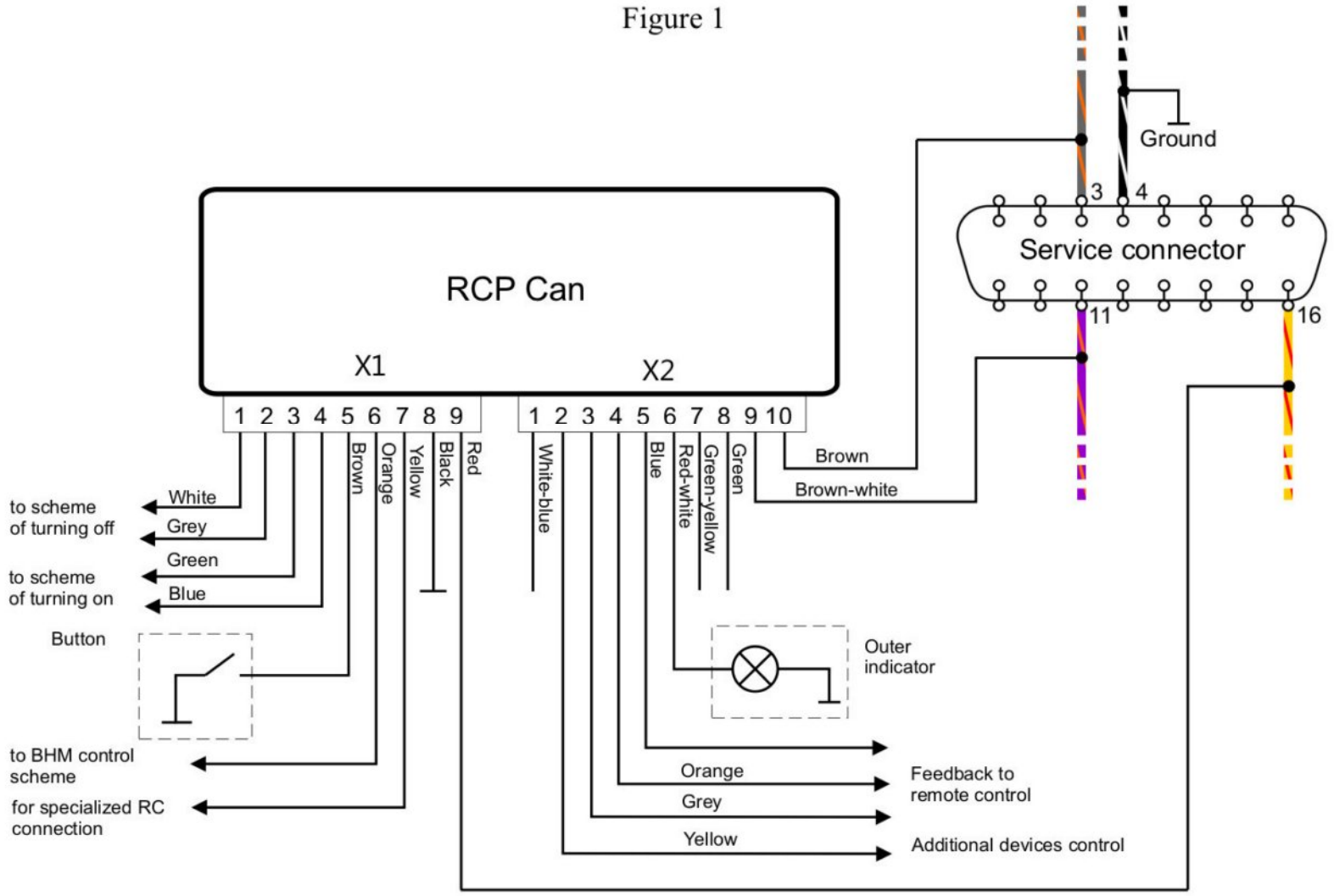


# **RCP Can-F3**

## **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 by Ford key. It can be made or by plug-n-play cable (quick connection), or by quick splice connectors (supplied for permanent connection).
- The car's wiring marked in colour.
- Optional elements are outlined by dashes
- An original Ford button can be additionally installed as a button for the heater control purpose. Buttons with various logos are optionally available.

