

A COVER FOR A VEHICULAR INSTALLATION

[001] The invention relates to a cover for a vehicular installation, in which the cover holds a data card, for the data card to be received by the vehicular installation in which the cover is mounted thereupon.

BACKGROUND OF THE INVENTION

[002] As part of the Electronic Road Pricing (ERP) 2.0 initiative, the Singapore Land Transport Authority (LTA) has rolled out an updated vehicular installation that is referred to as an “On Board Unit” (OBU), which has Global Navigation Satellite System sensors that shall facilitate toll fee or parking fee collection. The OBU may be configured to receive a data card, which may be, by way of example, a smart card (e.g., a CEPAS card). The data card shall enable instantaneous payments to be made based on a location of the vehicle in real-time.

[003] However, it is noted that users face difficulties in inserting or removing their smart card from the OBU. Accordingly, to ensure that the ERP 2.0 initiative achieves widespread adoption among Singaporeans, it is desirable to have a means that holds the smart card of the user in a manner that (i) allows the user to conveniently insert their smart card into the OBU in a secure manner, and also (ii) allows the user to conveniently remove their smart card from the OBU in a substantially effortless manner.

SUMMARY OF INVENTION

[004] The main objective of the invention is to allow users to conveniently remove their smart card from the OBU in a substantially effortless manner. The invention may also allow users to conveniently insert their smart card into the OBU as well. Furthermore, the invention may also serve as a housing that protects the card and portions of the OBU from being exposed to the external environment and/or ingress of foreign substances.

[005] The present invention intends to provide a cover for a vehicular installation, comprising at least one holder mechanism having one or more holders, wherein each holder, or parts thereof, are disposed along one or more interior surfaces of the cover that are to be

adjacent to the vehicular installation when the cover is mounted thereupon. The holding mechanism is configured to receive any one or a combination of a top surface of a data card and a bottom surface of the data card, for the data card to be attached to the cover, so that a free end of the data card is received by the vehicular installation as the cover is mounted thereupon.

[006] Preferably, the holders of the cover comprise a first protrusion and a second protrusion, which each project from a first interior surface and a second interior surface, wherein the first interior surface and the second interior surface are substantially perpendicular with respect to each other. Preferably as well, the first protrusion is formed with a first recessed portion, and the second protrusion is formed with a second recessed portion, wherein the first recessed portion and the second recessed portion are substantially aligned or non-aligned with respect to each other. Preferably as well, the first recessed portion and the second recessed portion, or portions thereof, each receive the top surface of the data card and the bottom surface of the data card, for the data card to be attached to the cover.

[007] Preferably, the holder includes one or more groups of protrusions, with each group of protrusions comprising a first protrusion, which projects from a first interior surface along an axis perpendicular to the first interior surface, a second protrusion and a third protrusion, which each project from the first interior surface and a second interior surface, wherein the first interior surface and the second interior surface are substantially perpendicular with respect to each other, wherein the second protrusion is relatively located at a left side of the first protrusion, and the third protrusion is relatively located at a right side of the first protrusion.

[008] Preferably, the second protrusion is formed with a lateral portion and a vertical portion, and the third protrusion is formed with a lateral portion and a vertical portion, wherein the vertical portions of the second protrusion and the third protrusion are located nearer to the first protrusion compared to free ends of the lateral portions of the second protrusion and the third protrusion. Preferably as well, the first protrusion, or portions thereof, is adjacent to the top surface of the data card, and the lateral portions of the second protrusion and the third protrusion, or portions thereof, are adjacent to the bottom surface of the data card, as the data card is attached to the cover.

[009] Preferably, the first protrusion is formed with a lateral portion and a vertical portion, and wherein the second protrusion is located at a left side of vertical portion of the first protrusion, and the third protrusion is located at a right side of the vertical portion of the first protrusion. Preferably as well, the lateral portion of the first protrusion, or portions thereof, is adjacent to the top surface of the data card, and the second protrusion and the third protrusion, or portions thereof, are adjacent to the bottom surface of the data card, as the data card is attached to the cover. Preferably as well, the first protrusion, or portions thereof, is adjacent to the top surface of the data card, and the second protrusion and the third protrusion, or portions thereof, are adjacent to the bottom surface of the data card, as the data card is attached to the cover.

