

1

Amplifier of acceleration signal - auto pilot, for new technology cars.

The invention refers to a system of continuous measurements and transformations of signals which come from the potentiometer of electronic acceleration pedal of modern cars.

5

Lately there has been an increase in the complaints of drivers of new technology cars with electronic acceleration pedal, concerning lack of an acceleration pedal reply to the driver's orders.

10 In new technology cars, the command of acceleration is not transmitted with the traditional wire, (mechanic way). The command is transmitted from the driver's foot to the ECU (electronic control unit), with a potentiometer. (Electronic acceleration pedal).

15 The application of the electronic acceleration has as a result the bad acceleration of the car and the problems caused in the overacting and generally the circulation of vehicles.

20 This invention is coming to cover the disadvantage of poor acceleration of cars that is provided with electronic acceleration pedal.

The basic operation of the amplifier of acceleration signals for new technology cars is the digital transformation of the signals of the potentiometer with proper software and their transmission to the control unit.

25

Simultaneously with the transformation of acceleration signals, the device executes also a second operation, the upkeep of steady speed with the pressure of a switch when it is asked by the driver. (Automatic pilot).

30 The amplifier of acceleration signals for new technology cars has as a basic item a microprocessor which is programmed to measures the signals from the acceleration potentiometer, and supply the ECU (electronic control unit) with new signals which will improve the car acceleration and will keep the speed of the vehicle steady during long travels, when it is chosen by the driver.

35

The invention is fully applied as it refers to changing of the signals of electronic acceleration pedal, and it does not alter the structure of the central program of the car.

40

One more advantage of the device is the possibility of it's inactivation by pressing a switch on the car board. (Grounding command).

45

2

The invention is presented below with reference to adapted drawings starting from plan one where the outer appearance of the device appears.

Drawing one shows the device in really exterior dimensions. Drawing two shows the designing of the electronic circuit of the amplifier of acceleration signals - auto pilot, for new technology cars.

The signals from the acceleration potentiometer (drawing 1-B) are smoothed and directed to the A/D input of the microprocessor.

- 10 The microprocessor (drawing 1-A) is programmed to measure the signals from the acceleration pedal with priorities, and to calculate the change of the angle of the potentiometer of acceleration pedal, (angular speed). Then the program multiplies the signal's rates by an algorithm which is determined by the rate of the angular speed of the acceleration
15 potentiometer.

- The signals at the entry of the microprocessor are compared between each other as well as the altered signals at the exit of the microprocessor. Another algorithm oversees the comparisons of the signals and decides on
20 whether the entry signals and their transformations should be accepted before being sent to the exit the device.

- As long as the device is interfered between the acceleration potentiometer, (drawing 1-B) and the electronic control unit (ECU), (drawing 1-C) it is
25 possible for the device to under-takes the complete control of the car speed since it is asked by the driver.

- When the car develops some speed, e.g. 80 km/hour, then if the driver presses the auto-pilot switch, (drawing 1-F), the program reads the
30 command and waits for the driver to leave the acceleration pedal within the next five seconds. (Confirmation of auto pilot order).

- If the program recognizes these two conditions, (switch and pedal), it goes on with the operation of automatic pilot.
35

- Now the microprocessor does not alter the signals of electronic acceleration pedal, but it reads the RPM of the engine and increases or decreases the commands to the ECU with final result to keeping the RPM of engine steady as well as the speed of the car, without the driver having
40 to press the acceleration pedal.

The pulses from injectors, (drawing 1-D) are used for the calculation of the engine revolving speed (RPM) during the operation of automatic pilot.

3

In order to take the program out of auto pilot operation, one of the following should be done: the driver should either press the brake pedal, (drawing 1-E), or press acceleration pedal again, (drawing 1-B).

5 The amplifier of acceleration signals - auto pilot, (drawing 1-A), is attached between the potentiometer of acceleration pedal, (drawing 1-B), and the electronic control unit, (ECU), (drawing 1-C).

10 The system is completed in a device which is placed in the interior of the car and is attached to the connector of the acceleration pedal.

The designing of the device allows its easy installation in all models in a simple way, without needing to get into the electronic circuits of the car. (Is not influenced the operation of circuits of the car, e.g., injection system - ignition system, ABS etc.).

15

20

25

30

35

40

45

4

CLAIMS

1. An amplifier of acceleration signals for new technology cars, which is interfering between the potentiometer of the acceleration pedal and the electronic control unit (ECU) and is programmed to control the signals from accelerator pedal with priorities, and to calculate the changing of the angle of potentiometers of the acceleration pedal, (angular speed). Then the program multiplies the signal's rates by an algorithm which is determined by the rate of angular speed of the potentiometer of the acceleration pedal, which has as a final result to improve the acceleration of the car.
2. An amplifier of acceleration signals for new technology cars according to claim one, which as long as it is interfering between the potentiometer of the acceleration pedal and the electronic control unit (ECU), is possible to undertake the complete control of the car speed when it is asked by the driver. The processor reads the RPM of engine and increases or decreases the commands to the ECU, with a final result the engine RPM to be steady and accordingly the car speed, without the driver needing to press the acceleration pedal.
3. An amplifier of acceleration signals for new technology cars according to the claim one, which is activated or cancelled with the press of a simple switch on the car board. As a result the driver has two choices, the fast or regular driving. (Sport Switch).