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(71) Applicant: **VELDO TEKNOLOJİ MAKİNE ÜRETİM SANAYİ VE TİCARET ANONİM ŞİRKETİ** [TR/TR]; Çiftlikköy Mah. Mersin Üniversitesi Kampüs, Alanı Küme Evleri Mersin Teknopark 2. İnkübatör Binası No: 35 C B8, Yenişehir/Mersin (TR).

(72) Inventor: **GÜNEY, Sedat**; Tuzla Organize Sanayi Bölgesi 2.Cadde No:24 Tepeören, Tuzla/İstanbul (TR).

(74) Agent: **DESTEK PATENT, INC.**; Lefkosa Cad. NM Ofis Park B Blok No: 36/5 Besevler, 16110 Bursa (TR).

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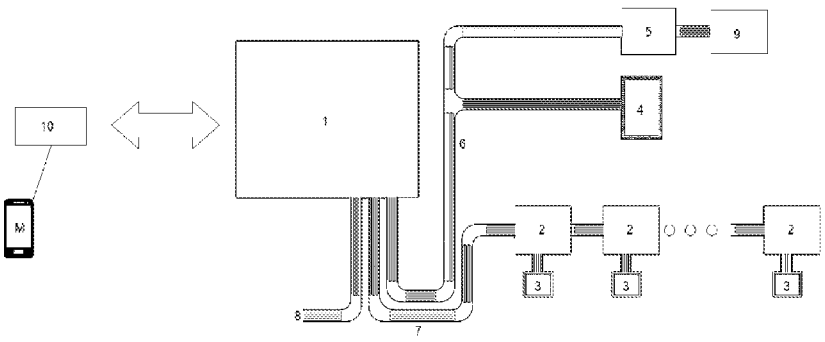

Figure-1

(57) Abstract: This invention is related to a passenger safety system that provides advanced safety by means of the proximity sensors that give information in terms of full/empty seats within the service vehicles, send visual and audible warnings to the exterior environment by operating integrally with the vehicle, send messages to the required points, present instant sitting element information by remote access, perceive only the human body when the vehicle is switched off and locked and when there is a passenger inside.

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A TRACKING SYSTEM AND A METHOD THEREOF

TECHNICAL FIELD

The invention is related to a system to be used in the passenger transportation field that provides tracking the passenger existence and the location information.

The invention is particularly related to the passenger safety system giving information in terms of the empty/full seats, whether there are any passengers inside when the vehicle is closed and locked, sending visual and audial signal to the external environment by working integrally with the vehicle, sending messages to the required points, presenting instant sitting element via remote access, providing advanced safety via proximity sensors that perceives only the human body.

PRIOR ART

Today, the passenger service vehicles are used generally in the transfer of employees and students to their working places or schools. Particularly the student service vehicles include passengers at smaller ages, their getting out and getting in the vehicle is performed by the driver or the auxiliary staff. When there is no auxiliary staff, whether the students stand up or whether there is a student left in the vehicle is controlled by the driver. This situation creates accident risks because it may cause the driver's losing his/her attention. Recently, there are cases in which the students are forgotten within the vehicles. The student/students forgotten within the vehicles could not be able to make themselves heard especially the smaller ones and their security of life are put in jeopardy due to airlessness, fear etc. In the Patent Application No TR2017/14632 that is found as a result of the studies made in the prior art, the sensors that are sensitive to the weights are located in the interior parts of the passenger seat cushions. These sensors reflect the empty/full information to the LED panel within the vehicle and the number of persons to the LED panel outside the vehicle. In order to assemble these sensors, each seat must be disassembled and after the sensors are placed inside the cushion then it must be assembled again.

In this case a labor cost is encountered and due to long assembly period, the service is out of use. In case the sensors fail, because the seat cushions must be disassembled and assembled again, it is required a significant maintenance period. Also, because said sensor is digital, it does not have a capability of measuring the weight of the load in itself and it is lack of adequate sensitivity. If any weight is left on the seat, then it perceives this weight.

Consequently due to the abovementioned problems that could not be solved under the light of the prior art, it is required to make improvements in the relevant technical field.

BRIEF DESCRIPTION OF THE INVENTION

In order to eliminate the abovementioned disadvantages and to bring novel advantages to the relevant technical field, the present invention is related to a tracking system and a method.

The main aim of the invention is to present a system and a method that follows sitting element in all areas where there are passenger seats, sending information messages to both the driver and the relevant entities, providing functional usage by showing the sitting element configuration and status, is mountable easily and quickly and thus decreases the need for assembly labor significantly, is used with cable or wireless and particularly preventing the cases in which the passengers are forgotten within the vehicle.