[0010] Preferably, the holder includes at least one rotatable piece comprising a shaft that projects from a first interior surface, along an axis that is substantially perpendicular to the first interior surface, and a first body in connection with the shaft.

[0011] Preferably, the first body comprises surfaces that include arcuate surface, a first planar surface, and a second planar surface, a first common edge in which edges of the first planar surface and the second planar surface meet, a second common edge in which edges of the first planar surface and the arcuate surface meet, and a third common edge in which edges of the second planar surface and the arcuate surface meet. Preferably as well, the first body further comprises a first length that extends perpendicularly between the first common edge and the second common edge, and a second length that extends perpendicularly between the first common edge and the third common edge, wherein the first length is longer than the second length. Preferably as well, the first body is further formed with an aperture that allows the first body to be received by the shaft, for the first body to substantially rotate with respect to the shaft.

[0012] Preferably, the holder further includes one or more protrusions that include a first protrusion having either one or a combination of a pair of vertical portions that project from the first interior surface and a second interior surface, and a lateral portion that projects from the first interior surface and in connection with the vertical portions. Preferably as well, the lateral portion of the first protrusion, or portions thereof, is adjacent to the bottom surface of the data card; and the first body is rotated for its second common edge to become

substantially nearer or adjacent to the lateral portion and/or vertical portions of the first protrusion compared to its third common edge, in which its arcuate surface is in contact with the top surface of the data card; for the data card to be attached to the cover

[0013] Preferably, the first body is rotated for its second common edge to become substantially away from the lateral portion and/or the vertical portions of the first protrusion, for the data card to be removed from the cover.

[0014] Preferably, the holder further includes a second protrusion and a third protrusion, which each project from the first interior surface along an axis perpendicular to the first interior surface. Preferably as well, the second protrusion and a third protrusion are each formed with a first segment and a second segment at their bottom portion, wherein the data card is in contact with the first segment and the second segment as the data card is attached to the cover.

[0015] Preferably, the rotatable piece further comprises a second body connected to the first body and conforms to the planar surfaces of the first body, which allows a user to interact therewith to rotate the first body about the shaft.

[0016] One skilled in the art will readily appreciate that the invention is well adapted to carry out the objects and obtain the ends and advantages mentioned, as well as those inherent therein. The embodiments described herein are not intended as limitations on the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] To facilitate an understanding of the invention, there is illustrated in the accompanying drawings the preferred embodiments from an inspection of which when considered in connection with the following description, the invention, its construction and operation and many of its advantages would be readily understood and appreciated.

[0018] **FIG. 1** is a diagram illustrating a simplified drawing of a cover of the present invention, which holds a data card, being detached from a vehicular installation.

[0019] **FIG. 2** is a diagram illustrating a simplified drawing of the cover of the present invention, which holds the data storage unit, being attached to the vehicular installation.

[0020] **FIGS 3 – 5** are diagrams illustrating the cover of the present invention in its first example embodiment. In particular, **FIG. 3** illustrates its perspective view, **FIG. 4** illustrates its front interior view, and **FIG. 5** illustrates its front interior view with it holding the data card.

[0021] **FIGS 6 – 8** are diagrams illustrating the cover of the present invention in its second example embodiment. In particular, **FIG. 6** illustrates its perspective view, **FIG. 7** illustrates its front interior view, and **FIG. 8** illustrates its front interior view with it holding the data card.

[0022] **FIGS 9 – 11** are diagrams illustrating the cover of the present invention in its third example embodiment. In particular, **FIG. 9** illustrates its perspective view, **FIG. 10** illustrates its front interior view, and **FIG. 11** illustrates its front interior view with it holding the data card.

[0023] **FIGS 12 – 14** are diagrams illustrating the cover of the present invention in its fourth example embodiment. In particular, **FIG. 12** illustrates its perspective view, **FIG. 13** illustrates its front interior view, and **FIG. 14** illustrates its front interior view with it holding the data card.

[0024] **FIG. 15** is a diagram illustrating the cover of the present invention in its fifth example embodiment.

[0025] **FIG. 16** is a diagram illustrating a front interior view of the cover of the present invention in its fifth example embodiment, with its rotatable piece being in a first position.

[0026] **FIG. 17** is a diagram illustrating the front interior view of the cover of the present invention in its fifth example embodiment, with its rotatable piece being in a second position in which it is substantially near to a first protrusion.

