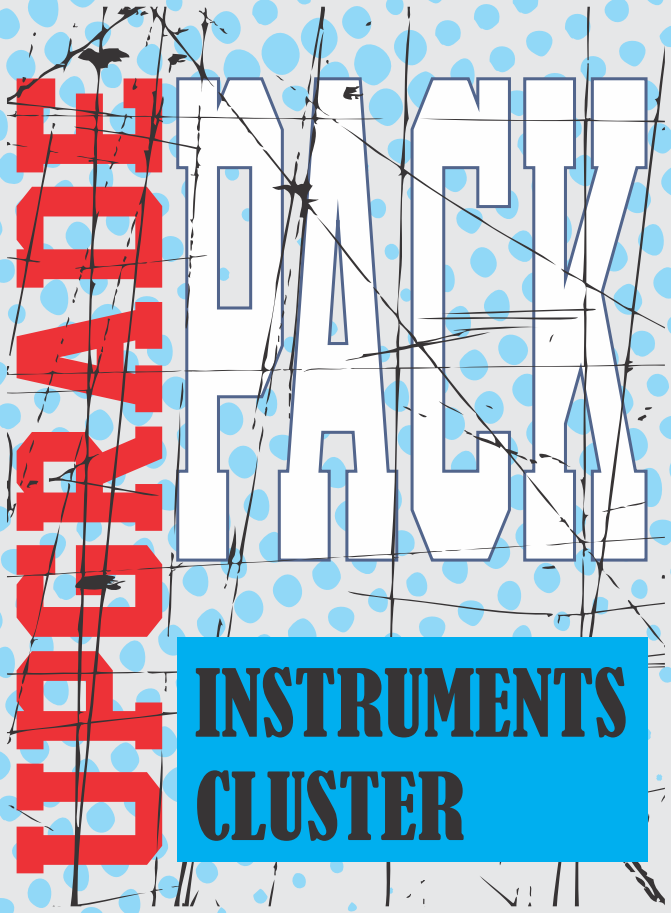
# INSTRUCTIONS MANUAL

Rv0 10/2021

OPG INSTRUMENTS




# OPEL KADETT

Instrument Clusters manufactured after 01/10/2021

## Presentation

This instrument cluster was developed to be used as a replacement for the original instrument cluster of Chevette and Marajó vehicles between 1973 and 1990.
Its system is all digital, allowing the speedometer, tachometer and fuel level to be configured to work accurately in the vehicle.
The fuel level gauge comes pre-configured, however, to ensure a perfect level of accuracy, we recommend using the custom fuel level sensor feature to be able to configure it with the vehicle's fuel level sensor.
The pointers are moved by stepper motors, which have great precision and long service life. These stepper motors reset each time the ignition is turned on and off, allowing the instrument cluster to completely turn off its power (battery) after turning off the ignition switch.
The great advantage of this feature is that it prevents the vehicle's battery from being discharged and allows the use of the panel in competition or collection vehicles equipped with a main switch.

## Features:

***Speedometer***, full and partial odometer, configurable for any gear ratio and tire diameter. Compatible with HALL type speed sensors, it can also use inductive type sensor, requiring the use of Inductive Sensor Conditioner CSI-1 code ODG 147.0.0.0.0.Speed sensor required for Hall type, thread M22x1.5. Sensor not included.

***8000 RPM Tachometer***, configurable for 4, 6 or 8 cylinder engines.

***Water Temperature Indicator,*** compatible with the original sensor (MTE 3005) and also with the MTE4054 sensor, which has independent grounding (two terminals). MTE3005 sensor included.

***Fuel Level Indicator,*** compatible with original fuel level sensor and with adaptations. Fuel level sensor not included.

***Translucent Lighting*** with dimmer function.

***Built-in Indicators:*** 6 lights (led) indicating the original built-in indicators.

***Extra Function*** reserve indication, which displays the word RESERVA on the display after reaching the fuel reserve. Activated with tank below 1/8 and automatically deactivated with more than 3/16 tank.