Another aim of the invention is to develop a system and a method that provides tracking of the sitting element by means of a proximity sensor that could be adhered to or that could be screwed easily under the sitting element; that does not require disassembling the seat cushions of the sitting element during assembly process.

Another aim of the invention is to develop a system and a method that could determine the weight applied on the sitting element within the service vehicles, as a human body.

In order to realize all aims mentioned above and emerged from the below detailed description, the present invention is a tracking system that follows the fullness information of the sitting element for determining the persons forgotten within the vehicle and that shares this information for performing the required warning and actions in all vehicles having a sitting element or in all service vehicles used in passenger transportation. Thus the system includes the following:

- an information unit that presents the user; sitting element arrangement configurations, fullness status information of the sitting element and various setting and info displays,
- at least one sensor that perceives a human body that is on the sitting element/approaches to the sitting element,
- at least one sitting element module that could process the data from said sensors and forwards these processed data through the relevant protocols,
- at least one mainboard that forwards and evaluates the signal from the sitting element to the processor located on itself within a determined format, provides internet access, SMS sending, image transfer via the peripheral units located on itself, provides to take necessary actions for the person within the vehicle/forgotten in the vehicle by providing instant time information and/or informs the user in terms of the current situation though the information unit/mobile device.

This invention also involves a tracking method that follows the fullness of the sitting element in order to detect the persons forgotten within the vehicle and provides the necessary actions and warnings to be made by sharing this information. Thus the method comprises the following procedure steps:

- perceiving the person/passenger on the sitting element by a sensor that could perceive the human body,
- providing the data created by the sensor to be transferred and processed by a sitting element module and forwarding this to the mainboard that provides to take the necessary actions,
- providing the mainboard to take the necessary actions for warning the user by operating together with the vehicle systems and/or to present the data transferred to itself to the user through an information unit/mobile device.

The present invention shall be taken into consideration together with the figures defined below in order to understand the embodiment and the advantages with additional elements fully.

BRIEF DESCRIPTION OF DRAWINGS

Figure 1 gives a general block scheme of the system.
Figure 2 gives a block diagram of the proximity sensor.
Figure 3 gives a schematic exterior view of proximity sensor.

REFERENCE NUMBERS

1. Mainboard
2. Sitting element module
3. Sensor
4. Control panel
5. Video output module
6. Communication cable
7. Sitting element module communication cable
8. Mainboard feeder cable
9. Exterior monitor
10. Mobile application

M: Mobile device
RCD: Resonant Circuit Driver
CS: Cap Sensor

DETAILED DESCRIPTION OF THE INVENTION

In this detailed description of the invention, the novelty of the invention is described with examples only in order to better explain the subject such that they shall not have any limiting effect on the invention. The invention is a tracking system that follows the fullness of the sitting element and provides the warning and the necessary actions to be taken in order to detect the persons forgotten within the vehicle, in all service

vehicles used in the passenger transportation and all vehicles that has a sitting element. In Figure 1, a schematic view of the system of the invention is given. Thus the system comprises; an information unit that presents the user; sitting element arrangement configurations, fullness status information of the sitting element and various setting and info displays, at least one sensor (3) that perceives a human body that is on the sitting element/approaches to the seating element, at least one sitting element module (2) that could process the data from said sensors (3) and forwards these processed data through the relevant protocols, at least one mainboard (1) that forwards and evaluates the signal from the sitting element module (2) to the processor located on itself within a determined format, provides internet access, SMS sending, image transfer via the peripheral units located on itself, provides to take necessary actions for the person within the vehicle/forgotten in the vehicle by providing instant time information and/or informs the user in terms of the current situation though the information unit/mobile device (M).

In a preferred embodiment of the system, the present invention is used on the vehicles such as services etc. that are used for passenger transportation. Mobile application (10) operates on mobile devices (M) such as tablet, telephone etc. that belong to the user. The mobile application (10) provides to inform the user in terms of the situation within the vehicle and/or provides to trigger the user to take necessary actions for the person forgotten within the vehicle.

Said information unit is characterized in that in a preferred embodiment of the system it may be a touch-operated control panel (4) and/or exterior monitors (9) as the vehicle monitor etc. In a preferred embodiment of the system, the present invention comprises at least one video output module (5) that provides to perform image transfer to the exterior monitors (9) such as the vehicle monitor used in vehicle such as the school vehicles.

