

Device for individually setting driving dynamic characteristics of a motor vehicle**Description**

[0001] The invention relates to a device for individually setting driving dynamic characteristics of a motor vehicle according to the preamble of claim 1.

Prior Art

[0002] From US 6 430 488 B1 a device for adapting vehicle parameters of a motor vehicle is known. The device has at least one input unit with which characteristic values for multiple on-board components of the vehicle, such as an airbag or a speed control system, such as cruise control, can be entered and thus adapted to the individual physiological characteristics of a driver. In addition, the device comprises multiple mobile storage units on which the various characteristic values for the various on-board components are stored, and wherein different authority levels are assigned to the mobile storage units, which authority levels enable different levels of influence on the setting of the characteristic values or the vehicle parameters. Furthermore, the device comprises a navigation system (GPS), with which the current position of the vehicle can be determined precisely, as well as a control and/or monitoring unit with which the characteristic values entered via the input unit can be displayed together with the vehicle position and via which the on-board components can be controlled by evaluating the respective input data (characteristic values, position, etc.).

[0003] From DE 40 33 574 A1 a control system for a motor vehicle is known. The control system comprises a control device for controlling the vehicle in accordance with information about a control characteristic and a rewritable memory for storing a plurality of partial information about the control characteristics of the control device and about various drivers, each of which is related to one another. In accordance with an input from a specific driver, information about a control characteristic corresponding to the specific driver is first read from the memory, provided that the driver who entered the information is the driver stored in the memory. The information is then fed to the control devices. The information on the control characteristics specified by the specific driver and stored in memory can be arbitrarily corrected and/or influenced according to a correction input. The driver can thus change the vehicle's default values or operating characteristics.

Object

[0004] The present invention addresses the problem of providing an improved device of the type mentioned above, which in particular increases driving safety.

[0005] This object is achieved by the subject matter of the independent claim and advantageous developments are the subject matter of the dependent claims.

[0006] The invention is based on the general idea of adjusting the driving dynamic characteristics of a vehicle to the driving skills of a respective driver via predetermined and/or predeterminable

vehicle parameters. For this purpose, a device is provided which has a storage device for storing the set vehicle parameters and a recognition device which identifies a driver on the basis of person-specific features, such as height, language or other suitable biometric characteristics.

[0007] The vehicle parameters can be entered into the device in advance and/or during driving via an input unit, wherein individual vehicle parameters are assigned to the respective driver. By setting or specifying the vehicle parameters according to the driver's driving skills, inexperienced and/or unsafe drivers in particular can be actively protected from critical driving situations. At the same time, the device supports inexperienced and/or untrained drivers by monitoring or regulating the driving parameters or driving dynamic characteristics.

[0008] Young, inexperienced and/or insecure drivers are disproportionately involved in serious traffic accidents. Particularly among the group of young drivers with little driving experience, an increased willingness to take risks combined with recklessness and overconfidence often lead to serious traffic accidents with serious consequences. By adjusting the vehicle's driving dynamic characteristics to the driving skills of the respective driver, it is possible to better protect the risk group in particular from serious accidents, which at the same time can also increase driving safety for other road users.

[0009] According to a preferred exemplary embodiment of the solution according to the invention, the driving dynamic characteristics of the vehicle can be defined by at least one of the following vehicle parameters: maximum power of an internal combustion engine of the vehicle, maximum torque of the internal combustion engine of the vehicle, maximum achievable vehicle speed, maximum longitudinal acceleration, Maximum transversal acceleration, minimum distance to the vehicle driving ahead, intervention parameters of a dynamic vehicle stabilization system. The risk group of novice drivers in particular often underestimate the engine power and the associated acceleration or maximum driving speed of the vehicle. At the same time, drivers often overestimate their own driving skills, which is why regulation or limitation, for example of the maximum available power of the vehicle engine and the associated maximum permissible acceleration or top speed, seem sensible. This should also help to reduce the number of traffic accidents caused by driving errors due to driving dynamic characteristics that are not adjusted for the individual driver.

[0010] According to an advantageous development of the invention, the adjustment of at least one of the vehicle parameters can be carried out directly or automatically as a function of a type of road currently being traveled on, for example a country road or a federal motorway, and/or a brightness and/or a wind speed and/or a temperature and/or a road curvature and/or weather conditions. For example, it can be provided that the maximum speed of the vehicle is automatically limited if the light intensity falls below a certain level, since it is much more difficult to recognize hazards at dusk or at night and therefore represents an increased risk of accidents. Furthermore, it is useful to

automatically limit the speed when the outside temperature falls below certain limits, especially at temperatures where black ice is to be expected. In general, it is possible to make the vehicle parameters dependent on or to link them to weather conditions, which can be accessed via a weather satellite, similar to a GPS system, or which are detected by a suitable sensor, such as a rain sensor. The options mentioned help inexperienced drivers in particular to gain driving experience with reduced risk.

