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(54) **MULTIMEDIA SYSTEM FOR VEHICLE WITH PORTABLE DASH PAD**

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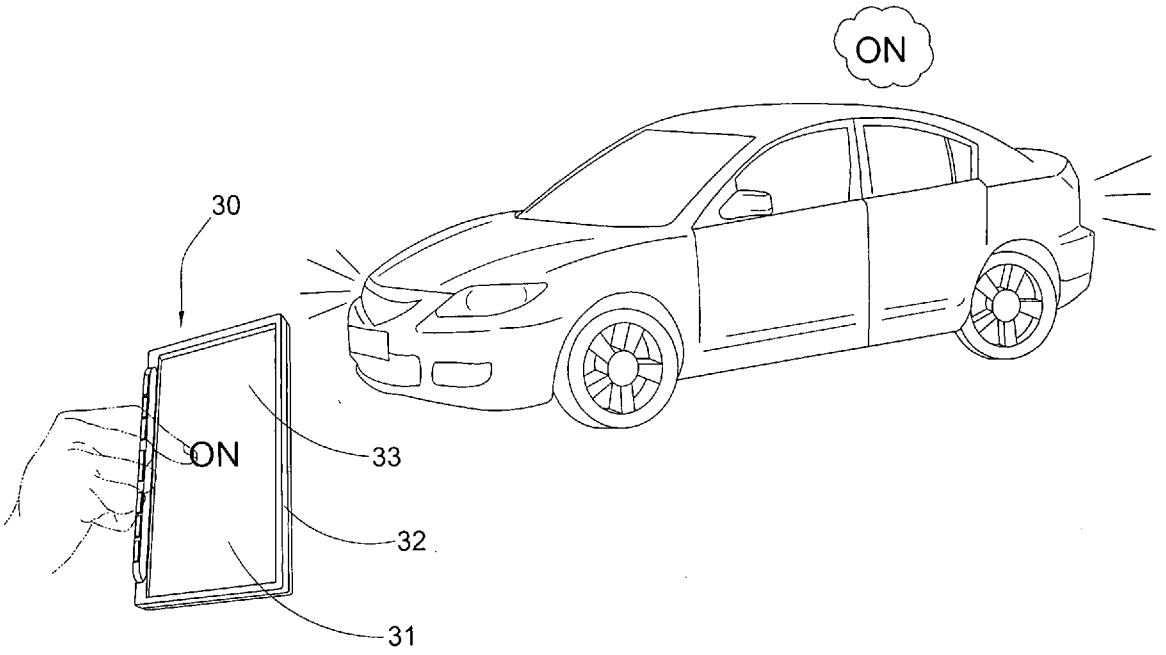
(57) **ABSTRACT**

A multimedia system for vehicle having a plurality of electrical accessories, including a control housing, a control module, and a dash pad. The control module includes a central processing module. The central processing module is electrically connected with the electrical accessories in such a manner that the central processing module is arranged to centrally control the electrical accessories. The dash pad is detachably mounted on the control housing and is wirelessly communicated with the central processing module, wherein a user is able wirelessly control the electrical accessories in the vehicle through the dash pad.