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

You can connect and use a set of devices as a remote control of your 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 your 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.2 presents the scheme to turn the heater on by the impulse of positive polarity. The fig.3 presents the scheme to turn the heater on by the impulse of negative polarity.

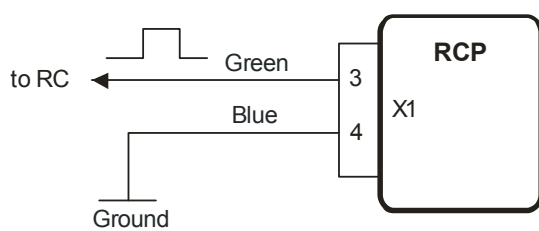


Figure 2

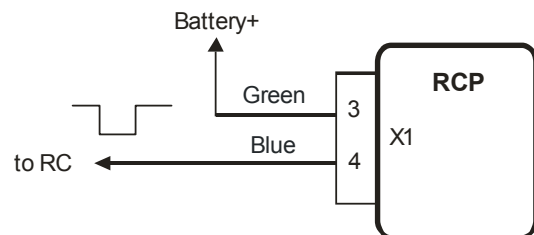


Figure 3

- 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.

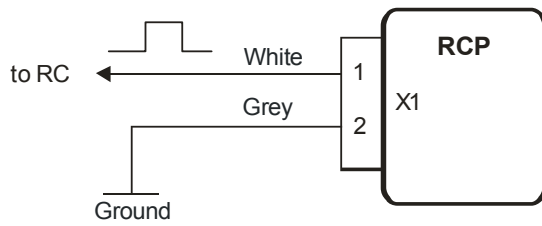


Figure 4

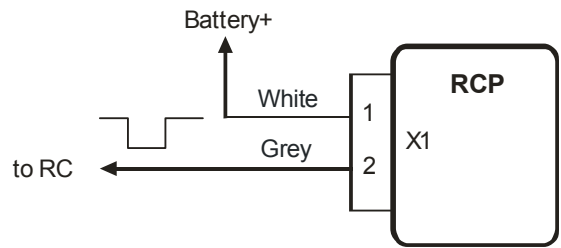


Figure 5

- 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-.

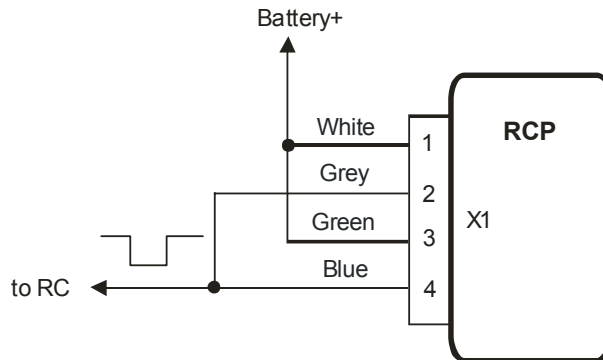


Figure 6

### • 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.

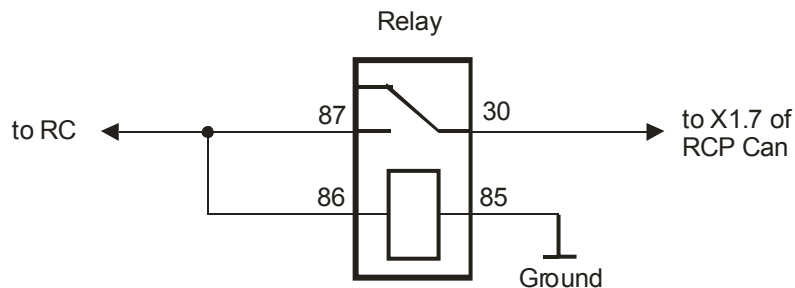


Figure 7

- 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

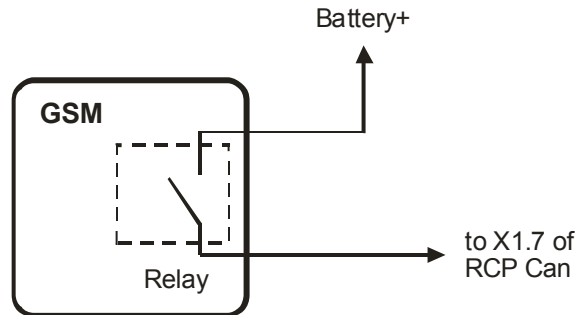


Figure 8

- **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.

