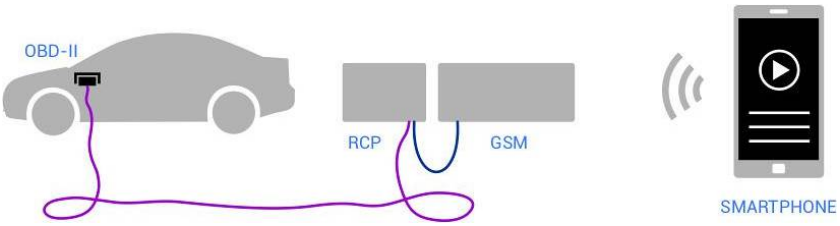
Autoplugin **GSM Kit**

User Manual

Rev D

Description

Autoplugin GSM Kit is intended for remote control of the car's factory installed fuel fired heater via mobile phone or smartphone. It includes RCP Can module, GSM module (modem) and application for Android-based smartphones (Android version 4.1 and higher).



Operation Principles

A smartphone or mobile phone can be used for the heater control. Smartphone sends SMS-commands to modem to control the heater; modem sends back SMS-notifications with heater's status. Specially designed application Therminal is used for convenient heater control. Also user can send SMS-commands manually, without using application (see chapter **SMS Commands**).

Advice: It is expedient to use SMS-optimized subscription for the modem. And pay for SMS packets for smartphone. Combine smartphone account with GSM module account, if possible.
Average amount of sent messages per heating cycle is 1,5 for smartphone and 4 for modem

---

Why SMS?

SMS in comparison to another cellular services has such advantages as: the best stability in terms of weak signals of cellular network, high priority under conditions of high network traffic, payment is only upon delivery (no use - no costs)

Installation

Application Installation

Use Google Play to install the application. The application's name for searching: *Therminal*

Initialization

Initialization of GSM modem should be performed before the operation. The command for initialization is placed in Settings section. During initialization Therminal informs the modem about main user's number and customizes data exchange. User should enter the modem's number in the international format (with the "+" prefix) before start the initialization.

NB! Uncompleted initialization can result in incorrect modem's operation and unnecessary costs.

Manual Initialization

If Therminal can't be used, perform the initialization manually using SMS:

123456 INIT

*Type message in uppercase letters, with space between 123456 and INIT, without spaces after INIT. Send SMS from the main user's phone only. It is necessary to wait for the answer of modem with the text contained «**Main User OK. Standard mode OK…**» before next message sending*

ALARM SMS

*Type message in uppercase letters, with space between ALARM u SMS, without spaces after SMS. Answer from modem should be «**ALARM SMS OK**». Send SMS from all the phones to be used for the heater control.*

INTERNET OFF

Type message in uppercase letters, with space between INTERNET and OFF, without

*spaces after OFF. Answer from modem should be «**INTERNET OFF OK**». Send SMS from the phone of main user only.*

ASK BALANCE *100#

Type message in uppercase letters, with space between ASK, BALANCE and code, without spaces after the code. Ask GSM provider for USSD code for the balance acquire (usually *100#*). Answer from modem should be «**ASK BALANCE OK**». Send SMS from the phone of main user only.*

Additional commands

123456 — Reset users list

NEW USER <*Number*> — Add new user

*Type message in uppercase letters, with space between NEW, USER and phone number. Number should begin from "+" symbol. Answer from modem should be «NEW **USER OK**»*

USERS? —Ask modem for registered users list

*Answer example from modem: **USERS? +79219472546, +79052117444** (available in Journal menu)*

ALRM PRIOR 4 — Send all types of notifications *(it is necessary for Therminal operation)*

ALRM PRIOR 5 — Send only the notification of heating completion

ALRM PRIOR 9 — Don't send notification for error occasion or heating completion *(modem feedback disable)*

Type messages in uppercase letters, with space between ALRM, PRIOR and a digit

Heater operation time

Autoplugin GSM Kit starts the heater in the direct start mode. In this mode factory installed fuel fired heater has standard fixed time of operation. Standard operation time can be limited in Therminal by reasons of whether conditions, battery conditions, etc.

Vehicle	Standard operation time
Ford Focus 2, C-Max, Kuga 1	30 min
Ford Focus 3, C-Max 2, Grand C-Max, Kuga 2	30 min
Ford Transit Custom, Tourneo Custom	30 min
Volvo S60, S80, V70, XC70, XC90	60 min
Volvo S60 II, S80 II, V60, V70 II, XC70 II, XC60	50 min