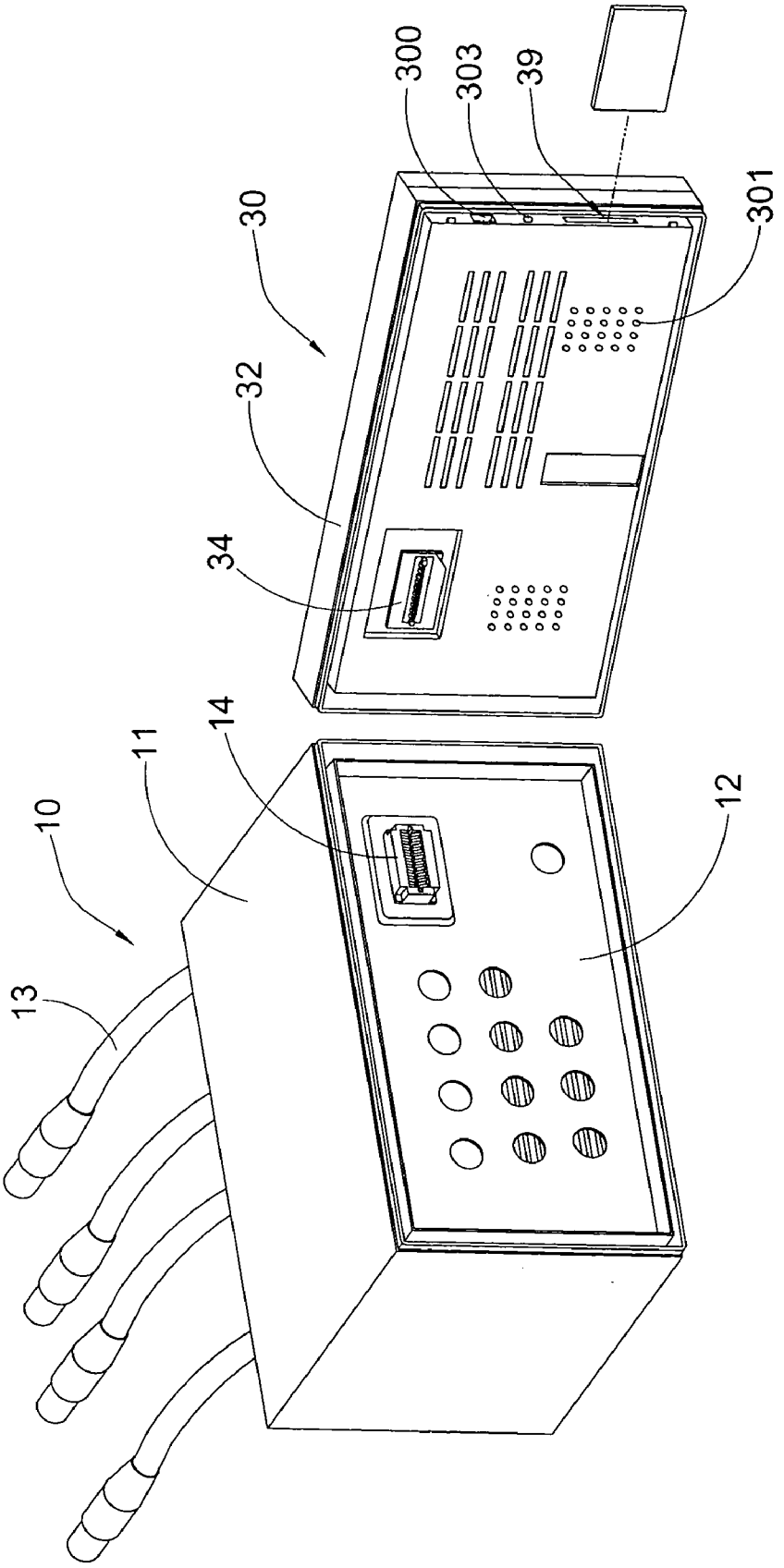


FIG. 1

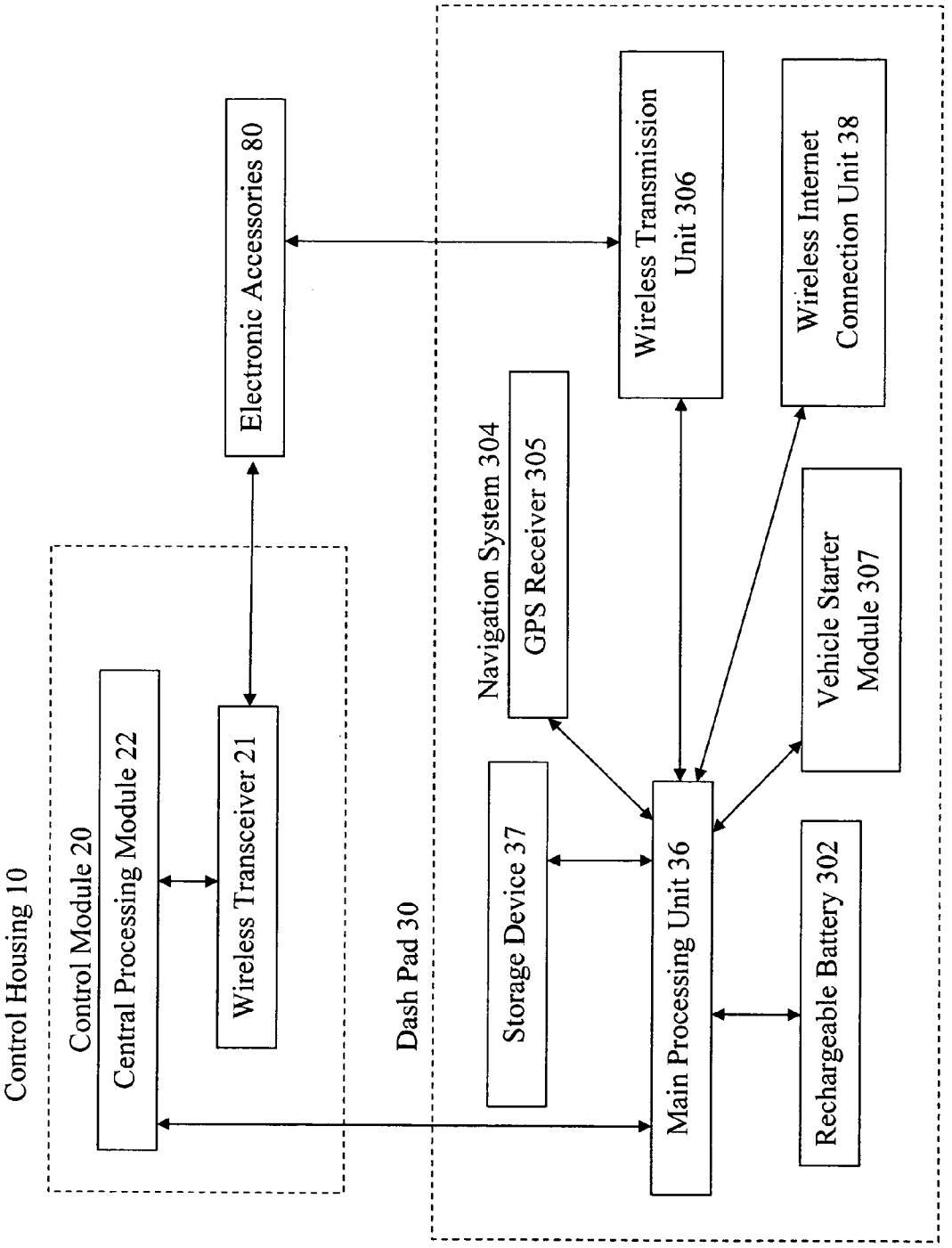

Control Housing 10
Control Module 20
Central Processing Module 22
Wireless Transceiver 21
Electronic Accessories 80
Dash Pad 30
Navigation System 304
GPS Receiver 305
Storage Device 37
Main Processing Unit 36
Rechargeable Battery 302
Wireless Transmission Unit 306
Wireless Internet Connection Unit 38
Vehicle Starter Module 307

