**CAUTION**: **Read the instructions and recommendations in the manual before installation. The device must be installed and used in accordance with these instructions. The device is intended for installation in motor vehicles with a 12/24 volt electrical system and equipped with a CAN BUS data bus. The device must be connected to 12 / 24V and grounded by the negative pole. The manufacturer or seller is not responsible for any damages resulting from incorrect installation, use, operation or control of the product other than the instructions for use. Inappropriate interference with or modification of the device may result in damage to the device itself or the car's electrical system and loss of warranty. For proper and faultless operation of the product, we recommend that you entrust the installation to a specialist workshop.**

## SYSTEM DESCRIPTION

KEETEC M CAN is a module designed for motor vehicles equipped with CAN data bus and 12 / 24V supply voltage. It is used to convert a digital signal from a data bus to analogue outputs that are used by a car alarm when the vehicle is guarded. It also allows you to write some information to CAN BUS by activating analog inputs. Before installing into vehicle, check the compatibility of the M CAN module with the list of supported vehicles.

**A SMART 4P RF can be connected to the M CAN module, which can operate in two modes:**

1.) a mode for writing to CAN BUS bus (default setting):
- locking (first pressing the button on RC Smart),
- unlocking (second press on RC Smart),
- opening trunk (long press on RC Smart)

2.) a mode to calibrate pulse output speed:

When you reach the speed of 50 km/h with the vehicle, press the RC Smart button.

**Supported signals for reading from CAN BUS:**
- Locking the vehicle using the original remote control
- Unlocking the vehicle using the original remote control
- Opening the vehicle door
- Opening the luggage compartment of the vehicle
- Opening the engine compartment
- RPM (output active when engine speed exceeds 500 rpm)
- Speed:

1. Switching (output is active if the vehicle does not exceed 10 km/h)
2. Pulse (pulse frequency is dependent on vehicle speed)

- Info GPS (output is active after opening the door / bonnet / trunk or switching on the ignition with the locked vehicle by the remote control)
- Status - when the vehicle is locked, the output is active. It is also possible to set the inverse logic of this output using the button or PC setup.
- Directional lights
- Lowering the foot brake pedal
- Pulling the handbrake
- Lowering the clutch pedal
- Switching on the low beam lights
- Switching on the high beam lights
- Switching on the parking lights

**Supported signals for writing to CAN BUS:**
- Locking the vehicle door
- Unlocking the vehicle door
- Unlock only the driver's door
- Opening the windows of the vehicle while there is a signal on the input
- Closing the windows of the vehicle while there is a signal on the input
- Opening the trunk on the vehicle
- Side door unlocking
- Side door locking
- Hazard lights flashing

## I. PROGRAMMIG M CAN

M CAN can be programmed using the service button or PC Keetec software.

**Programming via service button:**

In the supported vehicles list you can find the vehicle code for reading from CAN BUS, the vehicle code for writing to CAN BUS and all supported signals.
Vehicle code for reading, vehicle registration code and all functions are programmed by entering the code (inputs, outputs by entering a two-digit code, vehicle code for reading and writing by entering a three-digit code).
- Press and hold the button on the module for 10 seconds until the LED lights up
- Release the service button. The LED turns off. Programming is running.
- Press the button as many times as the value of the first digit of the vehicle code number (0 = 10 presses).

The LED flashes after each pressing. After entering the digit value, a quick LED flashing will confirm successful writing to the module.
- Repeat the process in the same way with the second and third digit of the code

Note: If you entered a vehicle code that is not in the supported vehicles list or an unknown function code, the LED will flash quickly 20 times.

## II. FUNCTIONS CODES (default settings in bold):

Function codes are entered in the same way as vehicle codes.

code 911: impulse speed output - pulses based on the vehicle speed are generated at the output set as impulse speed output. The output has to be calibrated at 50 km/h. When you reach the speed of 50 km/h, press the button 5 times on the module or RC SMART 4P remote control button (valid if the SMART 4P RF module is connected and the CAN pulse output is set). Speed is calibrated. In case of incorrect calibration, repeat the procedure.

**code 912:** speed based switching output - the output is activated if the vehicle speed is less than 10km/h. If the vehicle speed is above 10km/h, the output is deactivated.

code 913: disable repetition of lock/unlock pulse. After the vehicle is locked / unlocked, only one pulse will appear at the lock / unlock output, even if you press the buttons repeatedly.

**code 914:** allow repetition of lock/unlock pulse. After the vehicle is locked / unlocked, a pulse will appear every time the button is pressed on the lock / unlock output.
code 915: enable reactivation of the lock pulse. If unlocking occurs without opening the door, the system generates a locking impulse to CAN BUS.
**code 916:** disable the reactivation of the lock impulse.
code 919: allow activation after closing the luggage compartment. If the vehicle is unlocked with original remote and the luggage compartment will be opened and then closed and the door is not be opened within 30 seconds, the system will be reactivated.
**code 920:** disabled activation when the luggage compartment is closed..

code 921: allow permanent lock/unlock output. The output will be permanently switched on.