The sitting element module (2) used in the invention comprises high-speed processor, sensor (3), heat control module, RF module. Sitting element module (2), in case the sensor (3) within any sitting element/sitting element module (2) fails, detects the sensor (3)/ sitting element module (2) that fails and informs the information unit, provides to detect the failure and facilitates to respond to the failure without

disassemble the whole system. Also calibration is performed periodically by providing the perception of the heat within the vehicle continuously.

The control panel (4) to be used as an information unit in the present invention is an information display consists of high-speed processor, touch-operated module capable of bidirectional communication. The control panel (4) exhibits a system that comprises the vehicle sitting element arrangement configurations within the field of vision of the driver, settings and an information display. This control panel could be an LCD panel between 3.2" – 9", also by integrating into the current monitor of the vehicle via designed video output module (5), the information display image could be reflected to the vehicle monitor as an exterior monitor (9).

In a preferred embodiment of the invention the sensor (3) of the invention is a proximity sensor. The sensor (3) (proximity sensor) could detect the entity forgotten on the sitting element whether it is a human or not. Therefore it is avoided to encounter mistakes in cases where weights such as bags etc. are left on the sitting element.

The mainboard (1) of the present invention comprises high-speed processor, GPS/GPRS module, Wi-Fi module, RF module, RTC module, low power module and a module that includes USB/UART output. Also, there is the required CAN-BUS protocol unit on the processor located on the mainboard (1). The mainboard (1) provides to eliminate the risks in terms of life safety by warning the external environment visually and audibly by working with the vehicle integrally in case there is left a passenger/student inside the vehicle after the vehicle is switched off, also gives many critical information including the situation of the sitting elements, messages, mail and time information to the required entities through a mobile device (M) after the vehicle is switched off, in case there is left a passenger inside. The mainboard (1) of the present invention detects very quickly the location of the vehicle by giving location information via the GPS module located on it and provides to eliminate the possible disasters to be experienced. Similarly, it is provided to send e-mail and message (SMS) via the GPRS module located on the mainboard (1). The mainboard (1) could provide to ventilate the interior of the vehicle by working integrally with the vehicle, if the vehicle is left, forgotten or left over on purpose in a

distant region while it is switched off when there is a passenger/student left within the vehicle.

The system of the present invention consists of four main parts and three cables. The developed system is based on the release section induced on one electrode. The capacity is measured periodically by the proximity sensor according to the approach of a human. The system mainboard (1) comprises the sitting element module (2), the video output module (5), the control panel. The sitting element module (2) also comprises a proximity sensor (3). The connection problem between the sitting element module (2) – sensor (3) is eliminated by designing as such. Sitting element module (2) could be assembled easily under each sitting element within the vehicle. Assembly process is easily performed by adhering or screwing under the sitting element. In this way the assembly could be completed in a short time without the disassembly of any element from the vehicle, damaging original part of the vehicle. The assembly step is performed as follows: after fixing the mainboard (1) to an appropriate region that is electrically connected to the vehicle where the system will be used, the sitting element module communication cable (7) connected to this mainboard (1) is plugged in the input of the sitting element module (2) adhered to or screwed under the sitting element. This step is repeated with the other sitting element module communication cable (7) plugged into the output of the sitting element module (2) unless it is reached the last sitting element. If required, RF wireless feature could be activated and it is provided to send the signals to the mainboard (1) wirelessly by pressing the buttons on the sitting element modules (2) screwed under the sitting elements. There is a video output module (5) at the end of the communication cable (6) connected to the mainboard (1). This module, in cases characterized in that the communication module is an exterior monitor (9), provides to reflect the data received from the mainboard (1) to the exterior monitor (9). If the information data created by the system will be reflected to an exterior monitor (9) characterized as the vehicle monitor, then the assembly is completed by connecting this module to the video-in input of the vehicle monitor. If a touch-operated control panel (4) will be used as an information unit, the assembly is completed by plugging the other end of the communication cable (6) into the LCD touch screen used as a control panel (4).