Fig. 2

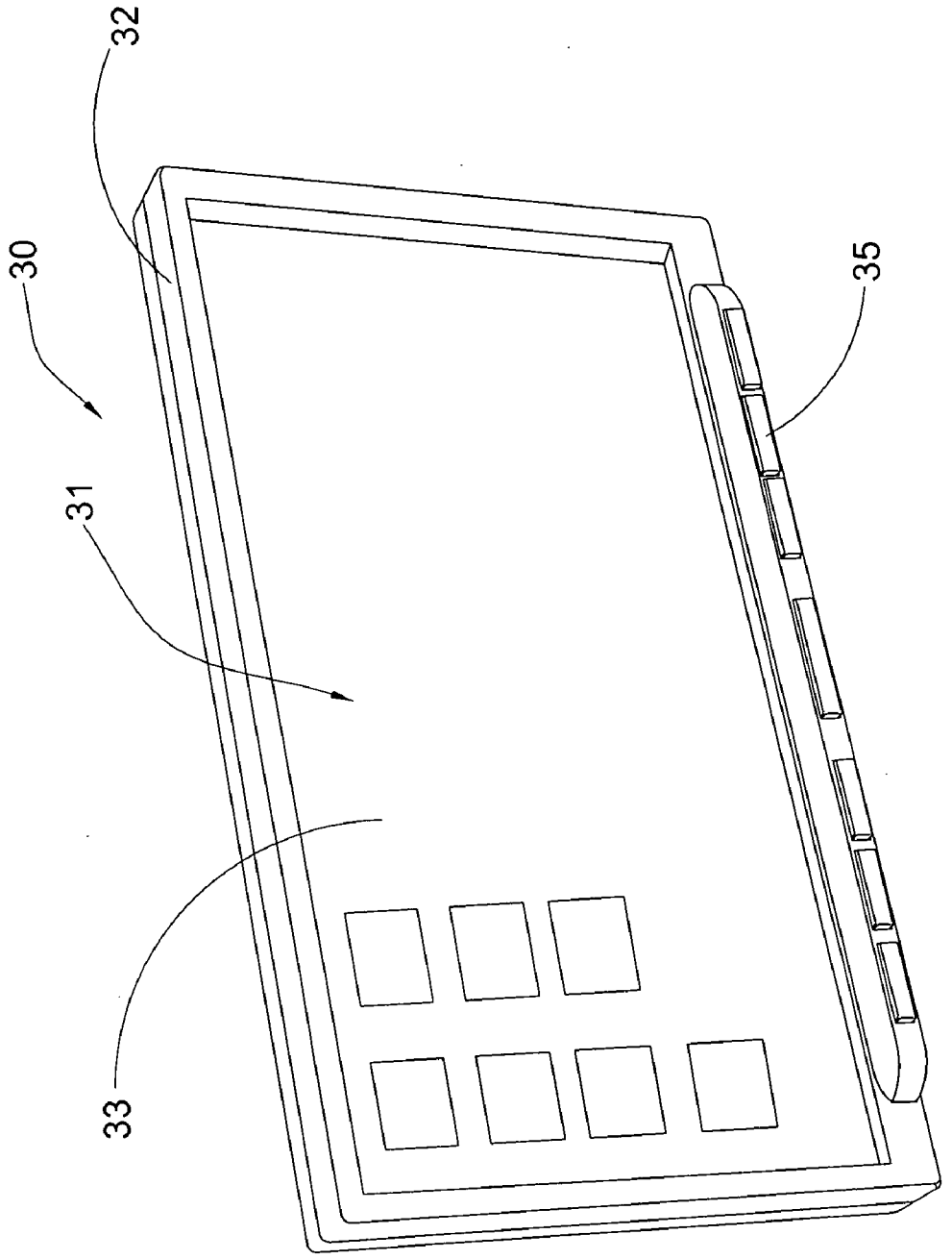


FIG.3

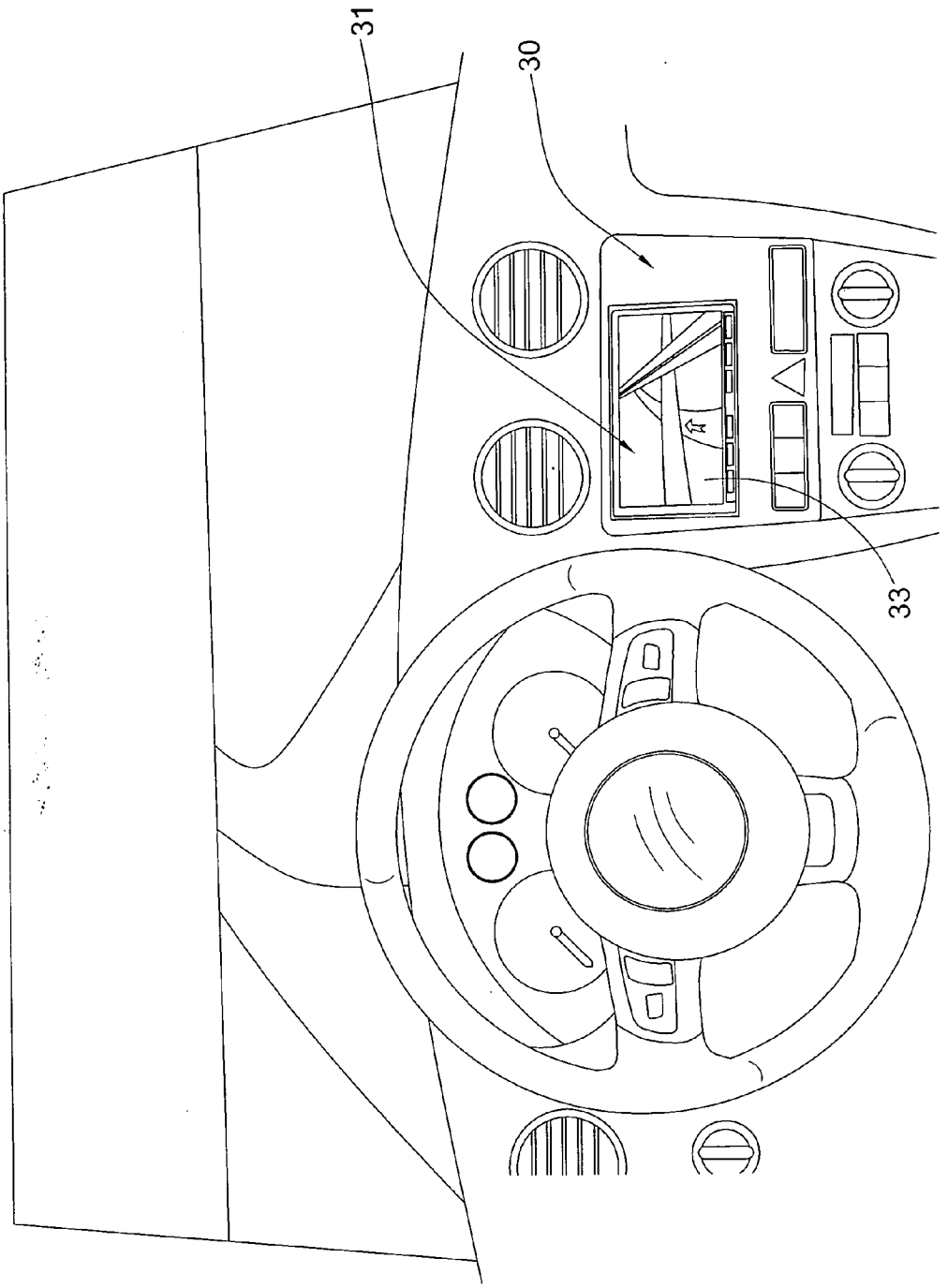


FIG.4

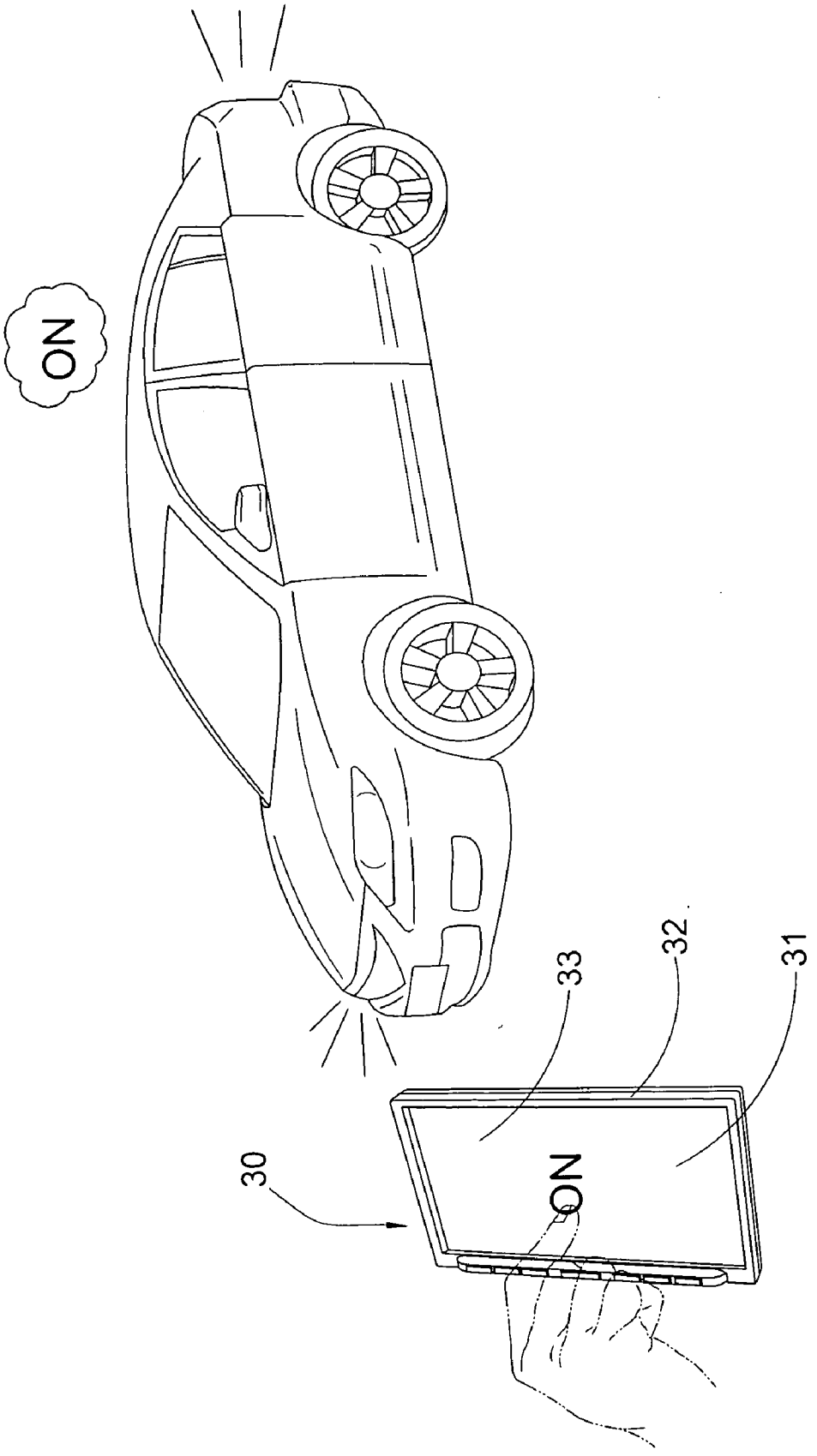


FIG.5

MULTIMEDIA SYSTEM FOR VEHICLE WITH PORTABLE DASH PAD

BACKGROUND OF THE PRESENT INVENTION

[0001] 1. Field of Invention

[0002] The present invention relates to a multimedia system, and more particularly to a multimedia system for use in vehicle and comprises a dash pad for allowing a user to wirelessly control electrical accessories in that vehicle.

[0003] 2. Description of Related Arts

[0004] Conventionally, a vehicle, such as a car, is usually equipped with a plurality of electronic accessories for allowing the driver or the passengers to perform certain activities while the vehicle is operating. For example, the vehicle may be equipped with a navigation system and a speaker system for navigating and for playing music respectively. The current practice is that each of the electronic accessories requires separate control panels and this has several disadvantages. First, the control panel for a particular electronic equipment is usually mounted at a particular location in the passenger compartment (such as on the dashboard) so that not every person in the vehicle can gain access to that particular control panel. Thus, a passenger sitting in the back seat may not control the navigation system which is mounted on the dashboard of the vehicle. On the other hand, the passenger sitting next to the driver may not control a DVD player mounted on a rear side of the driver seat because the control panel of the DVD player is provided thereon. This imparts great inconvenience to users of the electronic accessories.

[0005] Second, most of the electronic accessories provided in the vehicle do not support remote control. Even though there is, each of the electronic accessories requires separate remote control specifically manufactured to operate a particular kind of electronic accessory. For example, a DVD player mounted in the vehicle may have a remote control for allowing a user to operate the DVD player at a distance, but that remote control can only be used for that particular DVD player, and every electronic accessory will have its own remote control. The result is that there exist so many remote controls in the vehicle which may distract the driver and bring great inconvenience to other passengers.