**code 922:** disabling the permanent lock / unlock output. The output will switched for 0.8 seconds after unlocking or locking the vehicle.
code 923: allow inverted status output. The output will be active when the vehicle is unlocked.
**code 924:** disable inverted status output. The output will be active when the vehicle is locked.
code 925: enable calibration with the SMART 4P RF Module. The SMART 4P RF Remote Controller is used to calibrate pulse output.
**code 926:** Allow to write to the bus using the SMART 4P RF module. The SMART 4P RF Remote Controller is used to write to CAN Bus.

code 927: allows analog monitoring of the ignition to read RPM and speed from CAN BUS. This setting must be enabled for vehicles that do not support ignition monitoring.

**code 928:** disable analog monitoring of the ignition.

code 931: setting up the input/output 1. After entering the input/output code, the LED flashes quickly and then lights up for a longer time. Then you need to enter a two-digit code according to the required input/output function, please see the table below. The two-digit code is entered as the vehicle code (0 = 10 presses).

codes 932 - 940: setting up the inputs/outputs 2-10
After entering the input/output code, the LED flashes quickly and then lights up for a longer time. Then you need to enter a two-digit code according to the required input/output function, please see the table below. The two-digit code is entered as the vehicle code (0 = 10 presses).

code 941: switching polarity of the input 1. Default setting is (+), this applies to all inputs.

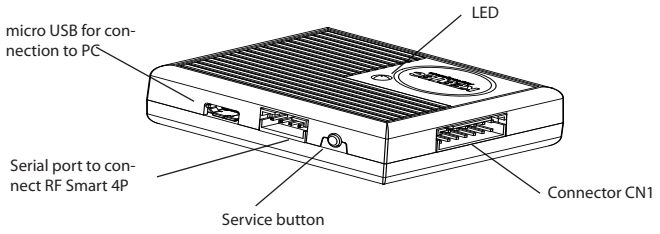
code 942 - 950: switching polarity of the inputs 2 - 10. Default setting is (+), this applies to all inputs.

code 999: reset to the factory settings.

## INPUT/OUTPUT CONFIGURATION WITH THE MODULE BUTTON

| INPUT (write to CAN BUS) | | OUTPUT (read from CAN BUS) | |
|---|---|---|---|
| CODE | FUNCTION | CODE | FUNCTION |
| 01 | not connected | 12 | lock (*) |
| 02 | lock - impulse (0.5 sec) | 13 | unlock (*) |
| 03 | unlock driver's door - impulse (0.5 sec) | 14 | ignition |
| 04 | unlock all doors - impulse (0.5 sec) | 15 | door |
| 05 | opening trunk - impulse (0.5 sec) | 16 | trunk |
| 06 | roll down windows - long signal | 17 | hood |
| 07 | roll up windows - long signal | 18 | RPM (**) |
| 08 | open left sidedoor - impulse (0.5 sec) | 19 | speed |
| 09 | open right sidedoor - impulse (0.5 sec) | 20 | Info GPS |
| 10 | hazard lights - impulse | 21 | Status |
| 11 | analog monitoring of ignition to read RPM and speed from CAN BUS | 22 | Hazard lights |
| - | - | 23 | Foot brake |
| - | - | 24 | Handbrake |
| - | - | 25 | Clutch pedal |
| - | - | 26 | Low beam lights |
| - | - | 27 | High beam lights |
| - | - | 28 | Parking lights |
| - | - | 29 | Deactivation of START/STOP system (***) |

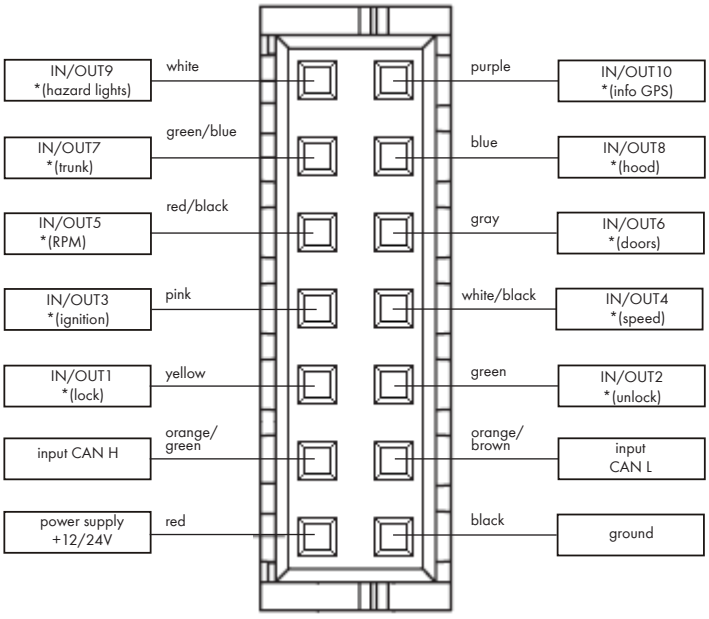
* Lock/unlock with original remote control
** Output is activated when engine exceeds 500 rpm
*** Deactivates START/STOP system if the RPM reading from CAN BUS is supported in the vehicle. Impulse appears on the output (0.9 sec) based on the RPM info from CAN BUS.