The system operates as the following:

The approach of the human body to the sitting element located within the vehicle in which the system is used, is perceived by the proximity sensor (3). The sensor (3) could perceive the human body on the sitting element cushion by creating a signal area. If there is no element within this field then the sensor (3) produces no signs. When a human body enters into the signal area, the capacity of the capacitor in the sensor (3) increases and the oscillator starts to produce exit sign. The oscillator is designed very well in order to perform this process. At this time the exit layer activates and produces exit sign. This sign is sent to the mainboard (1) in accordance with the required purpose. After the signal that reaches the mainboard (1) is evaluated by the software of the mainboard (1), information is sent to the control panel (4) / exterior monitor (9). The system is operated based on the ignition switch. The scenarios vary according to the cases where the motor of the vehicle is switched on or switched off. When the motor of the vehicle is switched on; the system presents the driver the information in terms of the sitting element arrangement and sitting element status through the vehicle monitor used as a control panel (4) or exterior monitor (9). The critical case here is the case when the vehicle is switched off (in other words the case when the driver lefts the vehicle). If a human body is perceived in the vehicle when it is switched off, this situation is considered as an emergency situation. In this cases first of all the mainboard (1) by operating integrally with the systems of the vehicle gives audible and /or visual warning to the interior of the vehicle. After the first warning, the motor is expected to be switched on after waiting a predetermined time. In case the motor does not switched on during the predetermined time, then the mainboard (1) activates the flashers of the vehicle and again the motor is expected to be switched on during a predetermined time. If during this period the driver does not switched on the motor of the vehicle, the car horn is activated and start to give warning (s.o.s) signal. Together with this signal, the information such that in which hour the seat is full and there is a passenger left within the vehicle, is sent to the required points through a message (SMS) and e-mail. Besides, the location of the vehicle is transferred to the required point. The ventilation of the vehicle could be provided through the mobile application (10) developed for mobile devices (M) from the relevant points until someone reach to the vehicle. A full passenger safety could be provided with this system. In addition to this the user could monitor the date/hour of the start/finish of the service, sitting element/belt, fullness and speed information through the mobile application (10). This information

could be reported and saved. Since the mainboard (1) could send data to the cloud environment, it provides the obtained data to be monitored by the relevant entities during the whole service by sharing this information with the relevant entities.

The present invention could be used in many alternative fields. For example, the information in terms of the students when they are in the classrooms, when they are sitting at their desks, how long they stay in the classroom, could be presented to the users with different applications of the present invention.

CLAIMS

1. A tracking system that follows the fullness information of the sitting element for determining the persons forgotten within the vehicle and that shares this information for performing the required warning and actions in all vehicles having a sitting element or in all service vehicles used in passenger transportation, **characterized in that** said system comprises the following:
   - an information unit that presents the user; sitting element arrangement configurations, fullness status information of the sitting element and various setting and info displays,
   - at least one sensor (3) that perceives a human body that is on the sitting element/approaches to the sitting element,
   - at least one sitting element module (2) that could process the data received from said sensors (3) and forwards these processed data through the relevant protocols,
   - at least one mainboard (1) that forwards and evaluates the signal received from the sitting element module (2) to the processor located on itself within a determined format, provides internet access, SMS sending, image transfer via the peripheral units located on itself, provides to take necessary actions for the person within the vehicle/forgotten in the vehicle by providing instant time information and/or informs the user in terms of the current situation though the information unit/mobile device (M).

2. A tracking system according to claim 1, **characterized in that**; it comprises a communication cable (6) that provides data transfer between the mainboard (1) and the information unit.

3. A tracking system according to claim 1, **characterized in that**; said information unit is a control panel (4) that has a specific processor on it, provides easy assembly with its touch-operated feature and presents the user besides the tracking information various functions and setting displays.

4. A tracking system according to claim 1, **characterized in that**; said information unit is an exterior monitor (9) characterized as the vehicle monitor.

5. A tracking system according to claim 1, **characterized in that**; it comprises at least one video output module (5) that provides to reflect image to the exterior monitors (9) such as the vehicle monitor etc.

6. A tracking system according to claim 1, **characterized in that**; it comprises a sitting element module communication cable (7) that provides data transfer between the sitting element module (2) and the mainboard (1).

7. A tracking system according to claim 1, **characterized in that**; it comprises a mainboard feeder cable (8) that transfers the required power for the operation of the mainboard (1).

8. A tracking system according to claim 1, **characterized in that**; said sensor (3) is a proximity sensor that detects the human body approaching onto the sitting element by using electromagnetic waves.

9. A tracking system according to claim 3, **characterized in that**; said control panel (4) is an LCD display.

10. A tracking system according to claim 9, **characterized in that**; said LCD display has a dimension between 3.2" – 9".

11. A tracking system according to claim 1, **characterized in that**; said mainboard (1) comprises at least one processor.

12. A tracking system according to claim 1, **characterized in that**; the processor on said mainboard (1) comprises CAN-BUS protocol unit that provides to integrate required number of systems and provides communication.

13. A tracking system according to claim 1, **characterized in that**; said mainboard (1) comprises a GPS module that provides the location information.

