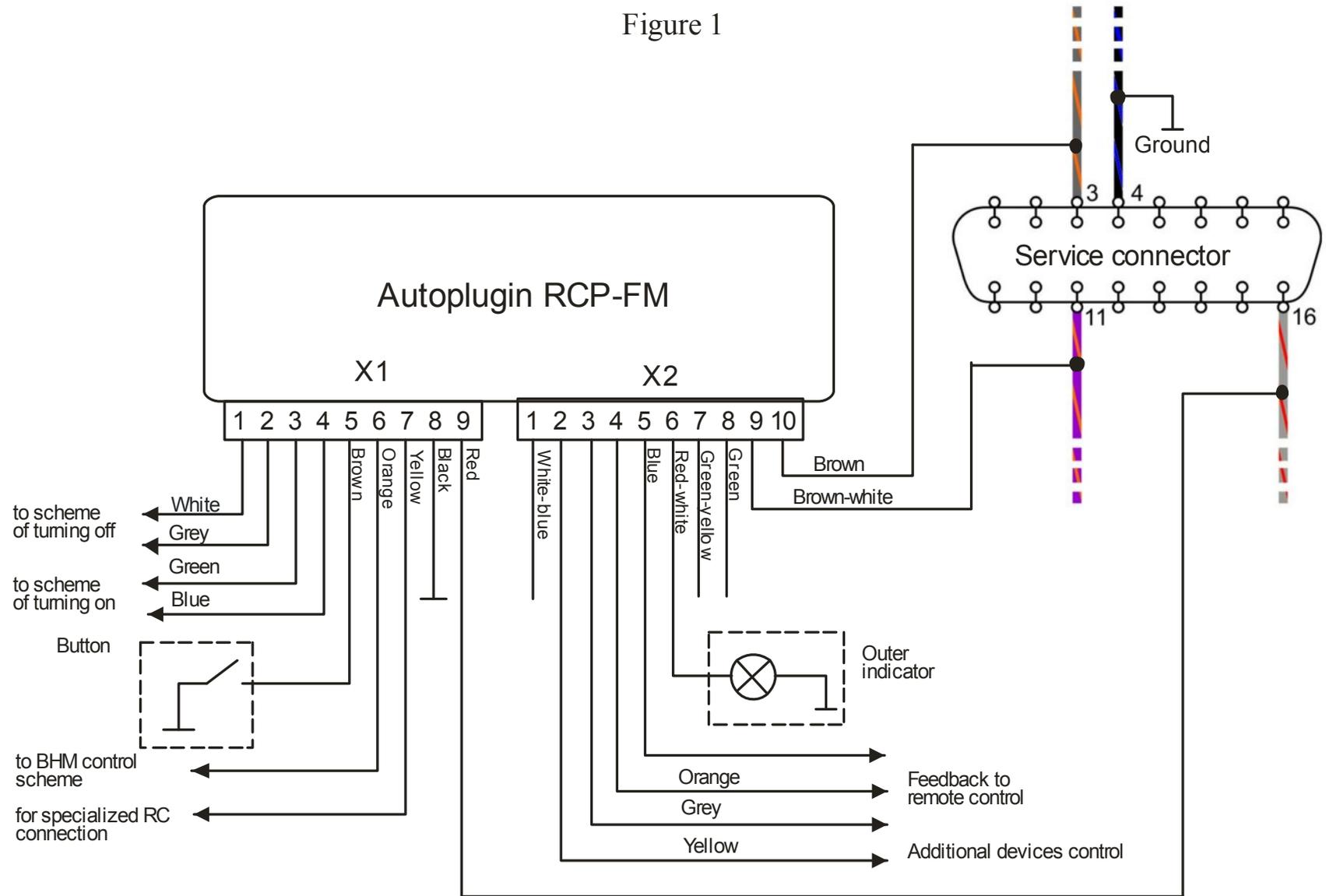


Autoplugin RCP-FM

Installation Manual

Figure 1



1) Connection variants

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 Ford key. It can be made either by the plug-n-play cable (quick connection), or by quick splice connectors (supplied for permanent connection). If you wish to connect additional remote control, permanent connection is recommended.

2) Permanent connection schemes

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

Explanations to the scheme:

- 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 for the fuel-fired heater: specialized heater remotes (such as Telestart, EasyStart, Smart Start), automotive GSM-modules, etc.