[0027] **FIG. 18** is a diagram illustrating a front interior view of the cover of the present invention in its fifth example embodiment, with it holding the data card.

[0028] **FIG. 19** is a diagram illustrating a front interior view of the cover of the present invention in its sixth example embodiment, with it holding the data card.

DETAILED DESCRIPTION OF THE INVENTION

[0029] The present invention relates to a cover for a vehicular installation that may be in the form of an on-board unit, in which the cover holds a data card that may be in the form of a smart card, for the smart card to be received by the vehicular installation in which the cover is mounted thereto. The invention may also be presented in a number of different embodiments with common elements.

[0030] According to the concept of the invention, the cover of the present invention is to receive the data card for holding it in a secured manner. With that, a user may interact with the cover, for inserting the cover together with the data card, into the vehicular installation. In the event the data card required to be removed, the user may interact with the cover to detach the cover from the vehicular installation and then remove the data card therefrom.

[0031] From hereon, it will be understood that, although the terms first, second, etc. may be used herein to describe various elements, components, regions, layers or sections, these elements, components, regions, layers or sections should not be limited by these terms. These terms are only used to distinguish one element, component, region, layer or section from another region, layer or section. Thus, a first element, component, region, layer or section discussed below could be termed a second element, component, region, layer or section without departing from the teachings of the present invention.

[0032] From hereon as well, spatially relative terms, such as “top”, “bottom”, “longitudinal”, “lateral”, “vertical”, “left”, “right”, and the like, may be used herein for ease of description to describe one element or feature's relationship to another element or feature as illustrated in the figures. It will be understood that the spatially relative terms are intended to encompass different orientations of the assembly in use or operation, in addition to the orientation

depicted in the figures. For example, if the assembly in the figures is turned over, elements described as “top” other elements or features would then be oriented “bottom” the other elements or features. Thus, the exemplary term “top” can encompass both an orientation of above and below. The device may be otherwise oriented and the spatially relative descriptors used herein interpreted accordingly.

[0033] From hereon as well, is to be noted that the cover may be described with reference to orthogonal axes that include a first axis, a second axis, and a third axis. The first axis corresponds to an x-axis or an axis that is along a lateral extent of cover, the second axis corresponds to a y-axis or an axis that is along a longitudinal extent of the cover, and the third axis corresponds to a z-axis or an axis that is along a vertical extent of the cover.

[0034] The invention will now be described in greater detail, by way of example, with reference to the figures. For ease of reference, common reference numerals or series of numerals will be used throughout the figures when referring to the same or similar features common to the figures.

[0035]**FIG. 1** illustrates a cover **100** of the present application that holds a data card **200**, being attached to the vehicular installation **300**. Whereas, **FIG. 2** illustrates the cover **100** of the present application that holds the data card **200**, being detached from the vehicular installation **300**.

[0036] Regarding the cover **100**, it is preferably configured to hold the data card **200** in a secure manner. In particular, the cover **100** may be configured to grip, lock, or fit to at least one portion of the data card **200** in a semi-permanent manner. Furthermore, the cover **100** may be defined to have one or more exterior surfaces and one or more interior surfaces. The interior surfaces are to be adjacent to the vehicular installation **300** when the cover **100** is mounted thereupon. Moreover, either one or both the exterior surfaces and the interior surfaces of the cover **100** may be configured to allow the cover **100** to be attached to the vehicular installation **300** in a semi-permanent manner.

[0037] Regarding the data card **200**, it is configured to substantially store data that is relevant to its user for its intended usage. The data card **200** may have a cuboidal body that is

substantially flat or generally wafer-like. Furthermore, the data card **200** may have data storage means, which may be, by way of example, an embedded microchip, a magnetic strip, or the like. More specifically, the data card **200** may be further configured to have, or facilitate, wireless interactions with the vehicular installation **300**. By way of example, in a setting based on ERP. 2.0, the data card **200** may be a money card that may store financial information of its user, and it may be involved in performing transactions for financial information of its user to be updated.