14. A tracking system according to claim 1, **characterized in that**; said mainboard (1) comprises a GPRS module that provides the capability to send message (SMS) and/or e-mail to required points.

15. A tracking system according to claim 1, **characterized in that**; said mainboard (1) comprises a Wi-Fi module that provides remote access capability.

16. A tracking system according to claim 1, **characterized in that**; said mainboard (1) comprises a RF module that provides wireless communication.

17. A tracking system according to claim 1, **characterized in that**; said mainboard (1) comprises a RTC module that provides to give instant time information.

18. A tracking system according to claim 1, **characterized in that**; said mainboard (1) comprises a module that provides USB/UART output.

19. A tracking system according to claim 1, **characterized in that**; said mainboard (1) comprises a low power module with sleep mode feature that provides to operate in a stable manner without giving damage to the accumulator of the vehicle and to save energy after the vehicle in which the system is integrated, is switched off.

20. A tracking system according to claim 1, **characterized in that**; said sitting element module (2) comprises a heat control module that provides heat control.

21. A tracking system according to claim 1, **characterized in that**; said sitting element module (2) comprises a RF module that provides wireless communication.

22. A tracking system according to claim 21, **characterized in that**; said sitting element module (2) comprises a button that brings RF module which provides wireless communication, in active/passive status.

23. A tracking system according to claim 1, **characterized in that**; said sitting element module (2) comprises an adhesive section/screwing section that provides its assembly to the sitting element.

24. A tracking system according to claim 3, **characterized in that**; said control panel (4) comprises a communication module that allows bidirectional communication.

25. A tracking system according to claim 1, **characterized in that**; it comprises a mobile application (10) that operates on a mobile device (M) and provides to inform the user in terms of the situation within the vehicle and/or provides to trigger the user to take necessary actions for the person forgotten within the vehicle.

26. A tracking method that follows the fullness of the sitting element in order to detect the persons forgotten within the vehicle and provides the necessary actions and warnings to be made by sharing this information in all vehicles with a sitting element and in service vehicles used in passenger transportation, characterized in that method comprises the following procedure steps:

- perceiving the person/passenger on the sitting element by a sensor (3) that could perceive the human body,
- providing the data created by the sensor (3) to be transferred and processed by a sitting element module (2) and forwarding this to the mainboard (1) that provides to take the necessary actions,
- providing the mainboard (1) to take the necessary actions for warning the user by operating together with the vehicle systems and/or to present the data transferred to itself to the user through an information unit/mobile device (M).

27. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that provides through an information unit to present the status information in terms of sitting element arrangement and sitting element status sent by the mainboard (1) to the user when the motor of the vehicle to which the system is integrated is switched on.

28. A tracking method according to claim 27, **characterized in that**; it comprises the procedure step that presents the data sent by the mainboard (1) to the user through a control panel (4).

29. A tracking method according to claim 27, **characterized in that**; it comprises the procedure step that presents the data sent by the mainboard (1) to the user via a video output module (5) through exterior monitors (9) such as the vehicle monitor.

30. A tracking method according to claim 26, **characterized in that**; when the vehicle to which the system is integrated is switched off and when a passenger is perceived within the vehicle by said sensor (3), the mainboard (1) comprises the following procedure steps by operating together with the systems belong to the vehicle to which the system is integrated:

- giving an audible and /or visual warning to the interior environment of the vehicle,
- if during a predetermined time the motor of the vehicle is not switched on, activating the flashers of the vehicle and waiting during a predetermined time for the vehicle to switch on,
- if at the end of the predetermined tine the motor of the vehicle is not switched on, activating the car horn for giving s.o.s signal and informing the user through the mobile device (M) in terms of the full sitting element information within the vehicle/vehicle location information.

31. A tracking method according to claim 30, **characterized in that**; it comprises the procedure step that informs the user in terms of the number of the full sitting element and time information when the sitting element is full.

32. A tracking method according to claim 30, **characterized in that**; it comprises the procedure step that informs the user in terms of the vehicle location obtained by means of the GPS module on the mainboard (1).

33. A tracking method according to claim 30, **characterized in that**; it comprises the procedure step that sends message (SMS) and/or e-mail to the mobile

device (M) of the user by means of the GPRS module on the mainboard (1) in terms of the full sitting element information.

34. A tracking method according to claim 30, **characterized in that**; it comprises the procedure step that the mainboard (1) informs the user in terms of the full sitting element information/ the vehicle location information through the mobile application (10) that operates on the mobile device (M) of the user.

