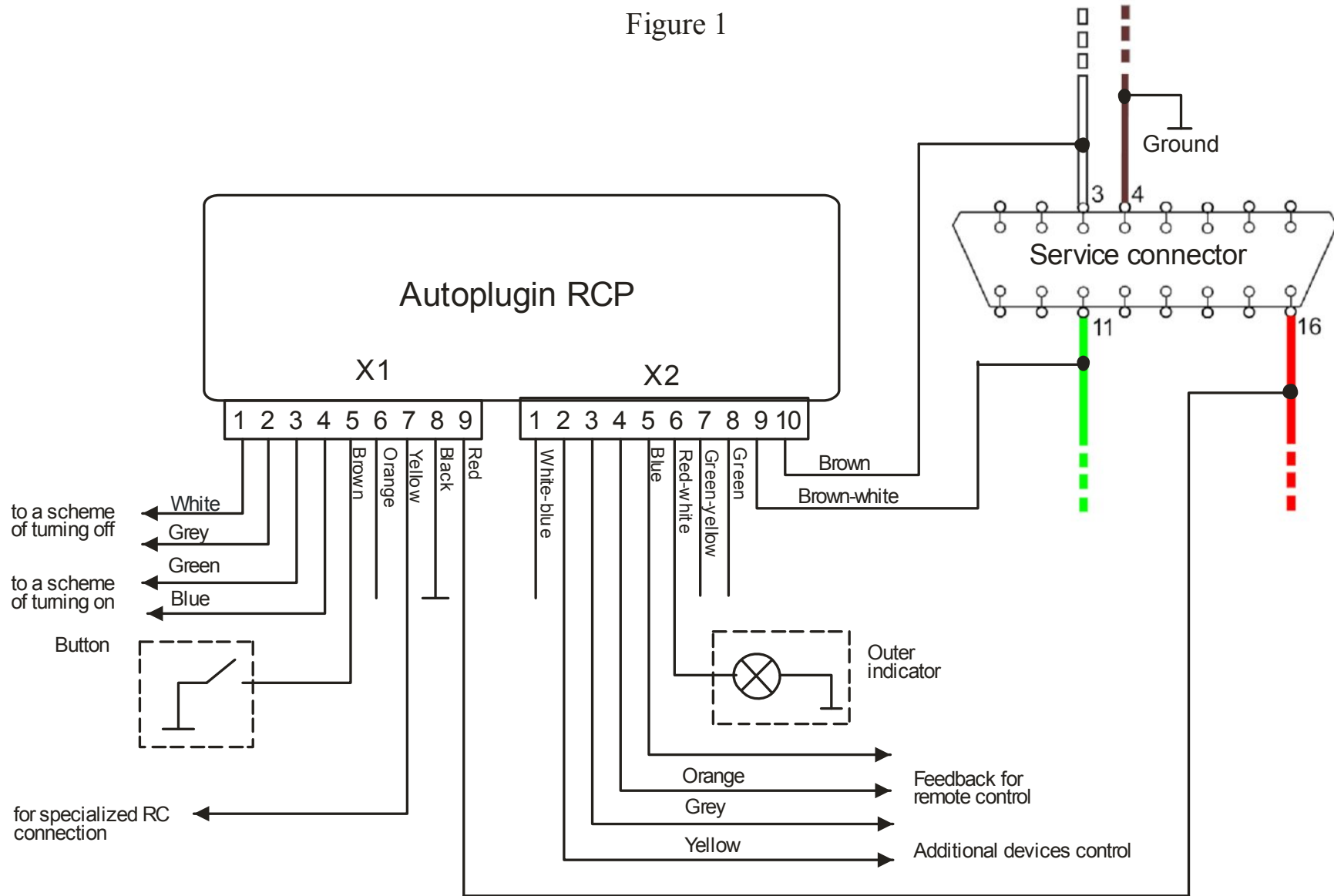


Autoplugin RCP-V1R

Installation Manual

Rev A

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 from Volvo key. You can use supplied PnP-cable for such a connection.
- 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, mobile phones in conjunction with automotive GSM-modules, etc.

If the remote control device has output channels that give short impulses in active state, it is possible to apply the schemes given at fig. 2-6. The RC with two output 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.

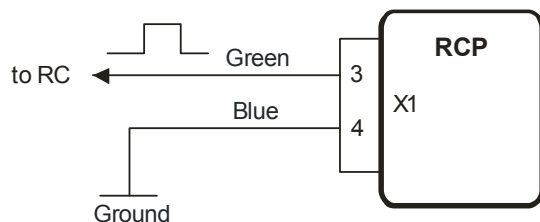


Figure 2

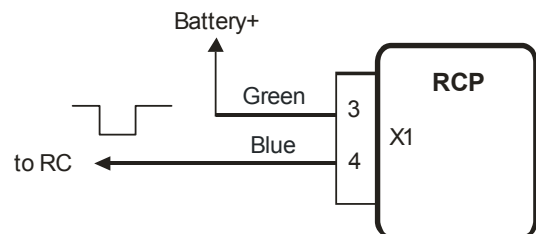


Figure 3

- 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.