[0038] Regarding the vehicular installation **300**, it is configured to receive the data card **200** or portions thereof, more specifically a free end of the data card **200** that is not attached to the cover **100**. Preferably, the vehicular installation **300** has a slot **301** that receives the data card **200** is inserted therein. With that, the data stored within the data card **200** may then be read by the vehicular installation **300**, for the vehicular installation **300** to perform its designated functions. Furthermore, the vehicular installation **300** may be an electronic device that is substantially attached to interior parts of a vehicle in a permanent or, or it may be substantially integrated within the vehicle itself. By way of example, in a setting based on ERP. 2.0, the vehicular installation **300** may be referred to as the “on-board unit (OBU)”.

[0039] **FIGS 3 – 5** are diagrams illustrating the cover of the present invention in its first example embodiment **100**. In particular, **FIG. 3** illustrates an interior perspective view of the cover **100** of the present invention in its first example embodiment **110**, **FIG. 4** illustrates its front interior view, and **FIG. 5** illustrates its front interior view with it holding the data card **200**. As shown, this first example embodiment **110** comprises at least one holding mechanism having holders that comprise a first protrusion **111** and a second protrusion **112**, which facilitate attachment of the data card **200** thereto.

[0040] With reference to **FIGS 3 – 5**, the first protrusion **111** and the second protrusion **112** of the first example embodiment **110** each may have fin-like bodies that project from a first interior surface and a second interior surface, or their portions thereof, wherein the first interior surface and the second interior surface are substantially perpendicular with respect to each other. Furthermore, the first protrusion **111** and the second protrusion **112** of the first example embodiment **110** may be at a distance away from each other, and they each may be substantially orientated for them to be substantially parallel to each other.

[0041] With reference to **FIGS 3 – 5**, within the first example embodiment **110**, its first protrusion **111** may be formed with a first recessed portion **111a** that projects inwardly from its free end along an axis that is perpendicular to the first interior surface. Furthermore, the second protrusion **112** may be formed with a second recessed portion **112a** that projects inwardly from its free end along an axis that is perpendicular to the first interior surface. The recessed portions **111a**, **112a** may be substantially parallel with respect with each other. Moreover, the location of first recessed portion **111a** along the first protrusion **111** and the location of the second recessed portion **112a** along the second protrusion **112** may be substantially aligned or non-aligned with respect to each other. In the case where they are substantially aligned, their recessed portions may have a zero angular deviation with respect to each other along a longitudinal axis. In the case where they are substantially non-aligned, their recessed portions may have a substantially small or minor angular deviation with respect to each other along the longitudinal axis.

[0042] With reference to **FIG. 3 – 5**, for a data card **200** to be attached onto the first example embodiment **110**, a user may manipulate the data card **200** for lateral side portions of the data card **200** to fit into the first recessed portion **111a** of the first protrusion **111** and the second recessed portion **112a** of the second protrusion **112**, or their portions thereof.

[0043] With reference to **FIG. 3 – 5**, for a data card **200** to be removed from the first example embodiment **110**, the user may manipulate the data card **200** and pull its free end for releasing the attached lateral side portions of the data card **200** from the recessed portions **111a**, **112a** of the protrusions **111**, **112**, or their portions thereof.

[0044] With reference to **FIG. 3 – 5**, within the cover **100** of the first embodiment **110**, it may further comprise guides **117**, **118** that protrude from interior surfaces of the first embodiment **110**, for assisting the user in guiding the data card **200** to be attached onto the first protrusion **111** and the second protrusion **112**, or removed from the first protrusion **111** and the second protrusion **112**.

[0045] **FIGS 6 – 8** are diagrams illustrating the cover **100** of the present invention in its second example embodiment **120**. In particular, **FIG. 6** illustrates its perspective view, **FIG. 7** illustrates its front interior view, and **FIG. 8** illustrates its front interior view with it holding

the data card **200**. As shown, this second example embodiment **120** comprises at least one holding mechanism having holders that facilitate attachment of the data card **200** thereto. The holders may each comprise one or more groups of protrusions, in which there is a first group that includes a first protrusion **121**, a second protrusion **122**, and a third protrusion **123**, and a second group that includes a fourth protrusion **124**, a fifth protrusion **125**, and a sixth protrusion **126**. The protrusions of the first group and the protrusions of the second group may be substantially similar but at a distance away from each other.

[0046] With reference to **FIGS 6 – 8**, within the second example embodiment **120**, its first protrusion **121** and its fourth protrusion **124** each may have fin-like bodies that project from a first interior surface along an axis perpendicular to the first interior surface. Furthermore, the first protrusion **121** and the fourth protrusion **124** may be substantially coplanar and are at a distance away from each other.