35. A tracking method according to claim 34, **characterized in that**; it comprises the procedure step that the user provides remote ventilation of the vehicle through the mobile application (10) that operates on the mobile device (M).

36. A tracking method according to claim 35, **characterized in that**; it comprises the procedure step that the mainboard (1) provides the ventilation of the vehicle as a result of the triggering process performed by the user through the mobile application (10).

37. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that provides the user to monitor the start-finish times of the service, sitting element-belt fullness and speed information through the mobile application (10) that operates on the mobile device (M) of the user.

38. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that the data transfer between the mainboard (1) and the information unit is provided by means of the communication cable (6).

39. A tracking method according to claims 28 and 29, **characterized in that**; it comprises the procedure step that the data transfer between the mainboard (1) and the control panel (4) / exterior monitor (9) is provided by the communication cable (6).

40. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that the required power to operate the mainboard (1) is provided by the mainboard feeder cable (8).

41. A tracking method according to claim 26, **characterized in that**; the data transfer between the sitting element module (2) and the mainboard (1) is provided by the sitting element module communication cable (7).

42. A tracking method according to claim 26, **characterized in that**; the data transfer between the sitting element module (2) and the mainboard (1) is provided wirelessly by the RF modules located in the mainboard (1) and the sitting element module (2).

43. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that said sensor (3) perceives the human body that approaches onto the sitting element or that is on the sitting element by using electromagnetic waves.

44. A tracking method according to claim 26, **characterized in that**; the capability of remote access to said mainboard (1) is provided by the Wi-Fi module located on the mainboard (1).

45. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that said mainboard (1) communicates wirelessly by means of the RF module.

46. A tracking method according to claim 26, **characterized in that**; said mainboard (1) gives instant time information by means of the RTC module.

47. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that it reports through the USB port provided by the module that provides USB/UART output located on the mainboard (1).

48. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that the integration of the system in required numbers and its communication is provided by means of the CAN-BUS protocol unit located on the processor on the mainboard (1).

49. A tracking method according to claim 30, **characterized in that**; it comprises the procedure step that the stable operation of the system without giving any

damage to the accumulator of the vehicle after the vehicle is switched off is provided by means of the low power module.

50. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that the sitting element module (2) provides the heat control within the vehicle by means of a heat control module located on itself.

51. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that the sitting element module (2) provides the wireless communication by means of a RF module located on itself.

52. A tracking method according to claim 51, **characterized in that**; it comprises the procedure step that the sitting element module (2) brings the RF module on itself to an active/passive status by means of a button.

53. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that said sitting element module (2) is assembled to the sitting element by means of an adhesive/screwing section.

54. A tracking method according to claim 28, **characterized in that**; it comprises the procedure step that said control panel (4) provides a bidirectional communication by means of a communication module.

55. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that said mainboard (1) sends the received data to a cloud environment, shares this obtained data with the relevant entities during the travel.

56. A tracking method according to claim 34, **characterized in that**; it comprises the procedure step that the communication of the mainboard (1) with the mobile application (10) that operates on the mobile device (M) is provided through the GPRS module located on the mainboard (1).

57. A tracking method according to claim 34, **characterized in that**; it comprises the procedure step that the communication of the mainboard (1) with the

mobile application (10) that operates on the mobile device (M) is provided through the Wi-Fi module located on the mainboard (1).

58. A tracking method according to claim 26, **characterized in that**; it comprises the procedure step that said sitting element module (2) informs the user in terms of the failure information of the sitting element module (2) and/or the sensor (3) through the information unit.