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

- The fig.2 presents the scheme of turning the heater on by the impulse of positive polarity. The fig.3 presents the scheme of turning the heater on by the impulse of negative polarity.

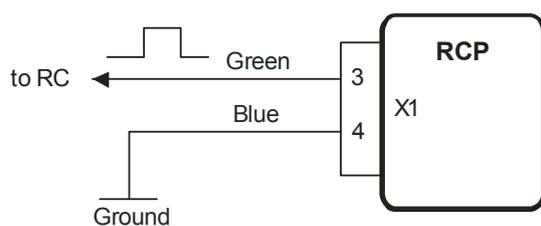


Figure 2

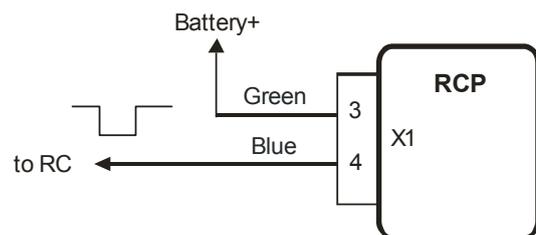


Figure 3

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

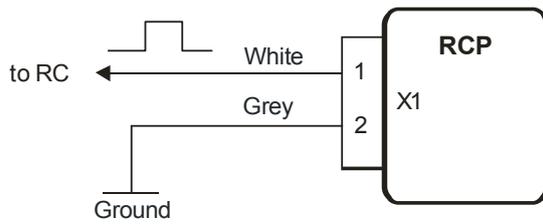


Figure 4

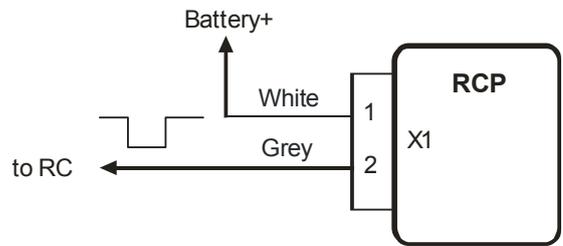


Figure 5

- The remote control with the only one output channel may be connected by the scheme at fig. 6. Such a connection gives 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 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-.

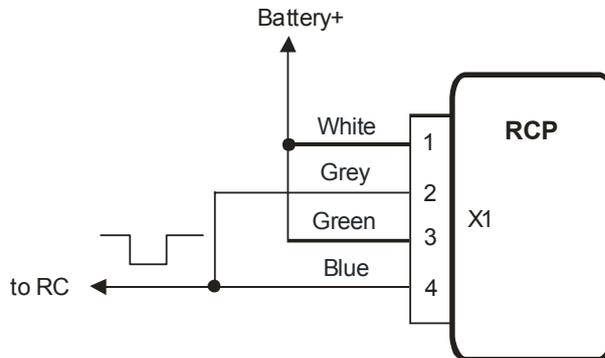


Figure 6

- **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.

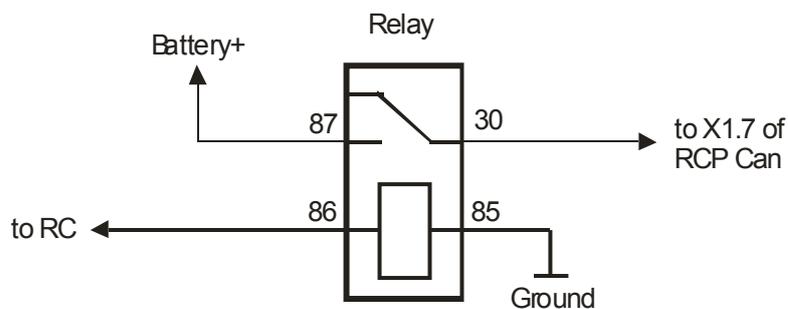


Figure 7

- 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

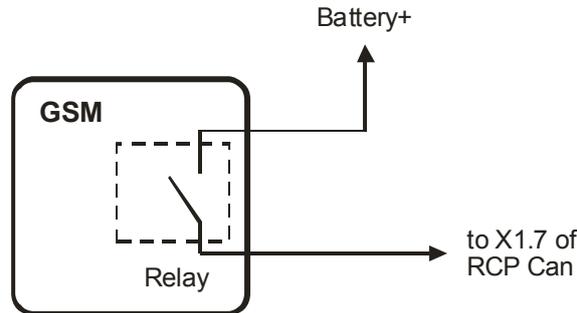


Figure 8

- **Alerts receiving**

If remote control unit has got inputs to obtain information about the heater operation, these can be connected directly to the RCP's outputs Alert_1 and Alert_2. The outputs are negative polarity. If inputs of remote control unit are 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.