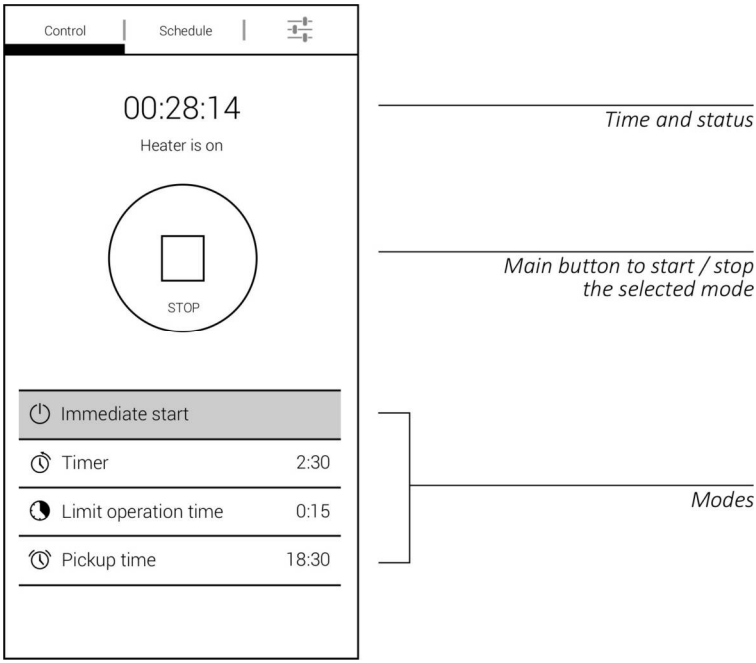
By default Therminal uses standard operation time and corresponding setting “Heater stop method” with the value «Automatically».

If user reduces operation time setting in Therminal, the setting “Heater stop method” should be set manually to “Send stop command”.

Using Therminal

Open the application and select “Control” section to have direct control for the heater. The Start/Stop on-screen button enables or disables selected mode of heater control and confirms notifications.

NB! Preheating is possible only when the engine is not running



Immediate Start Mode

When you push Start/Stop on-screen button, Therminal sends start command instantly in Immediate Start mode.

Immediate Start mode is used as default mode at the start of Therminal. Select «Immediate Start» in the modes list, if another mode selected at the moment.

Event/ Action	Time indicator	Screen Status
Start/ Stop button pressed	00:00:00 ☐	Command sent
Modem's response received	00:00:01 →	Heater starts up
Heater starts to operate	00:03:00 →	Heater operates
Heating finished	00:45:15 ☐	Heating completed
User Confirmation	00:00:00 ☐	*<No actual status>*

Time stamp is shown for example

Timer Mode

Timer Mode is intended to delay heater start on selected time.

NB! Heater start command is sent at the moment when timer reset to zero. Network services availabilities are required.

Select «Timer» in the modes list. Push on the current value of the timer to adjust another value. Push Start/Stop button to start the timer.

Event/ Action	Time indicator	Screen Status
Start/ Stop button pressed	-01:20:00 →	Timer is active
Timer expired	00:00:00 ☐	Command sent
Modem's response received	00:00:01 →	Heater starts up
Heater starts to operate	00:03:00 →	Heater operates
Heating finished	00:45:15 ☐	Heating completed
User Confirmation	00:00:00 ☐	*<No actual status>*

Time stamp is shown for example

Limit Operation Time Mode

This mode is the same as Immediate Start mode, but operation time of the heater can be limited for the current heating cycle without changing of “Heater operation time” setting.

Select «Limit operation time» in the modes list. Push on the current value of operation time to adjust another value. Push Start/Stop on-screen button to start the heater.

NB! Cycle duration can be selected only less than “Heater operation time” value.

Event/ Action	Time indicator	Screen Status
Start/ Stop button pressed	00:00:00 ☐	Command sent
Modem’s response received	00:00:01 →	Heater starts up
Heater starts to operate	00:03:00 →	Heater operates
Heating finished	00:20:00 ☐	Heating completed
User Confirmation	00:00:00 ☐	*<No actual status>*

Time stamp is shown for example

Pickup Time

In the “Pickup Time” mode user selects time during a day, at which the heating will be finished.

NB! Therminal calculates startup time and sends start command directly before the heating cycle. Therefore network services availabilities are required.

Select « Pickup Time » in the modes list. Push on the current value of pickup time to adjust another value. Push Start/Stop button to activate the mode.