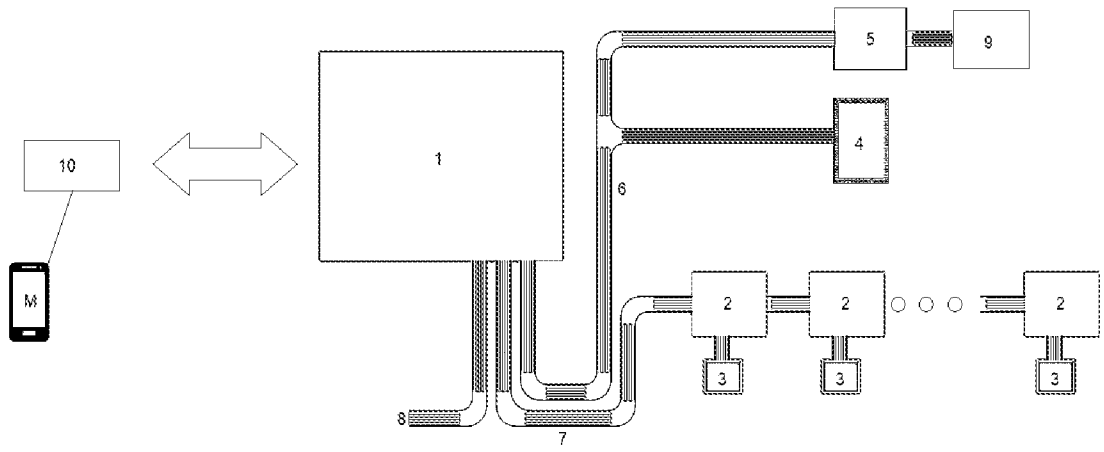

Figure-1

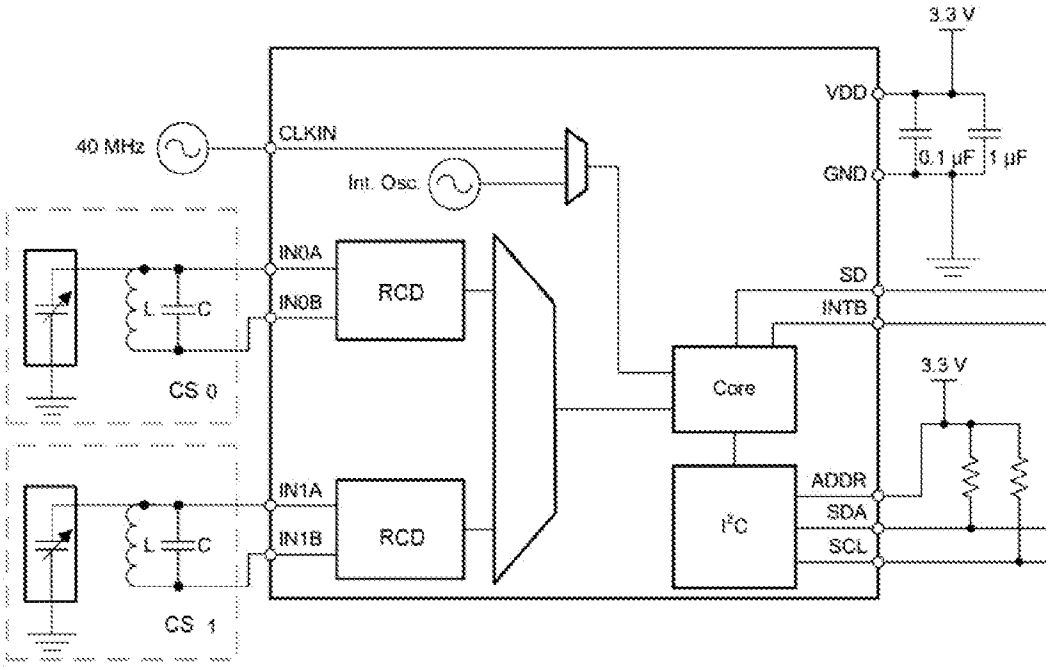
3.3 V
VDD
GND
0.1 µF
1 µF
40 MHz
CLKIN
Int. Osc.
IN0A
IN0B
RCD
L
C
CS 0
IN1A
IN1B
RCD
L
C
CS 1
SD
INTB
Core
3.3 V
ADDR
SDA
SCL
I²C