[0006] Third, many drivers or passengers may bring their own personal electronic accessories to the vehicle and use them while the vehicle is operating. For example, a driver may bring his or her music player and play his or her songs while driving. Very often, these personal electronic accessories do not have any connection to the electrical accessories equipped in the vehicle. Thus, the user needs to individually control their personal electronic accessories as well as the electronic accessories equipped in the vehicle whenever they wish to use them.

SUMMARY OF THE PRESENT INVENTION

[0007] The invention is advantageous in that it provides a multimedia system, and more particularly to a multimedia system for use in a vehicle and comprises a dash pad for allowing a user to wirelessly control electrical accessories in that vehicle.

[0008] Another advantage of the invention is to provide a multimedia system for use in a vehicle and comprises a dash pad which is arranged to act as a control panel for remotely controlling a plurality of electrical accessories in the vehicle so as to provide a single point of control to many different electrical accessories in the vehicle.

[0009] Another advantage of the invention is to provide a multimedia system, wherein the dash pad may also be used for controlling many personal electrical accessories of the passengers or the driver. Moreover, the dash pad may also be programmed to be used as a tablet computer when it is detached from a control housing. In other words, the user may also use the dash pad even when he or she is not in the vehicle.

[0010] Another advantage of the invention is to provide a multimedia system for use in a vehicle and comprises a dash pad which is detachably mounted onto a control housing provided in a vehicle and is remotely communicated therewith to control the corresponding electrical accessories.