## SETTINGS:

### *Number of cylinders:*

With the ignition off, press the **SET** key and turn the ignition on.

The display will show screen 1, release the key.

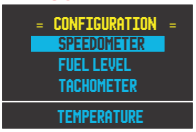
The ↻ key allows you to select between setting SPEEDOMETER, FUEL LEVEL, TACHOMETER and TEMPERATURE.

Select TACHOMETER and press the **SET** key to confirm.

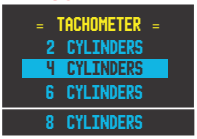
Screen 2 will be displayed.

The ↻ key allows you to select the ignition system configuration.

SCREEN 1:




SCREEN 2:




Select the option you want and confirm by pressing the **SET** key.
Screen 3 will appear indicating that the setup has been performed correctly.
Soon after, the instrument cluster will restart.

SCREEN 3:


### *Shift Light:*

To program the desired RPM so that the warning light (SHIFT) turns on, keep the engine at the desired RPM and press the **SET** key for 3 seconds. The SHIFT will flash indicating you have saved the configuration.

If you want to disable the function, just carry out this procedure with the engine turned off.

### *Fuel Level Gauge:*

For the intrument cluster to display the fuel level, the PINK cable from the main harness must be connected to the vehicle's fuel level sensor.
After installation, the instrument must be configured according to the steps below:

### *Standard, pre-configured Fuel Level Sensors:*

If the application is on a vehicle that has an original fuel level sensor and tank, follow the guidelines:

***1-*** With the ignition and taillight off, press the **SET** key and turn the ignition on (it doesn't need to start) and release the key.

***2-*** On screen 1 select the Fuel Level option.

***3-*** On screen 4 select the desired fuel level sensor according to the table on the previous page.

SCREEN 4:

### *Other Fuel Level Sensors:*

**If you are using a fuel level sensor or tank different from the original, a custom fuel level sensor configuration will be required.**

This configuration can be done in two ways:

The first is **BY RESISTANCE**, when the value of resistance for empty tank, half tank and full tank is already known.

The configuration is done by selecting CUSTOM SENDER on screen 4 and then BY RESISTANCE on screen 5.

On screen 6 enter the resistance corresponding to the EMPTY tank.

By pressing the **SET** key the value of the highlighted digit is incremented, pressing ↻ selects the next digit to be changed.

To continue select CONFIRM and press **SET**.

Then enter the resistance corresponding to HALF tank, confirm and then enter the resistance for FULL tank and confirm.

After confirming, the message SETUP OK will be displayed.

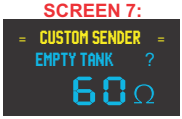
The second and most accurate way is **BY FUEL**, which must be done with the fuel level sensor installed in the tank and adding fuel, recording the resistance for each point (empty, half and full). Thus, the indication will be accurate, regardless of the shape of the tank.

To configure, on screen 5 select **BY FUEL**.

Screen 7 will be displayed with the resistance value read.

Make sure the tank is empty and confirm by pressing **SET**.

SCREEN 7:




Then the screen will be displayed requesting HALF TANK, put the amount of fuel referring to half tank, wait for the resistance to stabilize and confirm with **SET**.

Soon after, you will be asked for a FULL TANK, add fuel until the tank is complete, wait for the resistance to stabilize and confirm with **SET**.

After confirming, the message SETUP OK will be displayed.

**TABLE 1:**

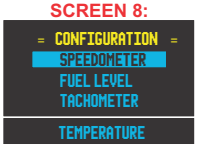
| Fuel Level Sensor | Resistance - EMPTY | Resistance - 1/2 | Resistance - FULL |
|---|---|---|---|
| 1 | 280 | 85 | 40 |
| 2 | 1 | 42 | 90 |
| 3 | 235 | 80 | 45 |
| 4 | 260 | 150 | 40 |
| X | CONFIGURABLE | CONFIGURABLE | CONFIGURABLE |

### *Speedometer Sensor:*

In order for the speedometer to correctly indicate the speed, it is necessary to configure it in the vehicle itself. For this, after installing the instrument cluster and the speed sensor, with the ignition key off, press the **SET** key, turn the ignition key, the screen 8 will be displayed.

