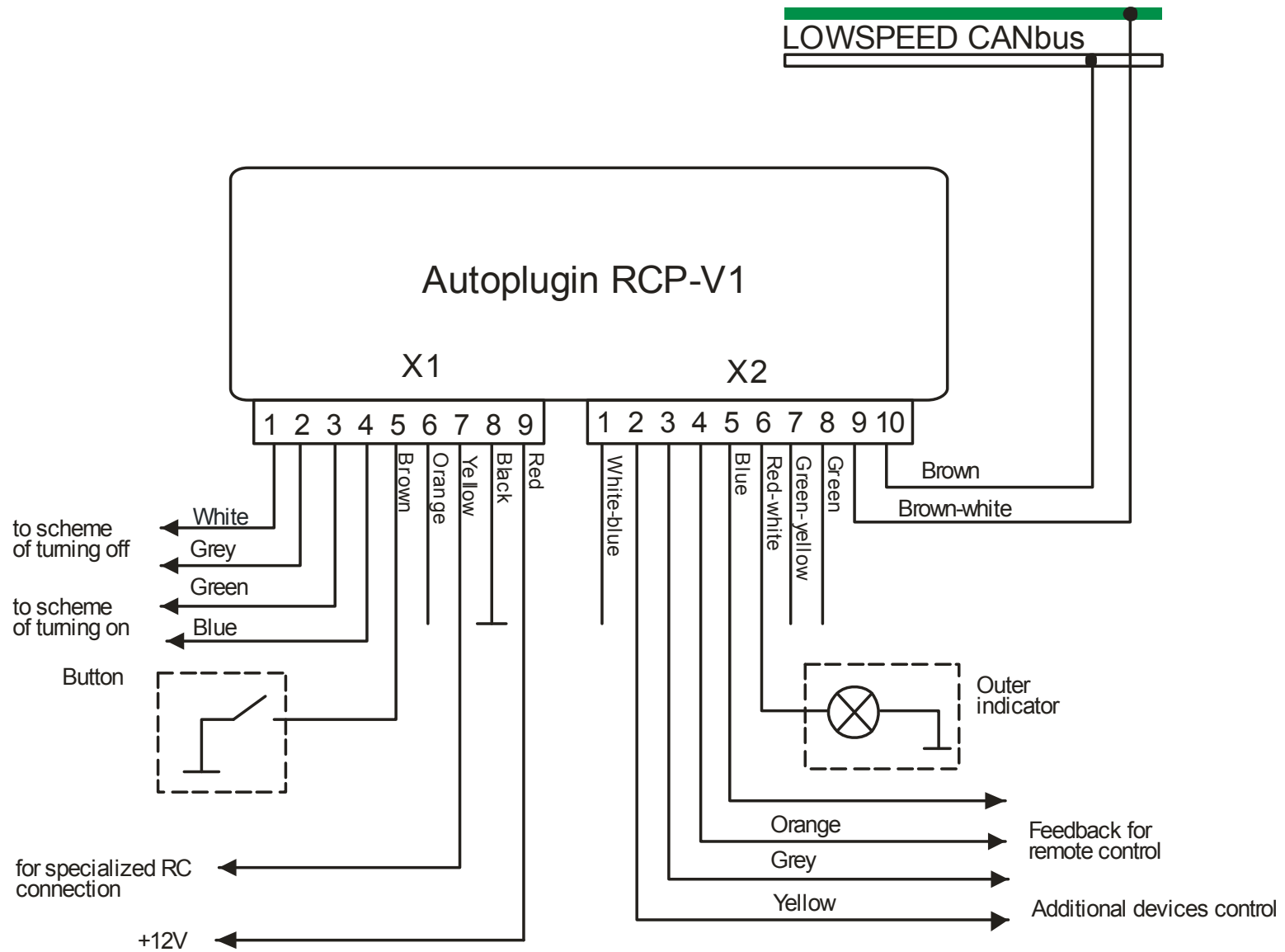


Figure 1

## 1) Connection schemes

- **General connection scheme (fig.1, page 2)**

Explanations to the scheme:

- It is enough to connect power wires (X1.8, X1.9) and CAN-bus wires (X2.9, X2.10) to the module to obtain a possibility to start the heater using Volvo key.
- The car's wiring marked in colour.
- Optional elements are outlined by dashes

- **Connection of the inputs Heater\_on± and Heater\_off±**

You can connect and use a set of devices as a remote control of the fuel-fired heater: specialized heater remotes (such as Telestart, EasyStart, Smart Start), additional alarm systems remote controls, GSM mobile phones in conjunction with automotive GSM-modules, etc.

If the remote control has output channels that give short impulses in active state, it is possible to apply the schemes given at fig. 2-6. The remote control with two independent channels can separately turn the heater on and off.