[0011] Additional advantages and features of the invention will become apparent from the description which follows, and may be realized by means of the instrumentalities and combinations particular point out in the appended claims.

[0012] According to the present invention, the foregoing and other objects and advantages are attained by a multimedia system for vehicle having a plurality of electrical accessories, comprising:

[0013] a control housing mounted in the vehicle;

[0014] a control module which is supported in the control housing, and comprises a central processing module electrically connected with the electrical accessories in such a manner that the central processing module is arranged to centrally control the electrical accessories; and

[0015] a dash pad detachably mounted on the control housing and is wirelessly communicated with the central processing module, wherein the dash pad comprises a control panel for allowing a user to input control commands on the control panel, wherein the control commands are wirelessly sent to the central processing module and are processed so as to control the corresponding electrical accessories, so that the user is able wirelessly control the electrical accessories in the vehicle through the control panel.

[0016] Still further objects and advantages will become apparent from a consideration of the ensuing description and drawings.

[0017] These and other objectives, features, and advantages of the present invention will become apparent from the following detailed description, the accompanying drawings, and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] FIG. **1** is a perspective view of a multimedia system according to a preferred embodiment of the present invention.

[0019] FIG. **2** is a block diagram of the multimedia system according to the above preferred embodiment of the present invention.

[0020] FIG. **3** is a perspective view of the dash pad according to the above preferred embodiment of the present invention.

[0021] FIG. **4** is a schematic diagram of the dash pad according to the above preferred embodiment of the present invention.