[0047] With reference to **FIGS 6 – 8**, within the second example embodiment **120**, its second protrusion **122** and its third protrusion **123** may project from the first interior surface and a second interior surface, wherein the first interior surface and the second interior surface are substantially perpendicular with respect to each other. In particular, the second protrusion **122** and the third protrusion **123** may be located relatively below and in the vicinity of the first protrusion **121**. The second protrusion **122** may be located, by way of example, on a left side of the first protrusion **121**, while the third protrusion **123** may be located, by way of example, on a right side of the first protrusion **121**. The second protrusion **122** and the third protrusion **123** may comprise a vertical portion and a lateral portion, wherein one end of the lateral portion is in connection with one end of the vertical portion. One end of the lateral portion of the second protrusion **122** and the third protrusion **123**, which is in connection with the vertical portion, may be nearer to the first protrusion **121**, compared to another end of the lateral portion that is not in connection with the vertical portion or is independent of the vertical portion. With that, the second protrusion **122** may be in the form of a “┐” shape, and the third protrusion **122** may be in the form of a “┌” shape.

[0048] With reference to **FIGS 6 – 8**, within the second example embodiment **120**, its fifth protrusion **125** and its sixth protrusion **126** may project from the first interior surface and the second interior surface. In particular, the fifth protrusion **125** and the sixth protrusion **126**

may be located relatively below and in the vicinity of the fourth protrusion **124**. The fifth protrusion **125** may be located, by way of example, on a left side of the fourth protrusion **124**, while the sixth protrusion **126** may be located, by way of example, on a right side of the fourth protrusion **124**. The fifth protrusion **125** and the sixth protrusion **126** may comprise a vertical portion and a lateral portion, wherein one end of the lateral portion is in connection with one end of the vertical portion. One end of the lateral portion of the fourth protrusion **122** and the fifth protrusion **123**, which is in connection with the vertical portion, may be nearer to the fourth protrusion **121**, compared to another end of the lateral portion that is not in connection with the vertical portion or is independent of the vertical portion. With that, the fifth protrusion **122** may be in the form of a “**┐**” shape, and the sixth protrusion **122** may be in the form of a “**┌**” shape.

[0049] With reference to **FIG. 6 – 8**, for a data card **200** to be attached onto the second example embodiment **120**, a user may manipulate the data card **200** for lateral side portions of the data card **200** to fit to the second example embodiment **120** in a manner such that (i) a top surface of the data card **200** is adjacent to a bottom surface of the first protrusion **121** and the fourth protrusion **124**, or their portions thereof, and (ii) a bottom surface of the data card **200** is adjacent to an upper surface of lateral portions of the second protrusion **122**, the third protrusion **123**, the fifth protrusion **125**, and the sixth protrusion **126**, or their portions thereof.

[0050] With reference to **FIGS. 6 – 8**, for a data card **200** to be removed from the second example embodiment **120**, the user may manipulate the data card **200** and pull its free end for releasing the attached lateral side portions of the data card **200** from the protrusions **121 – 126**, or their portions thereof.

[0051] With reference to **FIG. 6 – 8**, within the cover **100** of the second embodiment **120**, it may further comprise guides **127, 128** that protrude from interior surfaces of the second embodiment **120**, for assisting the user in guiding the data card **200** to be attached onto, or removed from, the cover **100** of the second embodiment **120**.

[0052] **FIGS 9 – 11** are diagrams illustrating the cover **100** of the present invention in its third example embodiment **130**. In particular, **FIG. 9** illustrates its perspective view, **FIG.**

10 illustrates its front interior view, and **FIG. 11** illustrates its front interior view with it holding the data card **200**. As shown, this third example embodiment **130** comprises at least one holding mechanism having holders that facilitate attachment of the data card **200** thereto. The holders may each comprise one or more groups of protrusions, in which there is a first group that includes a first protrusion **131**, a second protrusion **132**, and a third protrusion **133**, and a second group that includes a fourth protrusion **134**, a fifth protrusion **135**, and a sixth protrusion **136**. The protrusions of the first group and the protrusions of the second group may be substantially similar but at a distance away from each other.