- **Manual control of the boost heat mode**

The boost heat mode can be controlled manually by additional switch button (fig. 9). The button function will depend on the setting 1.1.

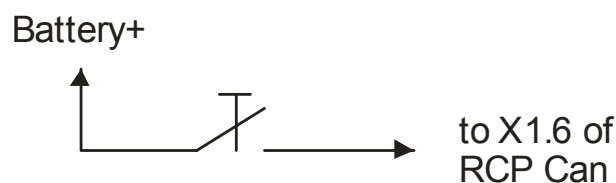


Figure 9

- **Status output line application**

1. Ventilation shut down during the heater autonomous operation.

The scheme with additional relay at fig.10 is used to turn off the automatic climate control module when the heater operates on pre-heat mode. This helps to prevent main battery from discharging if trips are not enough long to charge the battery between two cycles of the heater operation. To turn the

ventilation off it is necessary to activate the setting 7.5.6, to turn on back – setting 7.5.8.

Body Control Module (BCM) is placed upper the passenger legs. The layout of C1 connector on BCM can be found at the fig.13 (page 8).

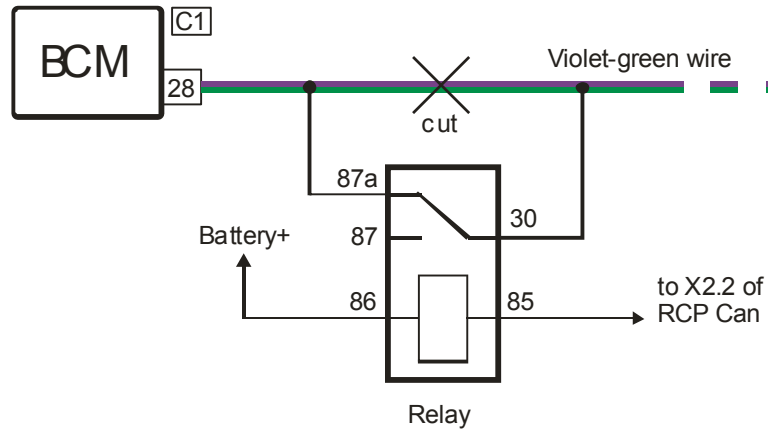


Figure 10

## 2) Installation procedure

### • General recommendations

It is highly recommended to disconnect the main battery before the installation. Note that the battery disconnection may reset the power windows settings, the heater settings in DIS, and also the radio will ask to enter the code after the battery reconnection. See vehicle's user manual for details.

- Open the small glove box at the left side of the dashboard, below the lighting control switch (fig.11)
- Find a place inside the dashboard to install the module (mounted on double-sided tape). It is permissible to install the module inside of the box 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 by quick splice connectors (supplied). The backside view of the service connector presented at the fig.12.

The module's power (pin X1.9) connects to the yellow-red (yellow with red stripe) wire of service connector (pin 16), the module's signal ground (pin X1.8) – to the black-white wire of service connector (pin 4).



Figure 11

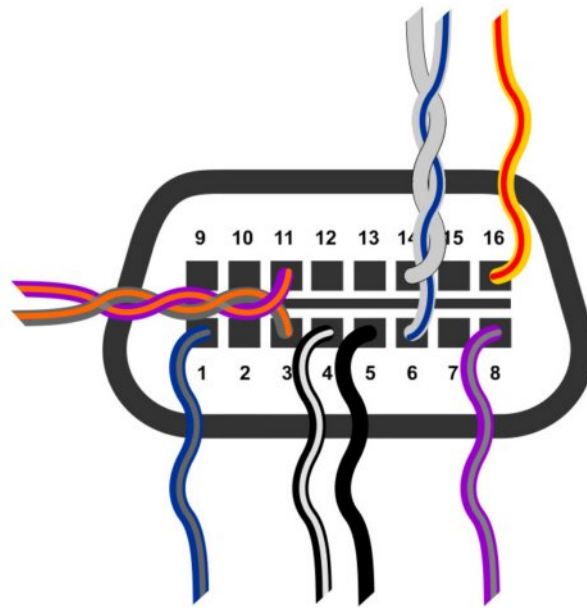


Figure 12

The signal «CAN-L» (pin X2.9) connects to the violet-orange wire (pin 11), the signal «CAN-H» (pin X2.10) – to the grey-orange wire (pin 3). 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.