[0011] In a further particularly advantageous development of the invention, it is provided that different skill levels are predetermined and/or can be predetermined, namely at least a beginner level with maximally restricted vehicle parameters and an advanced level with minimally restricted or unrestricted vehicle parameters. Novice drivers in particular make quick and visible progress in their driving skills when they drive regularly. The invention therefore offers the advantage of adapting the various vehicle parameters to the different skill levels and thus learning how to handle the vehicle safely and in a controlled manner and at the same time positively influencing the learning process by gradually increasing the skill levels combined with a reduction in the limitation of the vehicle parameters. Of course, one or more intermediate levels with partially restricted vehicle parameters are also conceivable, which improves fine-tuning of the skill levels during the learning process.

[0012] According to an advantageous development of the invention, the specification and/or the assignment and/or the setting of the different skill levels and/or of the different drivers can only be carried out by an authorized person. This offers parents, for example, as authorized persons the opportunity to limit the vehicle parameters of the vehicles used by the family and thus increase the driving safety of children who are inexperienced drivers.

[0013] Further important features and advantages of the invention emerge from the dependent claims, from the drawing and from the associated description of the figures with reference to the drawing.

[0014] It is understood that the features mentioned above and those yet to be explained below may be employed not only in the respective combination specified, but also in other combinations or alone, without departing from the scope of the present invention.

[0015] A preferred exemplary embodiment of the invention is illustrated in the drawings and will be described in greater detail in the following description.

[0016] The sole **Fig. 1** shows a schematic diagram of the device according to the invention.

[0017] According to **Fig. 1**, a device 1 for individually setting driving dynamic characteristics of a motor vehicle has a storage device 2, which serves to store predetermined and/or predeterminable vehicle parameters 6, such as a maximum power 7 of an internal combustion engine of the vehicle, for a respective driver 4,4'.

[0018] Furthermore, the device **1** has a recognition device **3** which identifies the driver **4** or **4'** on the basis of person-specific characteristics. According to Fig. 1, the identification of the driver **4** can **be carried out via a biometric recognition unit 20** integrated into the recognition device **3** or connected thereto. Additionally or alternatively, the recognition device **3** can have an acoustic recognition unit **21** and/or a reading device (not specified in more detail) for recognizing an identification code **22**. In principle, other recognition methods that allow the recognition of person-specific features are also conceivable, provided that the driver **4** can be clearly identified therewith. This also includes a transmitting and/or receiving unit for sending and/or receiving, for example, infrared or radio signals.

[0019] According to **Fig. 1**, an input unit **5** is provided through which different vehicle parameters **6**, such as maximum power **7** of the vehicle's internal combustion engine and/or maximum torque **8** of the vehicle's internal combustion engine and/or a maximum vehicle speed **9** and/or a maximum longitudinal **10** and/or transversal acceleration **11** and/or a maximum distance **12** to the vehicle driving ahead and/or an intervention parameter of a dynamic vehicle stabilization system **13** can be entered in the device **1**. These and, if applicable, other vehicle parameters **6** are particularly suitable for defining the vehicle's driving dynamic characteristics.

[0020] The device **1** also comprises an assignment device **25** which checks whether special vehicle parameters **6** are stored for the respective driver **4**. **If so, the assignment device 25** can assign individual vehicle parameters **6** to the respective driver **4**, whereby the driving dynamic characteristics of the vehicle can be adjusted in relation to the driving skills of the respective driver **4**. The input of the respective vehicle parameters **6** via the input unit **5** into the device **1** or the specification and/or the assignment and/or the setting of different skill levels and/or different drivers **4,4'** are to be carried out by an authorized person **24**. Authorized persons **24** may include, for example, car rental companies, legal guardians of new drivers or other persons who wish to minimize the risk of accidents due to driving errors for which the driver **4** is responsible, by influencing the driving dynamic characteristics of the vehicle.

[0021] In general, different skill levels are specified and/or can be specified, wherein at least one beginner level with maximally restricted vehicle parameters **6** and one advanced level with minimally restricted or unrestricted vehicle parameters **6** are provided. Furthermore, intermediate levels are conceivable in which one or more vehicle parameters **6** are partially restricted. The different skill levels can be defined based on, for example, statistical surveys regarding the driving skills of randomly or specifically selected persons and/or can be manually varied.

[0022] For example, it may be envisaged that a dynamic vehicle stabilization system, such as ESP, will actively intervene in driving operation of a beginner "earlier" than in the case of an advanced driver, in order to alert the beginner to critical driving situations at an early stage. The device **1** can

advantageously permanently check and, in particular, evaluate the driving skills of the respective driver **4**. It is conceivable that the device **1** independently grades the skill levels if the evaluation, for example on the basis of intervention statistics of the stabilization system, shows that no (or an increased number of) critical driving situations have occurred during a sufficiently long driving time.