[0053] With reference to **FIGS 9 – 11**, within the third example embodiment **130**, its first protrusion **131** and its fourth protrusion **134** each may have fin-like bodies that project from a first interior surface along an axis perpendicular to the first interior surface. Furthermore, the first protrusion **131** and the fourth protrusion **134** may be substantially coplanar and are at a distance away from each other. In particular, the first protrusion **131** and the fourth protrusion **134** may each have a vertical portion and a lateral portion, wherein the lateral portion is at a bottom of the vertical portion.

[0054] With reference to **FIGS 9 – 11**, within the third example embodiment **130**, its second protrusion **132** and its third protrusion may have fin-like bodies that project from the first interior surface and a second interior surface, wherein the first interior surface and the second interior surface are substantially perpendicular with respect to each other. Furthermore, the second protrusion **132** and the third protrusion **133** of the third example embodiment **130** may be at a distance away from each other, and they each may be substantially orientated for them to be substantially parallel to each other. The second protrusion **132** may be located, by way of example, on a left side of the vertical portion of the first protrusion **132**, while the third protrusion **133** may be located, by way of example, on a right side of the vertical portion of the first protrusion **131**.

[0055] With reference to **FIGS 9 – 11**, within the third example embodiment **130**, its fifth protrusion **135** and its sixth protrusion **136** may have fin-like bodies that project from the first interior surface and the second interior surface. Furthermore, the fifth protrusion **135** and the sixth protrusion **136** of the third example embodiment **130** may be at a distance away from each other, and they each may be substantially orientated for them to be substantially

parallel to each other. The fifth protrusion **135** may be located, by way of example, on a left side of the vertical portion of the fourth protrusion **134**, while the sixth protrusion **136** may be located, by way of example, on a right side of the vertical portion of the fourth protrusion **134**.

[0056] With reference to **FIGS 9 – 11**, for a data card **200** to be attached onto the third example embodiment **130**, a user may manipulate the data card **200** for lateral side portions of the data card **200** to fit to the third example embodiment **130** in a manner such that (i) a top surface of the data card **200** is adjacent to a bottom surface of the lateral portions of the first protrusion **131** and the fourth protrusion **134**, or their portions thereof, and (ii) a bottom surface of the data card **200** is adjacent to an upper surface of the second protrusion **132**, the third protrusion **133**, the fifth protrusion **135**, and the sixth protrusion **136**, or their portions thereof.

[0057] With reference to **FIGS 9 – 11**, for a data card **200** to be removed from the third example embodiment **130**, the user may manipulate the data card **200** and pull its free end to release the attached lateral side portions of the data card **200** from the protrusions **131 – 136**, or their portions thereof.

[0058] With reference to **FIGS 9 – 11**, within the cover **100** of the third embodiment **130**, it may further comprise guides **137, 138** that protrude from interior surfaces of the third embodiment **130**, for assisting the user in guiding the data card **200** to be attached onto, or removed from, the cover **100** of the third embodiment **130**.

[0059] **FIGS 12 – 14** are diagrams illustrating the cover **100** of the present invention in its fourth example embodiment **140**. In particular, **FIG. 12** illustrates its perspective view, **FIG. 13** illustrates its front interior view, and **FIG. 14** illustrates its front interior view with it holding the data card **200**. As shown, this fourth example embodiment **140** may comprise at least one holding mechanism having holders that facilitate attachment of the data card **200** thereto. The holders each may comprise one or more groups of protrusions, in which there is a first group that includes a first protrusion **141**, a second protrusion **142**, and a third protrusion **143**, and a second group that includes a fourth protrusion **144**, a fifth protrusion

145, and a sixth protrusion **146**. The protrusions of the first group and the protrusions of the second group may be substantially similar but at a distance away from each other.

[0060] With reference to **FIGS 12 – 14**, within the fourth example embodiment **140**, its first protrusion **141** and its fourth protrusion **144** each may have bodies that project from a first interior surface along an axis perpendicular to the first interior surface. Furthermore, the first protrusion **141** and the fourth protrusion **144** may be substantially coplanar and are at a distance away from each other.