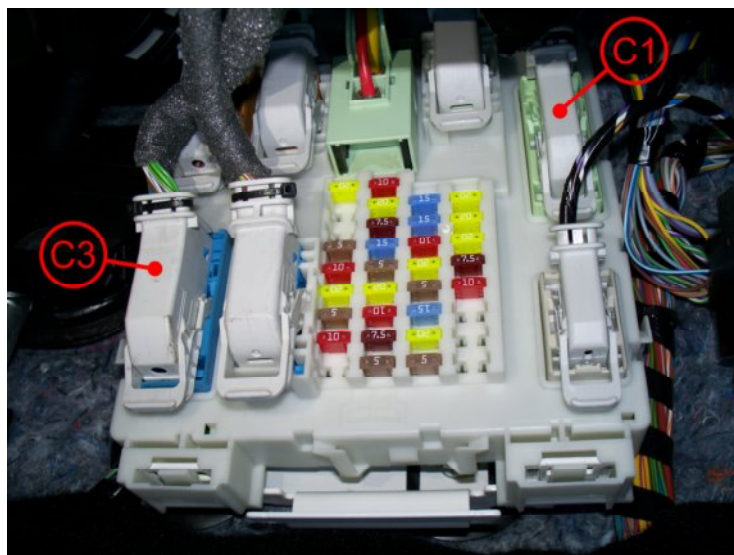


Figure 13

- Connect both connectors to the module (X2 should be connected first)
- Connect the vehicle's battery
- Turn the ignition on to let the module get the information from CAN-bus
- Test the heater start using remote controller or by the vehicle's key.
- Fix the module using double-sided adhesive tape
- Close the small glove box. Check that the box not clings to the module or wires.
- Adjust the module in programming mode if necessary. Make notes in the programming table of the user manual about the adjustments

### 3) Troubleshooting

If you have problems with the module's operation, first of all check indication of the built-in LED. After the power connection, LED will turn 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 the heater start, LED will indicate 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
1	Start command cannot be executed	The heater is not available for remote control	Try to start the heater from DIS menu, run the engine



2	No answer from the heater followed the start command	Outer temperature is upper than +15 Celsius degrees	The heater works only with temperatures below +15°C. It is the heater manufacturer's restriction
		The engine is hot (no need to pre-heat)	Let the engine cool down below +75 degrees
		The heater hasn't finished previous cycle of operation yet (you can hear the noise from the air blower fan)	The heater will startup after previous cycle of operation will be fully completed
		Fuel level in the tank is close to empty ("Fuel Low" warning indicator is lighting in DIS)	Refuel your vehicle
		The heater is blocked after 5 unsuccessful starts	Try to start the heater from DIS 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 by RCP command 9.1.1.
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 4.1 и 4.2	Charge vehicle's battery with special charger (or start engine to charge) or cancel 4.1/4.2 module's settings
4	Time limits exceeded	The heater restart is not possible without engine run. It is the heater manufacturer's restriction	Change default setting 2.1.1 to another one (2.1.2 - 2.1.9) to enable heater restart and bypass the restriction
		Time limit for autonomous operation of the heater is achieved (with active setting 2.1.2 - 2.1.9)	Run the engine. It is recommended to have trips between heater operation cycles longer than heater operation cycles

5	Unsuccessful start	The heater was switched off spontaneously at a startup	Make a diagnostics of the heater if the error is repeated
6	Operation cycle too short	The heater was switched off spontaneously with operating time of less than 20 minutes	Make a diagnostics of the heater if the error is repeated
8	CAN-bus error	There is a problem with connection of the module to the CAN-bus	Check the module 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 a diagnostics of the heater