3) Installation procedure

- **General recommendations**

It is highly recommended to disconnect the main battery before the installation in the case of permanent connection to the wiring. Note that the battery disconnection may reset the power windows settings, heater settings in the CIP, and also the radio unit may require code entering after battery reconnection. See car's User Manual for details.

- Find the service connector. It placed at the left side of the dashboard below the lighting control switch, and closed by the case. Detach plastic elements of the dashboard from the connector to the edge of the dashboard (Torx T20 screwdriver needed).
- Find place inside the dashboard to install the module (mounted on double-sided tape). It is permissible to install the module inside the dashboard using plug-n-play cable.

- 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 3-9. Make task specific connections if necessary.

The module is powered and connects to the CAN-bus wires near the service connector using quick splice connectors (supplied). See fig.9 for details. Twist the brown and brown-white wires of the module's connector X2 to the pair before making connections. It is not recommended to lengthen these module's wires.

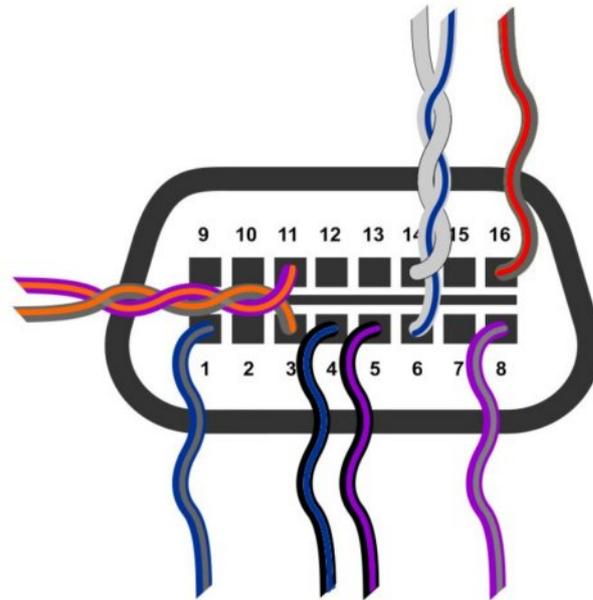


Figure 9

- Connect both connectors to the module
- Connect vehicle's battery
- Turn the ignition on to let the module get information from CAN-bus. Wait until the LED goes off.
- Test heater start from a remote controller, car's key or button.
- Fix the module using double-sided adhesive tape
- Install plastic elements of the dashboard and close the case of service connector
- Adjust the module in Setup mode if necessary. Make notes in the programming table of the User Manual about the adjustments

4) Troubleshooting

If you have problems with the module operation, first of all check indication of the built-in LED. If a run-time error occurs at startup or during operation, LED indicates the error by flashings. The number of flashes in series 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 | Outer temperature is upper than +15 Celsius degrees | The heater works only at outside temperatures below +15°C. It is heater manufacturer's restriction |
| | | 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 5 unsuccessful starts | Try to start the heater from CIP menu. If it not started to burn, check for fuel and coolant quality (especially at extreme cold temperatures) and possible heater's exhaust system clogging by snow. Then unblock the heater in the Setup mode. |
| 3 | Battery low | The module has determined that battery voltage at heater startup or during heater operation is below the specified settings 4.1 и 4.2 | Charge battery with special charger (or start engine to charge) or cancel 4.1/4.2 module's settings |
| 4 | Time limits exceeded | Time limit for autonomous operation of the heater has achieved (with active setting 2.1.2 - 2.1.9) | Run the engine. It is recommended to make trips between heater operation cycles longer than heater operation cycles |
| 5 | Unsuccessful start | The heater switched off spontaneously at startup | Make diagnostics of the heater if the error appears again |
| 6 | Operation cycle too | The heater was switched off spontaneously with | Make diagnostics of the heater if the error appears again |

| | | | |
|----|----------------------|---|--|
| | short | operating time of less than 20 minutes | |
| 8 | CAN-bus error | There is a problem with connection of the module to the CAN-bus | Check for the module's cables 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

BHM or Boost Heat Mode – operational mode of the heater, when it operates together with the engine to help the engine and the interior warm up more quickly.