Pressing the ↻ key changes the highlighted menu.

SCREEN 8:

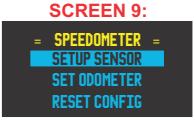



With the SPEEDOMETER option highlighted, press the **SET** key to confirm.

On screen 9 select SETUP SENSOR.

The configuration can be done in two ways: Traveling a determined distance (100 or 1000 meters) or keeping the speed of 60 km/h for programming.

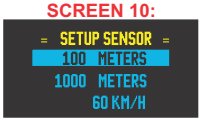
SCREEN 9:



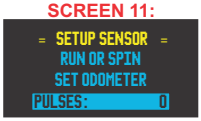

To configure by distance, on screen 10 select the option that corresponds to how many meters will be traveled for the configuration.

While on screen 11, scroll or turn the wheel the amount of times corresponding to the selected value. Note that the counter should increment as the wheel turns.

SCREEN 10:




SCREEN 11:




***This counter indicates the amount of pulses read from the sensor and not the distance traveled!!!***

After traveling the selected distance, press **SET** to confirm the programming.

SCREEN 12:


**To configure by speed,** on screen 10, with the ↻ key, select the 60km/h option and then press the **SET** key to confirm.

Screen 12 will be displayed.

At this time, in a safe place, put the vehicle in motion.

The words STOPPED or MOVING appear on the yellow line, which are used to visualize if the sensor is working correctly.

If when driving the vehicle it does not indicate MOVING, check the sensor connection.

When it is 60km/h press and release the **SET** key.

The instrument cluster will initialize and start setting the speed.

**NOTE:** During this programming all pointers will be stopped at the beginning of the scale. The accuracy of the speedometer will directly depend on the speed the vehicle was at when performing this setting.

## Total Odometer - Preloading a Km value:

It is possible to configure the total Km value, allowing to preload the odometer value from the vehicle's original panel, for this, access the SPEEDOMETER ► SET ODOMETER function. (Screens 8 and 9).

Setup screen 13 will be displayed.

SCREEN 13:


Pressing the **SET** key increases the value of the highlighted digit.

Pressing ↻ selects the next digit to be changed.

To finish select CONFIRM and press **KM/h**. The instrument cluster will restart finalizing the configuration.

## Reset setting:

To return the speedometer to the factory settings (500 pulses for 100m and odometers reset) on screen 9 select the RESET CONFIG option and confirm.

Note: This procedure does not change the other settings.

## *Resetting the Partial Odometer:*

To reset the partial odometer count, at any time during operation press the **SET** key for 3 seconds.

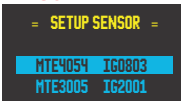
## *Selection of temperature sensor type:*

To choose between the two possible types of sensors, from screen 8 select the TEMPERATURE option.

Screen 14 will be displayed.

Select the installed sensor (MTE3025 or MTE4054) and confirm with the **SET** key.

SCREEN 14:




| TEMP. | MTE 3005 | MTE 4054 |
|---|---|---|
| 120 °C | 48Ω | 110Ω |
| 110 °C | 60Ω | 140Ω |
| 100 °C | 80Ω | 179Ω |
| 90 °C | 108Ω | 233Ω |
| 80 °C | 143Ω | 307Ω |
| 70 °C | 204Ω | 411Ω |
| 60 °C | 279Ω | 560Ω |
| 50 °C | 378Ω | 778Ω |
| 40 °C | 545Ω | 1104Ω |

## *DIMMER - Light intensity adjustment:*

To adjust the illumination intensity, any time the taillight is on, press the **DIMM** key.