[0023] The setting of at least one of the vehicle parameters **6** can be carried out either directly, for example manually, or via the person-specific data stored in the storage unit **2**, automatically depending on a currently traveled road type **25**, for example a country road or a federal motorway, and/or a brightness **14**. The measurement of brightness **14** can be done, for example, using known light sensors. Furthermore, an automatic adjustment of the vehicle parameters **6** depending on a wind speed **15** and/or a temperature **16** and/or a curve curvature **17** is conceivable. The temperature **16** can be determined using conventional temperature sensors, wherein at temperatures **16** which are close to freezing point, for example, the maximum vehicle speed **9** can be limited. This can be particularly helpful for inexperienced and/or insecure drivers.

[0024] According to **Fig. 1**, the device **1** can have an image processing unit **18** which can recognize the currently traveled road type **25** and/or traffic signs and/or curve curvatures **17**. The image processing unit **18** can be designed as a video system and can either be integrated into the device **1** or connected to it. Additionally or alternatively, the device **1** can be connected to a navigation system **19**, which can assign to the current location the road type **25** currently being traveled and/or the curve curvatures **17** occurring during the further course of the journey.

[0025] Furthermore, according to **Fig. 1**, an information unit **23** is provided which informs the driver **4** and/or the authorized person **24** about the set vehicle parameters **6**. It can be provided that exceeding of the set vehicle parameters **6** is tolerated to a certain extent, wherein the information unit **23** emits suitable optical and/or acoustic warning signals when the set vehicle parameters **6** are exceeded, which warning signals can be perceived by the driver **4**. In general, it is also conceivable that exceeding the set vehicle parameters **6** as well as an entire journey history can be stored in the storage unit **2** in order to be possibly retrieved at a later point in time by the authorized person **24**. This enables, for example, the authorized person **24** to subsequently detect or prove any erroneous conduct regarding the driving behavior of the respective driver **4**.

[0026] In summary, the essential features of the invention can be characterized as follows:

The invention provides for the driving dynamic characteristics of a vehicle to be individually adjusted in relation to the driving skills of a respective driver **4** via predetermined and/or predeterminable vehicle parameters **6**. For this purpose, a device **1** is provided which has a storage device **2** for storing the set vehicle parameters **6** and a recognition device **3** which identifies a driver **4** on the basis of person-specific features.

[0027] By setting or specifying the vehicle parameters **6**, in particular inexperienced and/or insecure drivers **4** can be actively protected from critical driving situations.

Claims

1. A device (1) for individually setting driving dynamic characteristics of a motor vehicle by means of predetermined and/or predeterminable vehicle parameters (6),
 - with a storage device (2) for storing the set vehicle parameters (6),
 - with a recognition device (3) which identifies a driver (4) on the basis of person-specific features, and
 - with an input unit (5) for entering the vehicle parameters (6) into the device (1),
 - with an assignment device which assigns individual vehicle parameters (6) to the respective driver (4), **characterized in that**

the vehicle parameters (6) assigned to the driver (4) adjust the driving dynamic characteristics of the vehicle to the driving skills of the respective driver (4).

2. The device according to claim 1, characterized in that, the driving dynamic characteristics of the vehicle are defined by at least one of the following vehicle parameters (6):

- maximum power (7) of an internal combustion engine of the vehicle,
- maximum torque (8) of the vehicle's internal combustion engine,
- maximum achievable vehicle speed (9),
- maximum longitudinal acceleration (10),
- maximum transversal acceleration (11),
- minimum distance (12) to the vehicle ahead,
- intervention parameters of a dynamic vehicle stabilization system (13).

3. The device according to claim 1 or 2, characterized in that the adjustment of at least one of the vehicle parameters (6) takes place directly or automatically as a function of a currently traveled road type (25) and/or a brightness (14) and/or a wind speed (15) and/or a temperature (16) and/or a curve curvature (17) and/or weather conditions.

4. The device according to claim 3, characterized in that,

- an image processing unit (18) is provided which recognizes the currently traveled road type (25) and/or traffic signs and/or curve curvatures (17) and/or weather conditions,
- the device (1) is connected to a navigation system (19) which can assign the currently traveled road type (25) and/or curve curvature (17) to the current location.

5. The device according to any one of claims 1 to 4, characterized in that,

- the recognition device (3) has a biometric recognition unit (20) and/or
- the recognition device (3) has an acoustic recognition unit (21) and/or
- the recognition device (3) is designed to recognize an identification code (22).

6. The device according to any one of claims 1 to 5, characterized in that an information unit (23)

is provided which informs the driver (4) about the set vehicle parameters (6).