[0022] FIG. **5** is another schematic diagram of the dash pad according to the above preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0023] Referring to FIG. **1** to FIG. **5** of the drawings, a multimedia system according to a preferred embodiment of

the present invention is illustrated, in which the multimedia system comprises a control housing **10**, a control module **20**, and a dash pad **30**. The multimedia system is for a vehicle such as a car having a plurality of electronic accessories **80**, such as a speaker system, a navigation system, a multimedia player, and the likes. The control housing **10** is mounted in the vehicle, and preferably inside the passenger compartment of that vehicle.

[0024] On the other hand, the control module **20** is supported in the control housing **10**, and comprises a central processing module **22** is electrically connected with the electrical accessories **80** in such a manner that the central processing module **20** is arranged to centrally control the electrical accessories **80** upon receipt of control commands originated from the dash pad **30**. In other words, the central processing module **22**, which is a single, is capable of controlling the electrical accessories **80**.

[0025] The dash pad **30** is detachably mounted on the control housing **10** and is wirelessly communicated with the central processing module **22**, wherein the dash pad **30** comprises a control panel **31** for allowing a user to input control commands on the control panel **31**, wherein the control commands are wirelessly sent to the central processing module **22** and are processed so as to control the corresponding electrical accessories **80**, so that the user is able wirelessly control the electrical accessories **80** in the vehicle through the control panel **31**.

[0026] According to the preferred embodiment of the present invention, the control housing **10** has a substantial cubic main body **11** for receiving the control module **20**, and a mounting platform **12** formed on a front side of the main body **11** for allowing the dash pad **30** to be detachably mounted on the mounting platform **12**. When the multimedia system is in actual use, the cubic main body **11** is normally received inside the dashboard of the vehicle so that the user is only allowed to access the mounting platform **12** unless electrical wiring needs to be re-adjusted (as explained below).

[0027] The control housing **10** further comprises a plurality of electrical wires **13** extended from the control module **20** to an exterior of the control housing **10**, wherein the electrical wires **13** are arranged to be connected to the corresponding electrical accessories **80** for transmitting control commands thereto. Each of the electrical wires **13** comprises a specifically designed plug for connecting with a corresponding electrical accessory **80** having the corresponding socket. The user has to connect the corresponding electrical wires **13** with the relevant electrical accessory **80** by consulting a user manual or by experience. According to the preferred embodiment of the present invention, the electrical accessories **80** comprises speakers, a navigation unit, a rear camera, a multimedia player such as a DVD player, a radio, and the likes. Each of these electrical accessories **80** are arranged to be connected with one of the electrical wires **13** for connecting with the control module **20**. Moreover, one of the electrical wires **13** is connected to a power source of the vehicle so as to acquire power for the operation of the multimedia system of the present invention.

[0028] Note also that each of the electrical accessories **80** is connected to the power source of the vehicle so that they are readily operative when the control commands are sent out from the control module **20**. Moreover, the control housing **10** further comprises a dash pad socket **14** provided on the mounting platform **12**, wherein the mounting platform **12** is shaped and sized to correspond to that of the dash pad **30** for allowing the dash pad **30** to be fittedly yet detachably mounted onto the mounting platform **12**.

[0029] The central processing module **22** of the control module **20** comprises a control circuitry mounted in the control housing **10**, wherein the central processing module **22** is electrically connected with the electrical wires **13** for transmitting control commands to the corresponding electrical accessories **80**. The control module **20** further comprises a wireless transceiver **21** provided in the control housing **10** for wirelessly communicating the central processing module **22** with the dash pad **30**. Thus, the dash pad **30** is capable of wirelessly transmitting the control commands to the central processing module **22** through the wireless transceiver **21**. Similarly, the central processing module **22** is capable of transmitting user interactive signals to the dash pad **30** through the wireless transceiver **21** for informing the user as to the operation status of the electrical accessories **80**.

[0030] The dash pad **30** comprises a main body **32** and a touch screen **33** provided on a front side of the main body **32**, wherein the control panel **31** is formed on the touch screen **33** so that the user is able to press on a relevant control button on the touch screen **33**. In order to connect the dash pad **30** with the control housing **10**, the dash pad **33** further comprises a connection plug **34** provided on a rear side of the main body **32** and is aligned with the dash pad socket **14** of the control housing **10**. Thus, the user is able to detachably insert the connection plug **34** into the dash pad socket **14** so as to detachably mount the dash pad **30** on the mounting platform **12** of the control housing **10**.

[0031] Furthermore, the dash pad **30** further comprises a plurality of auxiliary control buttons **35** provided on the main body **32**, wherein the auxiliary control buttons **35** are primarily used for providing additional control to the dash pad **30** or the electrical accessories **80**. For example, one of the auxiliary control buttons **35** may be a power switch of the dash pad **30** itself so that whenever the power switch is pressed, the dash to pad **30** will be turned on immediately. This is merely an example and many other operations can be controlled by the auxiliary control buttons **35**. Thus, one of the auxiliary control buttons **35** can be a short key for activating certain function, such as radio function.

[0032] It is important to mention that the dash pad **30** itself can be programmed and utilized as a tablet computer apart from controlling the electrical accessories **80** in the vehicle. Thus, the dash pad **30** further comprises a main processing unit **36** and a storage device **37** for processing and storing digital data. When properly programmed, the dash pad **30** can perform functions resembling to a tablet computer. In order for the dash pad **30** to get connected to internet, the dash pad **30** further comprises a wireless internet connection unit **38** provided in the main body **32** for transmitting signal from and to the internet. The wireless internet connection unit **38** may utilize more than one method to get access to internet, such as through Wi-Fi or data network. Once connected to internet, the dash pad **30** is capable of performing such functions as internet browsing and downloading.