## III. WIRING DIAGRAM - CONNECTOR CN1

All inputs have a configurable polarity, output polarity is unchangeable. The outputs do not have a configurable polarity (OUT1 to OUT4 are (+) 500mA and OUT5 to OUT10 (-) 100mA). The speed output can only be set at OUT4 and OUT5.

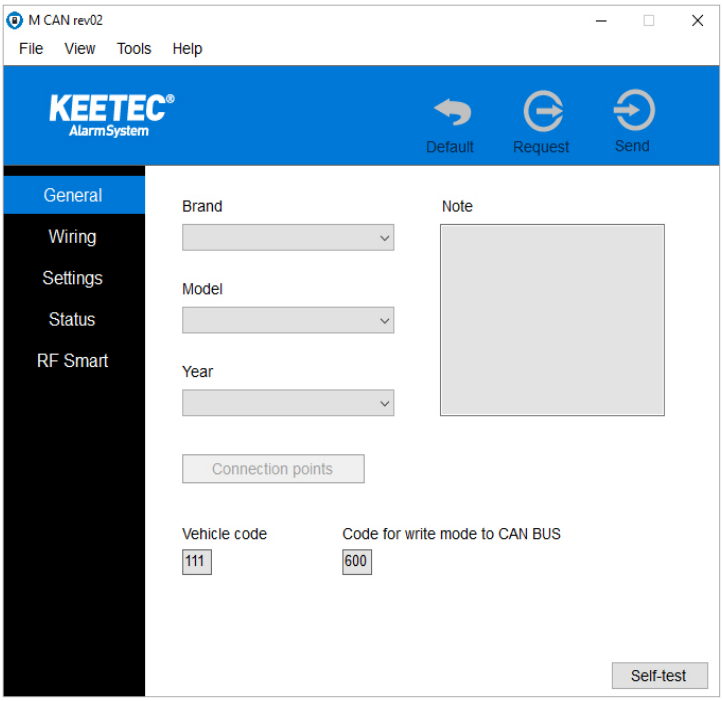
### CN1

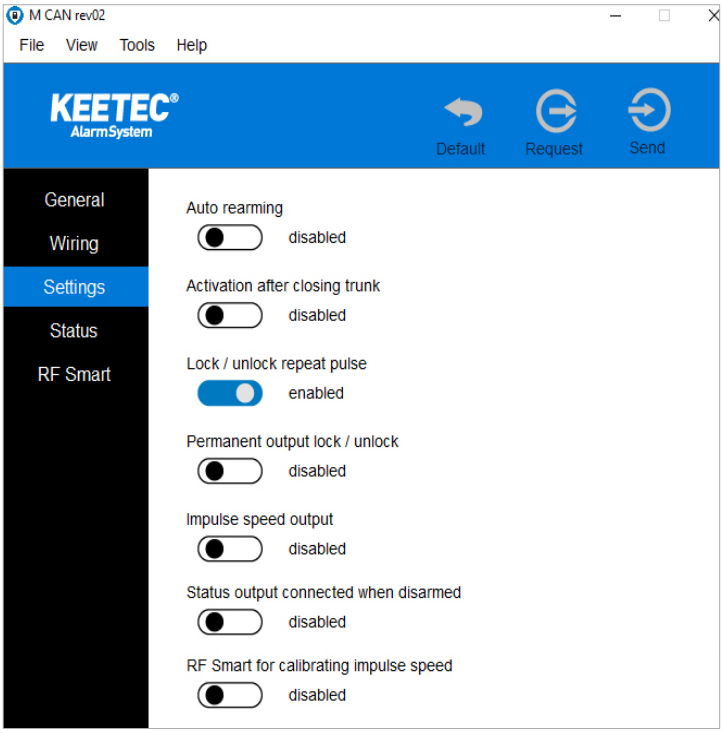



*Default settings (can be changed according to the needs).

## IV. PC SETUP

All M CAN rev02 settings can be configured via software via micro USB cable (no programmer required). You need to have KEETEC Software installed.




| TECHNICAL DATA | |
|---|---|
| Power supply | 12/24V |
| Operating temperature | -30°C to 70°C |
| Idle power consumption | 7mA |
| Diameters (length x width x height) | 48 x 40 x 19mm |