- The fig.3 presents the scheme to turn the heater on by the impulse of positive polarity. The fig.4 presents the scheme to turn the heater on by the impulse of negative polarity.

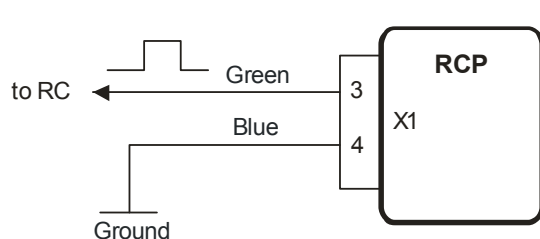


Figure 2

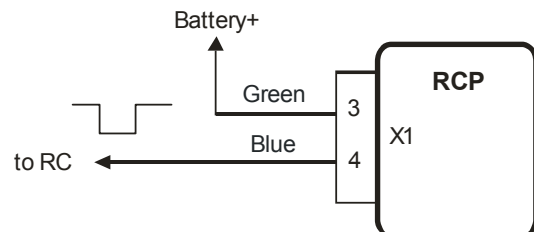


Figure 3

- The fig.4 presents the scheme to turn the heater off by the impulse of positive polarity. The fig.5 presents the scheme to turn the heater on by the impulse of negative polarity.

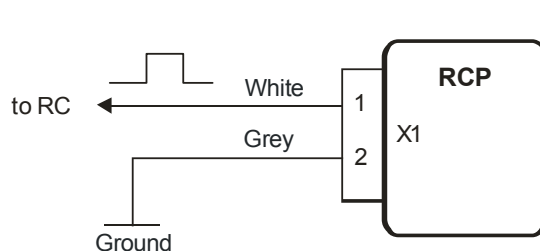


Figure 4

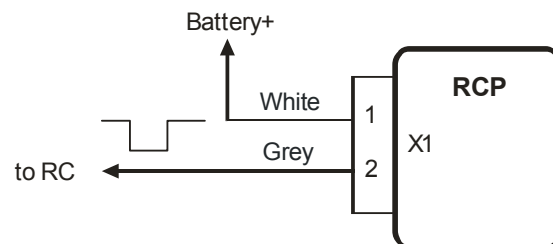


Figure 5

- The remote control with the only one output channel may be connected by the scheme at fig. 6 to add a possibility not only to turn the heater on, but also turn the heater off too. Every one impulse on the output of the remote control receiver unit will move the heater to the opposite state: switch on the idle heater, switch off the operated heater. To realize this mode it is necessary to connect in pairs the inputs Heater\_on+ with Heater\_off+, and the inputs Heater\_on- with Heater\_off-.

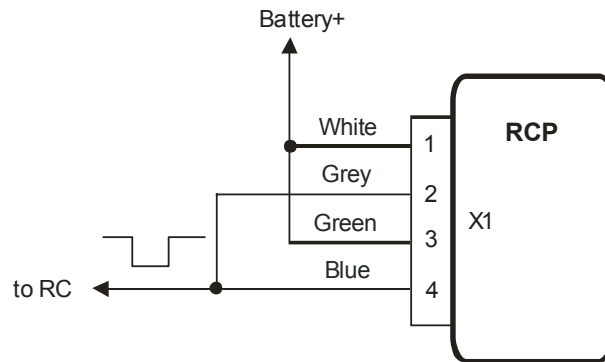


Figure 6

- **Connection of the input RC\_in**

- The input RC\_in is intended for the connection of specialized remote controls such as DEFA Smart Start, Hydronic Easy Start, Webasto Telestart. If a problem exists with direct connection of the remote control output line to the input RC\_in, it is recommended to make a connection by the scheme at the fig.7.

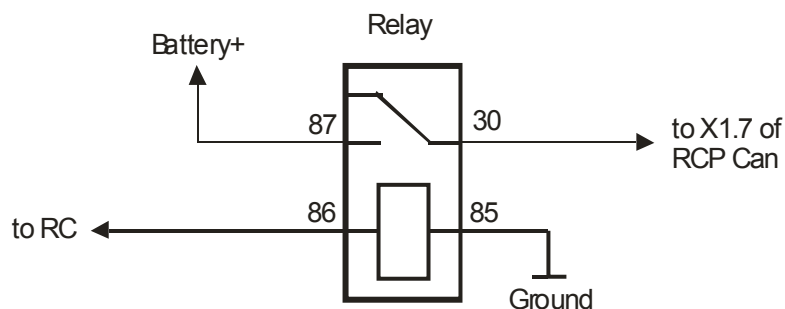


Figure 7

- Some GSM modules can control an additional device through the inner relay. They may be connected to RCP Can by the scheme at the fig.8