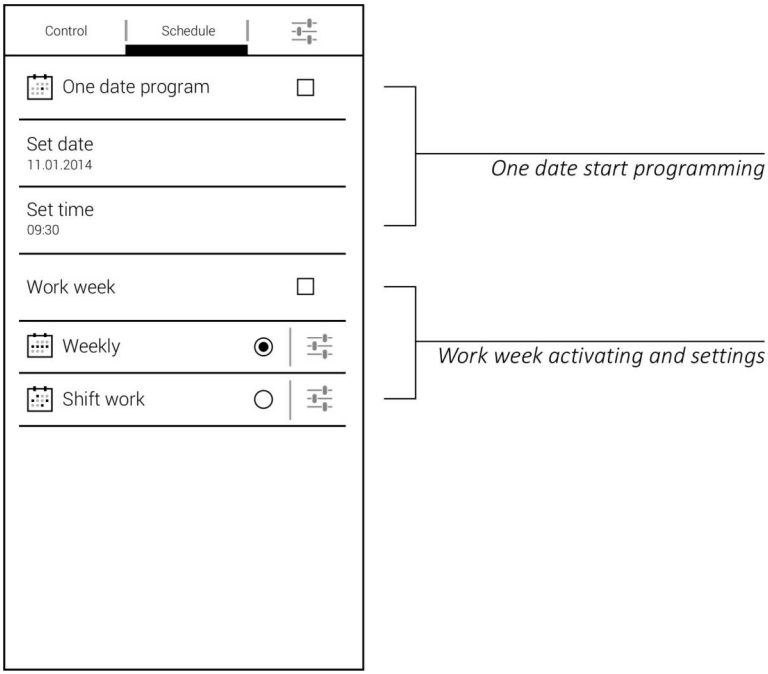
Event/ Action	Time indicator	Screen Status
Start/ Stop button pressed	18:20:00 ☐	Waiting for startup time
Startup time is come	00:00:00 ☐	Command sent
Modem's response received	00:00:01 →	Heater starts up
Heater starts to operate	00:03:00 →	Heater operates
Heating finished	00:45:15 ☐	Heating completed
User Confirmation	00:00:00 ☐	*<No actual status>*

Time stamp is shown for example

Schedules

NB! Schedules are saved in the smartphone's memory. Therminal calculates startup time by the schedule and sends start command directly before beginning of heating cycle. Therefore network services availabilities are required.

NB! Ready time is set in the schedules (the moment at which heating will be finished)



One Time

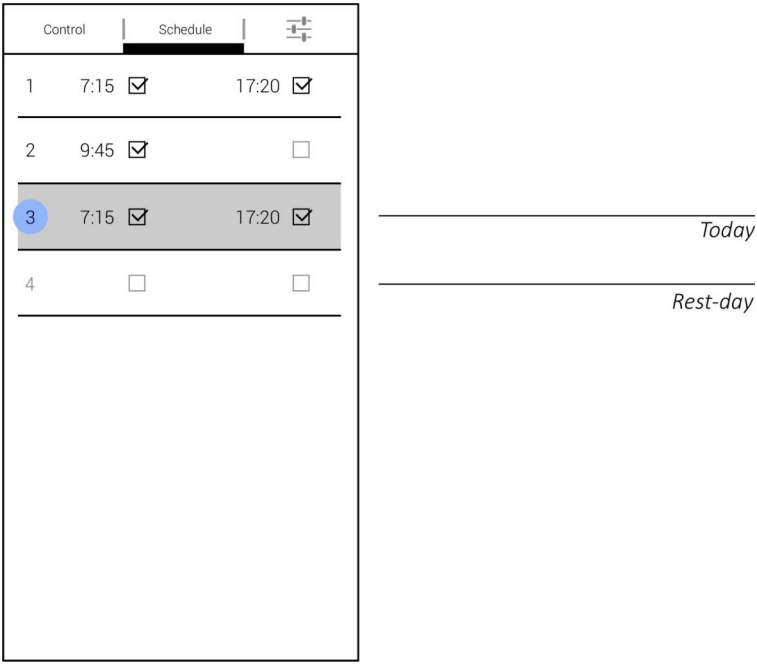
One Time mode describes heating ready time for the certain date and time. The individual switch is used to enable or disable the schedule.

Weekly

Two independent ready times for a day can be set for every day of the week. The schedule repeats every week.

Shift Work

In the Shift Work mode workdays alternate with days of rest cyclically, independently of days of week.



Shift Work schedule logic:

1. It is necessary make a list of workdays and rest days in one cycle. The number of days in the list is the period the schedule. Rest day is a day in the list with no one ready time. Workday is a day in the list with at least one ready time.

2. Two independent ready times for a day can be set for every day of the schedule.

3. Current day (today, up to 00:00) is set by pressing on day's index number in the list.

Balance check

Set USSD request code in the Therminal's settings before check the balance of GSM account (usually *100#).

NB! Balance check available only at the moment when Therminal doesn't control the heater.

Heater Control without Using Therminal

Commands

NB! Send these commands from registered numbers only

User can type following messages manually to control the heater:

Heater On
Command starts the heater. *Type message with space between* **Heater** *and* **On***, without spaces following* **On***.* Positive feedback from modem that the command received and executed: HEATER ON: accepted

Heater Off
Command stops the heater. *Type message with space between* **Heater** *and* **Off***, without spaces following* **Off***.* Positive feedback from modem that the command received and executed: HEATER OFF: accepted

BALANCE?

Command asks balance of the modem's account. *Type message in uppercase letters, without space between BALANCE and "?", without spaces at the end.*

See chapter Manual Initialization if balance check operates incorrectly.

Feedback Messages

Modem sends feedback messages to users' phones when determined events happen:

Heating finished… if heating completed or if the engine was started

Heating terminated… if error happens during the heating