Figure-2

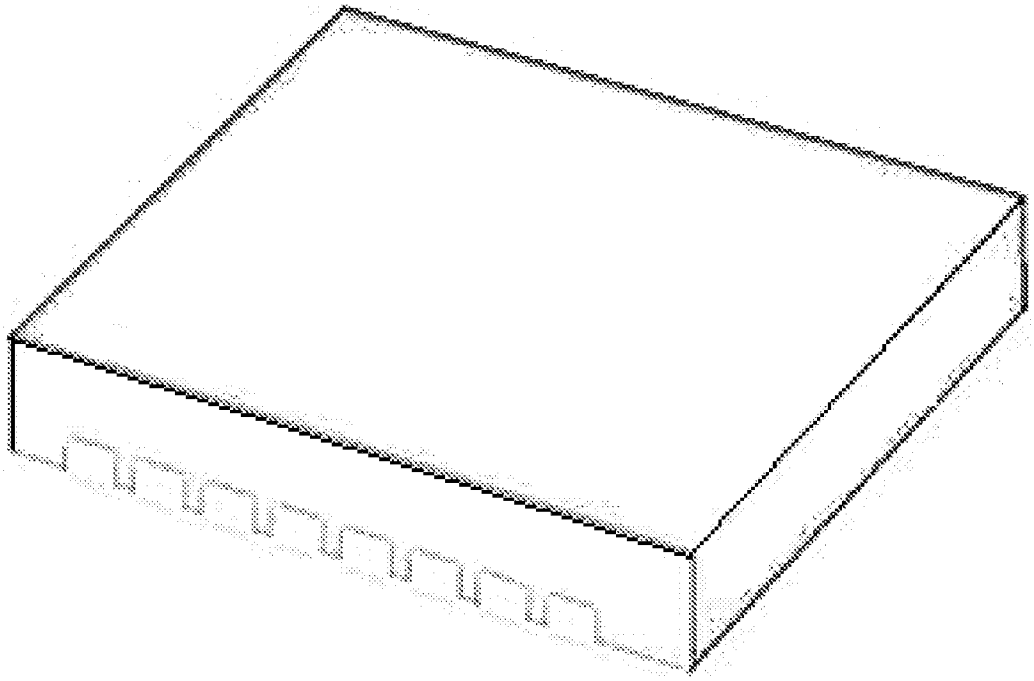

Figure-3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/TR2018/050637

A. CLASSIFICATION OF SUBJECT MATTER

B60N 2/00 (2006.01)i; G08B 21/02 (2006.01)i
B60N2/002; G08B21/22 (CPC)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B60N; G08B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Published patent and utility model applications of Turkey, 2005-2019

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO Abstract & Fulltext Databases, WPI Data & Keywords: passenger, track, empty, full, seat, existence, proximity, range, detect, sensor, vehicle, minibus, minivan, mass transit, mass transportation, school bus, student, child, kid , bus, transport, occupant, presence, discern, occupied, forgotten, left-behind, neglected, abandoned, unattended, warn, alert, alarm, notify, beep, mobile, wireless, cellular, handheld, telephone, phone, cellphone, smartphone, mobile terminal, tablet, user equipment, PDA, LCD, display, screen, monitor, sms, message, driver, ekran, yolcu, servis, otobüs, öğrenci, çocuk, oturma, koltuk, dolu, cep telefonu, mobil cihaz, sensör, mesaj, minibüs, unutulan, araç, sürücü

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Okul Servisleri Koltuk Takip Sistemleri (VELDO TEKNOLOJİ MAKİNE ÜRETİM SANAYİ VE TİCARET ANONİM ŞİRKETİ) http://web.archive.org/web/20180728170949/http://www.veldo.com.tr:80/koltuk-doluluk-sensoru-1 28 July 2018 (2018-07-28) & http://web.archive.org/web/20180528130447/http://www.veldo.com.tr:80/koltuk-doluluk-sensoru-1 28 May 2018 (2018-05-28) whole document	1-58
X	US 2012232749 A1 (SCHOENBERG GREGORY B [US]) 13 September 2012 (2012-09-13) especially abstract, description paragraphs 11-15, 84-101, 137; figures 1, 3, 7, 14, 29	1-58
X	TR 2017 14632 U (MUZAFFER GÖKÇIMEN, ZAFER ÖNEL) 23 October 2017 (2017-10-23) especially abstract, description pages 4-5; figures 1, 3-4	1-58
X	CN 203063861 U (CHI YUNXIA) 17 July 2013 (2013-07-17) especially abstract, description paragraphs 3-5, 8-9; figure 1	1-58

☑ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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Date of the actual completion of the international search	Date of mailing of the international search report
18 July 2019	**18 July 2019**

Name and mailing address of the ISA/TR
Turkish Patent and Trademark Office (Turkpatent)
Hipodrom Caddesi No. 115
06560 Yenimahalle
Ankara
Turkey
Telephone No. **(90-312) 303 11 82**
Facsimile No. **+903123031220**

Authorized officer
Mustafa Güney ÇALIŞKAN
Telephone No. **+903123031219**

INTERNATIONAL SEARCH REPORT

International application No.
PCT/TR2018/050637

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 9569948 B1 (PLATT KEITH [US]) 14 February 2017 (2017-02-14) especially abstract, description columns 5-6; claim 1; figures 1, 3	1-58
X	US 2015274036 A1 (ARAD ELI [IL]) 01 October 2015 (2015-10-01) especially abstract, description paragraphs 15-19, 79, 130-133; figures 8, 10-11	1-58
X	WO 2017004587 A1 (TWO COOL DADS LLC [US]) 05 January 2017 (2017-01-05) especially abstract, description pages 15, 20; figures 2A, 5-6	1-58