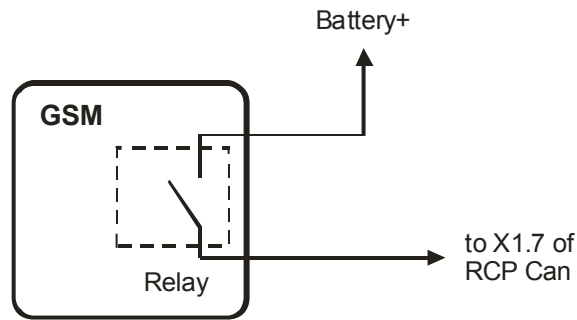


Figure 8

- **Alerts receiving**

If remote control unit has got inputs to obtain information about the heater operation, they can be connected to the RCP Can outputs Alert\_1 and Alert\_2. The outputs have negative polarity. Therefore if remote control unit not fit it, it needs to apply a matching circuit (with relay ex.).

Events given on the outputs Alert\_1 and Alert\_2 are adjusted by the settings 7.3 and 7.4 accordingly. Also the RCP output line Timer\_out can be used as a notification how much time the heater operates.

- **Status output line application**

1. Indication of the heater's operation

The module can indicate the heater's operation using direction indicators signals. Connect the module's output X2.2 to the yellow wire (pin 3 of the connector) of the hazard warning switch, and activate the settings 7.5.3 (the settings 6.3-6.5 also need to be adjusted) in the RCP.

- 2) **Installation procedure**

- **General recommendations**

It is highly recommended to disconnect main battery before the installation.

Required tools: Torx screwdriver, wire cutter, wire stripper.

- Remove the panel on the left side of cargo area (luggage compartment)
- Find place behind the panel to install the module (mounted on double-sided tape)
- Connect the module to the vehicle's wiring according to the scheme at the fig.1. Connect the module to the receiver unit of remote control, according to the schemes at the figures 3-8. Make task specific connections, if necessary.

The module is connected to car's wiring using quick splice connectors (supplied).

RCP's power (pin X1.9) connects to a wire, permanently connected to positive battery terminal (i.e. free contacts of unused fuses F13, F14, F15) . RCP's signal ground (pin X1.8) connects to a wire, permanently connected to negative battery terminal or to the car's body (i.e. black wire of green connector, attached to the black harness).

The signal «CAN-L» (pin X2.9) connects to the green wire of twisted pair, the signal «CAN-H» (pin X2.10) – to the white wire of twisted pair (can be found inside the black harness). Twist the brown and brown-white wires of the connector X2 to the pair before connections. It is not recommended to lengthen these wires.

- Connect both connectors to the module (X2 should be connected first)
- Insert the key to the ignition lock, turn it to the II position. Connect the vehicle's battery (if it was disconnected early). Turn the ignition off. *It is important to observe the sequence of battery connection.*
- Test the heater start by the module's command
- Fix the module using double-sided adhesive tape
- Install interior elements in the reverse order of removal
- Adjust the module in Setup mode if necessary. Make notes in programming table of user manual about adjustments were made.

### 3) Troubleshooting

If there is a problem with the module's operation exist, first of all check indication of the built-in LED. After the power connection, LED turns on for a 1 second and then has to turn off. In the programming mode LED lights continuously. If a run-time error appears at startup, LED indicates an error by flashings. The number of flashes corresponds to the error code. See table 1 for the codes description and possible solutions.

**Table 1**

<b>Error Code</b>	<b>Error Description</b>	<b>Possible Reasons of Error Appearance</b>	<b>Solutions</b>
2	No answer from the heater followed the start command	The heater control is not activated in the CIP	Configure the heater by Volvo car dealer's equipment
		Fuel level in the tank is close to empty ("Fuel Low" warning indicator is lighting in CIP)	Refuel the car

		The heater has been blocked after 3 unsuccessful starts	Try to start the heater from CIP menu. If it not started to burn, make a diagnostics of the heater.
3	Battery level is low	The module has determined that the battery voltage at the heater startup or during the heater operation is below the specified settings 3.1 и 3.2	Charge vehicle'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 (with active setting 1.1)	Run the engine or cancel 1.1 module's setting
5	Unsuccessful start	The heater was switched off spontaneously at a 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 of the module to the CAN-bus	Check for the module's connection
9	Settings error	Settings have been incorrectly stored in RCP memory	Reset the settings (8.1.1), readjust RCP
11	Heater no connection	The heater is unplugged from CAN-bus or is out of order	Make diagnostics of the heater

## **Glossary**

CAN - Control Area Network (digital network for data transfer in vehicles)

RCP - Remote Control Plug-in (electronic module for the heater remote control)

CIP - Combined Instrument Panel