[0033] The dash pad **30** further comprises a memory slot **39** provided on the main body **32** wherein external flash memory can be inserted into the memory slot **39** for expanding a memory capacity of the dash pad **30**, and for allowing external data to be transferred into the built-in storage device **37** of the dash pad **30**. Thus, a user is able to save his or her own video files in a flash memory and transfer or play that video

file by the dash pad **30** when the external flash memory is inserted into the memory slot **39**.

[0034] Apart from acquiring data directly from external flash memory, the dash pad **30** may acquire data from other devices, such as an external hard drive or even from a laptop computer itself. Conversely, a user may want to transfer date from the dash pad **30** to other devices, such as his or own computer. Thus, the dash pad **30** further comprises at least one USB port **300** provided on the main body **32** wherein a user is able to connect external devices, such as a computer, to the dash pad **30** through the USB port **300** by using a conventional USB cable.

[0035] Furthermore, in order to support multimedia activity, the dash pad **30** further comprises at least one speaker **301** formed on the main body **32** for delivering audible voice corresponding to the activity performed by the main processing unit **36**. For example, if the dash pad **30** is playing a video file (either pre-stored in the storage device **37** or streaming from internet), the speaker **301** is then arranged to deliver the sound stored in the video file. Note that the audio file may also be transferred to the control housing **10** so that the audible voice is delivered by the speaker as one of the electrical accessories **80** of the vehicle.

[0036] In order to supply electricity to the dash pad **30**, it further comprises a rechargeable battery **302** provided in the main body **32** for providing electricity to all other components of the dash pad **30**. Thus, the dash pad further comprises a recharging port **303** provided on the main body **32** for acquiring electricity from an external power source. Thus, the rechargeable battery **302** may be recharged by mounting the dash pad **30** onto the control housing **10** so that it can be recharged by the power generated by the vehicle, or by connecting the dash pad **30** to an external power source through the recharging port **303**. The latter method is usually used when the dash pad **30** is detached from the control housing **10** and is used as a standalone tablet computer or controller for the electrical accessories **80**.

[0037] The dash pad **30** further comprises a navigation system **304** provided in the main body **32** and comprises a GPS receiver **305** electrically connected to the main processing unit **36** for receiving wireless signal which indicate a current position of the dash pad **30**. When the vehicle does not have a built-in navigation system, the dash pad **30** may provide one and can be used as a standalone navigator for the vehicle.

[0038] The dash pad **30** further comprises a wireless transmission unit **306** provided in the main body **32** wherein control commands are wirelessly sent to the wireless transceiver **21** of the control module **20** through the wireless transmission unit **306**. The wireless signal transmission technology may be embodied as RF signal transmission, Bluetooth signal transmission, or other similar wireless signal transmission technologies.

[0039] The dash pad **30** further comprises a vehicle starter module **307** electrically connected to the wireless transmission unit **306** and the main processing unit **36**, wherein the vehicle starter module **307** is arranged to remotely start actuate starting up of the vehicle in which the dash pad **30** is to be mounted so as to allow the user to remotely start up the vehicle before he or she gets into the car. This helps the user to pre-warm the vehicle so that when he or she gets into the vehicle, he or she can start driving it immediately.

[0040] The operation of the present invention is as follows: the dash pad **30** may be used for controlling the electrical accessories **80** in a vehicle. When this happens, the user may operate the control panel **31** for remotely controlling the operation of the electrical accessories **80**. This can be done while the dash pad **30** is mounted on the control housing **10** or is detached therefrom. On the other hand, the dash pad **30** may be programmed to perform many functions which can also be performed by a computer. For example, the dash pad **30** may be programmed to have the ability to browse websites, send emails, perform word processing, play games etc. Thus, the dash pad **30** can be adapted for use as a tablet computer wherein the control panel **31** is used primarily as an input device for that tablet computer. A user may be able to expand memory by inserting an external memory card through the memory slot **39**. Moreover, the user may be able to connect the dash pad **30** as a tablet computer to other devices through the USB port **300**.

[0041] One skilled in the art will understand that the embodiment of the present invention as shown in the drawings and described above is exemplary only and not intended to be limiting.

[0042] It will thus be seen that the objects of the present invention have been fully and effectively accomplished. It embodiments have been shown and described for the purposes of illustrating the functional and structural principles of the present invention and is subject to change without departure from such principles. Therefore, this invention includes all modifications encompassed within the spirit and scope of the following claims.

What is claimed is:

1. A multimedia system for vehicle having a plurality of electrical accessories, comprising:

a control housing mounted in said vehicle;

a control module which is supported in said control housing, and comprises a central processing module electrically connected with said electrical accessories in such a manner that said central processing module is arranged to centrally control said electrical accessories; and

a dash pad detachably mounted on said control housing and is wirelessly communicated with said central processing module, wherein said dash pad comprises a control panel for allowing a user to input control commands on said control panel, wherein said control commands are wirelessly sent to said central processing module and are processed so as to control said corresponding electrical accessories, so that said user is able wirelessly control said electrical accessories in said vehicle through said control panel.

2. The multimedia system, as recited in claim **1**, wherein said control housing has a main body for receiving said control module, and a mounting platform formed on a front side of said main body for allowing said dash pad to be detachably mounted on said mounting platform.

3. The multimedia system, as recited in claim **2**, wherein said control housing further comprises a plurality of electrical wires extended from said control module to an exterior of said control housing, wherein said electrical wires are arranged to be connected to said corresponding electrical accessories for transmitting control commands thereto.