7. The device according to claim 6, characterized in that,

- exceeding the set vehicle parameters (6) is tolerated to a certain extent,
- the information unit (23) emits optical and/or acoustic warning signals when the set vehicle parameters (6) are exceeded.

8. The device according to any one of claims 1 to 7, characterized in that different skill levels are predetermined and/or can be predetermined, namely at least one beginner level with maximally restricted vehicle parameters (6) and an advanced level with minimally restricted or unrestricted vehicle parameters (6).

9. The device according to any one of claims 1 to 8, characterized in that at least one intermediate level with partially restricted vehicle parameters (6) is provided.

10. The device according to any one of claims 8 or 9, characterized in that the different skill levels can be varied manually or automatically.

11. The device according to any one of claims 8 to 10, characterized in that the specification and/or the assignment and/or the setting of the different skill levels and/or the different drivers (4,4') can be carried out by an authorized person (24).

It follows a sheet of drawings

Abstract:

The invention relates to a device (1) for individually setting driving dynamic characteristics of a motor vehicle by means of predetermined and/or predeterminable vehicle parameters (6) with a storage device (2) for storing the set vehicle parameters (6) and with a recognition device (3) which identifies a driver (4) on the basis of person-specific features, and with an input unit (5) for entering the vehicle parameters (6) into the device (1) with an assignment device which assigns individual vehicle parameters (6) to the respective driver (4). What is essential to the invention is that the vehicle parameters (6) assigned to the driver (4) adjust the driving dynamic characteristics of the vehicle to the driving skills of the respective driver (4).

Attached drawings

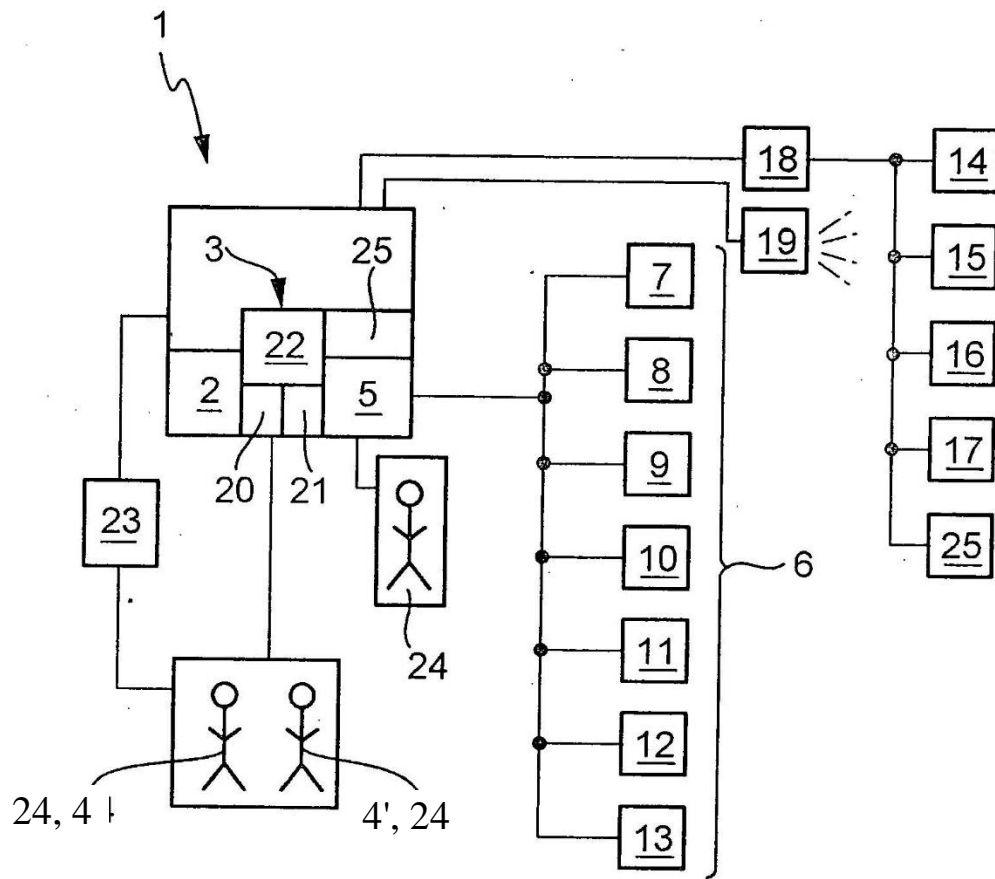


Fig. 1



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Certification

Welocalize Translations

TRANSLATOR'S DECLARATION:

I, Alessandro Neckels, hereby declare:

That I possess advanced knowledge of the German and English languages. The attached German into English translation has been translated by me and to the best of my knowledge and belief, it is a true and accurate translation of: DE10323723A1 Schanz.pdf

I hereby declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

A handwritten signature in black ink, appearing to read "Alessandro Neckels", written over a horizontal line.

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