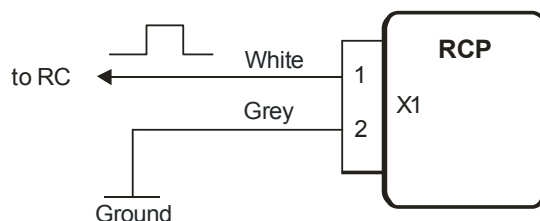


Figure 4

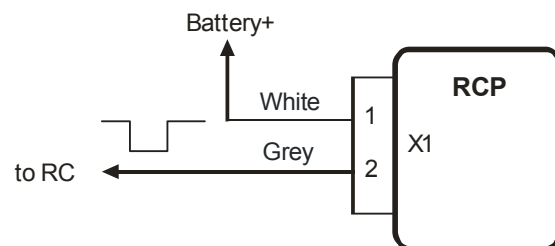


Figure 5

- The remote control with only one output channel may be connected by the scheme at fig. 6. The scheme provides possibility not only to turn the heater on, but also to turn the heater off. Every one impulse on the output of the remote control receiver unit moves the heater to opposite state: switch on idle heater, switch off 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-.

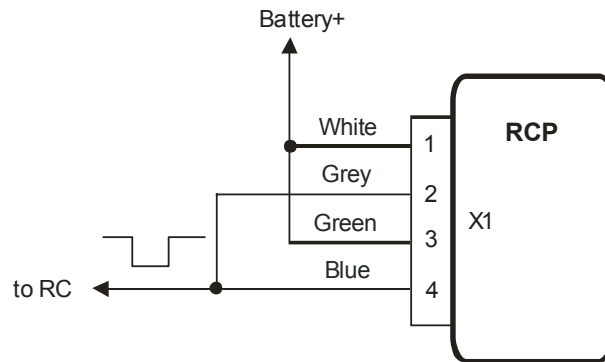


Figure 6

- **Connection of the input RC_in**

- The input RC_in is intended for connection of specialized remote control devices such as DEFA Smart Start, Hydronic Easy Start, Webasto Telestart. If direct connection of RC's output control line to the RCP's input line RC_in is not functional, try the scheme at the fig.7.

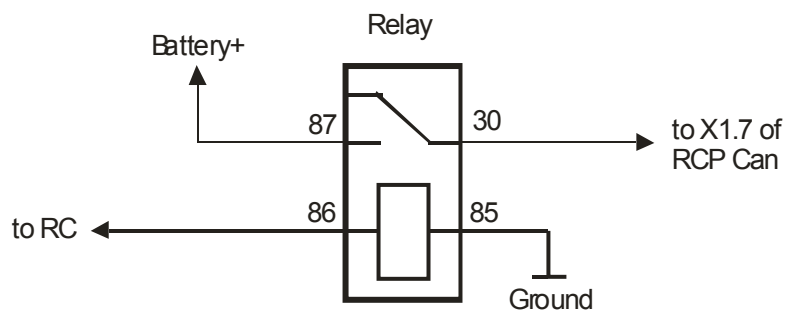


Figure 7

- Some GSM modules control additional device by the means of embedded relay. These may be connected to RCP using the scheme at the fig.8

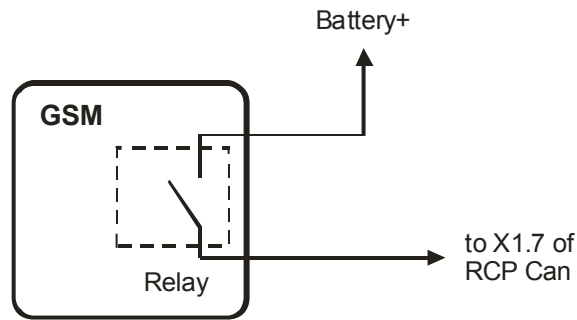


Figure 8

- **Alerts receiving**

If remote control unit has got inputs to obtain information about the heater operation, these can be connected directly to the RCP outputs Alert_1 and Alert_2. The outputs are negative polarity. If RC's inputs have positive polarity, 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 notification how much time the heater operates.

- **Status output line application**

1. Indication of the heater's operation

The module can indicate heater 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 RCP.

- 2) **Installation procedure**

- **General recommendations**

It is highly recommended disconnect main battery for permanent installation procedure.

The required tools: Torx screwdriver, wire cutter, wire stripper.

- Remove the screws that secure the panel around service connector on the left side of the dashboard. Gently pull the panel and remove it
- Find place inside the dashboard to install the module (mounted on double-sided tape)
- Connect the module to the car'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 3-9. Make task specific connections, if necessary.

The module is powered and connects to the CAN-bus wires near the service connector by quick splice connectors (supplied).

The module's power (pin X1.9) connects to the red wire of service connector (pin 16), the module's signal ground (pin X1.8) – to the brown wire of service connector (pin 4).

The signal «CAN-L» (pin X2.9) connects to the green wire (pin 11), the signal «CAN-H» (pin X2.10) – to the white wire (pin 3). 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 switch, turn it to the II position. Connect the car's battery (if was disconnected early). Turn the ignition off. *It is important to observe the sequence of battery connection.*
- Test heater start from the module
- Fix the module using double-sided adhesive tape
- Install interior elements in the reverse order of removal
- Adjust the module in Setup mode if it necessary. Make notes in the programming table of user manual about the adjustments

3) Troubleshooting

If you have problems with module operation, first of all check indication of the built-in LED. Then power is applied to the module, 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 heater start, 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

Error Code	Error Description	Possible Reasons of Error Appearance	Solutions
2	No answer from the heater followed the start command	The heater is not activated in CIP	Configure the heater by Volvo 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 is blocked after 3 unsuccessful starts	Try to start the heater from CIP menu. If it not started to burn, make diagnostics of the heater.

3	Battery low	The module has determined that battery voltage at startup or during heater operation is below the specified settings 3.1 и 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 (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 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 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)

CIP - Combined Instrument Panel

RC – Remote Control

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