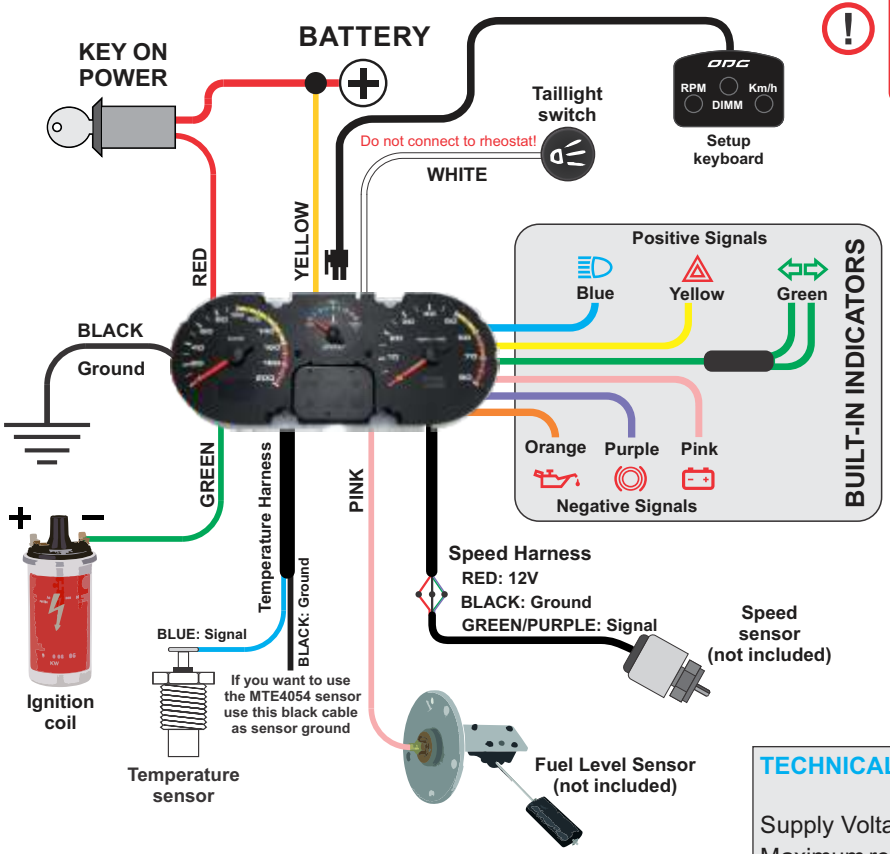
The lighting intensity will vary between the minimum and maximum while the key is pressed, and the display will indicate it, when releasing the key the configuration is saved.

## *Checking settings:*

To view the values of the saved settings, turn on only the taillight and then press the **SET** key.

A screen will be displayed with W values (pulses p/100m), firmware version, cylinder configuration and fuel level sensor resistance values corresponding to empty, half and full tank.

## WIRING DIAGRAM:




*The **RED** cable must be connected to +12V ignition that does not turn off at startup, preventing the device from starting up by turning the key and trying to start up again at startup time.*

*The **YELLOW** cable must be connected to +12V battery (line30), because it is responsible for maintaining the device's power supply and allows the pointer to return to the initial position after the ignition is turned off.*

***TEMPERATURE SENSOR:** We recommend using the **MTE4054** sensor because it has an independent ground, avoiding incorrect indication due to the possible difference in grounding between the motor and the panel.*

*Use Hall type speed sensor or a CSI-1 converter together with an inductive sensor.*

### TECHNICAL SPECIFICATIONS:

| | |
|---|---|
| Supply Voltage: | 9 a 16 Vdc |
| Maximum resistance of fuel level sensor: | 1k ohm |
| Compatible temperature sensors: | MTE3005 / MTE4054 |
| Standby Current: | 450mA (max) |
| Operating Current: | < 1mA |
| Electrical cables: | 0,32mm² x 50cm |

# OPEL KADETT

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Origem: Brasil
Validade: Indeterminado - Garantia: vide termo
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