4. The multimedia system, as recited in claim **3**, wherein said control housing further comprises a dash pad socket provided on said mounting platform, wherein said mounting platform is shaped and sized to correspond to that of said dash pad for allowing said dash pad to be fittedly yet detachably mounted onto said mounting platform.

5. The multimedia system, as recited in claim **4**, wherein said central processing module of said control module comprises a control circuitry mounted in said control housing, wherein said central processing module is electrically connected with said electrical wires for transmitting control commands to said corresponding electrical accessories.

6. The multimedia system, as recited in claim **5**, wherein said control module further comprises a wireless transceiver provided in said control housing for wirelessly communicating said central processing module with said dash pad, such that said dash pad is capable of wirelessly transmitting said control commands to said central processing module through said wireless transceiver.

7. The multimedia system, as recited in claim **6**, wherein said dash pad comprises a main body and a touch screen provided on a front side of said main body, wherein said control panel is formed on said touch screen so that said user is able to press on a relevant control button on said touch screen.

8. The multimedia system, as recited in claim **6**, wherein said dash pad further comprises a connection plug provided on a rear side of said main body and is aligned with said dash pad socket of said control housing, so that a user is able to detachably insert said connection plug into said dash pad socket so as to detachably mount said dash pad on said mounting platform of said control housing.

9. The multimedia system, as recited in claim **8**, wherein said dash pad further comprises a plurality of auxiliary control buttons provided on said main body, wherein said auxiliary control buttons are primarily used for providing additional control to said dash pad and said electrical accessories.

10. The multimedia system, as recited in claim **9**, wherein said dash pad further comprises a main processing unit and a storage device for processing and storing digital data, so that when said main processing unit is properly programmed, said dash pad is capable of performing functions resembling a tablet computer.

11. The multimedia system, as recited in claim **10**, wherein said dash pad further comprises a wireless internet connection unit provided in said main body for allowing said dash pad to gain access to internet.

12. The multimedia system, as recited in claim **11**, wherein said dash pad further comprises a memory slot provided on said main body wherein an external flash memory is adapted for being inserted into said memory slot for expanding a memory capacity of said dash pad, and for allowing external data to be transferred into said storage device of said dash pad.

13. The multimedia system, as recited in claim **12**, wherein said dash pad further comprises at least one USB port provided on said main body.

14. The multimedia system, as recited in claim **13**, wherein said dash pad further comprises at least one speaker formed on said main body for delivering audible voice corresponding to said activity performed by said main processing unit.

15. The multimedia system, as recited in claim **14**, wherein said dash pad further comprises a navigation system provided in said main body and comprises a GPS receiver electrically connected to said main processing unit for receiving wireless signal which indicate a current position of said dash pad.

16. The multimedia system, as recited in claim **15**, wherein said dash pad further comprises a wireless transmission unit provided in said main body wherein control commands are wirelessly sent to said wireless transceiver of said control module through said wireless transmission unit.

17. The multimedia system, as recited in claim **16**, wherein said dash pad further comprises a vehicle starter module electrically connected to said wireless transmission unit and said main processing unit, wherein said vehicle starter module is arranged to remotely actuate starting up of said vehicle so as to allow a user to remotely start up said vehicle before getting into said vehicle.

18. A dash pad for use as a tablet computer for controlling a plurality of electrical accessories equipped in a vehicle comprising a control housing and a control module, wherein said tablet computer comprises:

a main body;

a main processing unit and a storage device received in said main body for processing and storing digital data; and

a touch screen provided on a front side of said main body to form a control panel wherein a user is able to press on a relevant control button on said touch screen to input control commands for controlling an operation of said electrical accessories, wherein said control commands are wirelessly sent to said control module of said control housing, wherein when said main processing unit is properly programmed, said dash pad is capable of performing functions resembling a tablet computer.

19. The dash pad, as recited in claim **18**, wherein said dash pad further comprises a connection plug provided on a rear side of said main body for detachably inserting into said control housing.

20. The dash pad, as recited in claim **19**, further comprising a plurality of auxiliary control buttons provided on said main body, wherein said auxiliary control buttons are primarily used for providing additional control to said dash pad and said electrical accessories.

21. The dash pad, as recited in claim **20**, further comprising a wireless internet connection unit provided in said main body for allowing said dash pad to gain access to internet.

22. The dash pad, as recited in claim **21**, further comprising a memory slot provided on said main body wherein an external flash memory is adapted for being inserted into said memory slot for expanding a memory capacity of said dash pad, and for allowing external data to be transferred into said storage device of said dash pad.

23. The dash pad, as recited in claim **22**, further comprising at least one USB port provided on said main body.

24. The multimedia system, as recited in claim **23**, further comprising at least one speaker formed on said main body for delivering audible voice corresponding to said activity performed by said main processing unit.

25. The dash pad, as recited in claim **24**, further comprising a navigation system provided in said main body, and a GPS receiver electrically, connected to said main processing unit for receiving wireless signal which indicate a current position of said dash pad.

26. The dash pad, as recited in claim **25**, further comprising a wireless transmission unit provided in said main body wherein control commands are wirelessly sent to said wireless transceiver of said control module through said wireless transmission unit.

27. The multimedia system, as recited in claim **26**, wherein said dash pad further comprises a vehicle starter module electrically connected to said wireless transmission unit and said main processing unit, wherein said vehicle starter module is arranged to remotely actuate starting up of said vehicle so as to allow a user to remotely start up said vehicle before getting into said vehicle.

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