[0061] With reference to **FIGS 12 – 14**, within the fourth example embodiment **140**, its second protrusion **142** and its third protrusion **143** may have fin-like bodies that project from the first interior surface and a second interior surface, wherein the first interior surface and the second interior surface are substantially perpendicular with respect to each other. Furthermore, the second protrusion **142** and the third protrusion **143** of the fourth example embodiment **140** may be at a distance away from each other, and they each may be substantially orientated for them to be substantially parallel to each other. The second protrusion **142** may be located, by way of example, on a left side of the vertical portion of the first protrusion **141**, while the third protrusion **143** may be located, by way of example, on a right side of the vertical portion of the first protrusion **141**.

[0062] With reference to **FIGS 12 – 14**, within the fourth example embodiment **140**, its fifth protrusion **145** and its sixth protrusion **146** may have fin-like bodies that project from the first interior surface and a second interior surface, wherein the first interior surface and the second interior surface are substantially perpendicular with respect to each other. Furthermore, the fifth protrusion **145** and the sixth protrusion **146** of the fourth example embodiment **140** may be at a distance away from each other, and they each may be substantially orientated for them to be substantially parallel to each other. The fifth protrusion **145** may be located, by way of example, on a left side of the vertical portion of the fourth protrusion **144**, while the sixth protrusion **146** may be located, by way of example, on a right side of the vertical portion of the first fourth protrusion **144**.

[0063] With reference to **FIGS 12 – 14**, for a data card **200** to be attached onto the fourth example embodiment **140**, a user may manipulate the data card **200** for lateral side portions

of the data card **200** to fit to the fourth example embodiment **140** in a manner such that (i) a top surface of the data card **200** is adjacent to a bottom surface portion of the first protrusion **141** and the fourth protrusion **144**, or their portions thereof, and (ii) a bottom surface of the data card **200** is adjacent to an upper surface of the second protrusion **142**, the third protrusion **143**, the fifth protrusion **145**, and the sixth protrusion **146**, or their portions thereof.

[0064] With reference to **FIGS 12 – 14**, for a data card **200** to be removed from the fourth example embodiment **140**, the user may manipulate the data card **200** and pull its free end to release the attached lateral side portions of the data card **200** from the protrusions **141 – 146**, or their portions thereof.

[0065] With reference to **FIGS 12 – 14**, within the cover **100** of the fourth embodiment **140**, it may further comprise guides **147, 148** that protrude from interior surfaces of the fourth embodiment **140**, for assisting the user in guiding the data card **200** to be attached onto, or removed from, the cover **100** of the fourth embodiment **140**.

[0066] **FIG. 15** illustrates an interior perspective view of the cover **100** of the present invention in its fifth example embodiment **150**. As shown, this fifth example embodiment **150** comprises at least one holding mechanism having at one or more holders, which include a rotatable piece **151**, a first protrusion **152**, a second protrusion **153**, and a third protrusion **154**, for facilitating attachment of the data card **200** thereto.

[0067] With reference to **FIG. 15**, within the fifth example embodiment **150**, the rotatable piece **151** comprises a shaft **151a**, a first body **151b**, and a second body **151c**.

[0068] With reference to **FIG. 15**, regarding the rotatable piece **151** within the fifth example embodiment **150**, its shaft **151a** may be a generally rigid rod-like body that projects from a first interior surface along an axis that is perpendicular to the first interior surface. Furthermore, the shaft **151a** may have a first end that is affixed to the first interior surface, and a second end that is a free end.

[0069] With reference to **FIG. 15**, regarding the rotatable piece **151** within the fifth example embodiment **150**, its first body **151b** may, by way of example, substantially have a shape

that is partially cylindrical. In particular, the first body **151b** may be in the form of a segmented cylinder, a truncated cylinder, or a sectioned cylinder. More specifically, the first body **151b** may have an arcuate surface that extends along an axis that is perpendicular to the first interior surface of the fifth example embodiment **150**. Furthermore, the first body **151b** may further comprise a first planar surface and a second planar surface, wherein the first planar surface may extend from one longitudinal edge of the arcuate surface and the second planar surface may extend from another longitudinal edge of the arcuate surface, in which both the first planar surface and the second planar surface both meet at a first common edge. This first common edge may also be regarded as an origin of the first body **151b**, and it may be parallel to the shaft **151a**. Though, it is to be noted that the shapes of the first body **151b** may not be limited to as described, and it may be of any other possible shape.

[0070] With reference to **FIG. 15**, regarding the rotatable piece **151** within the fifth example embodiment **150**, there may be a first length that extends perpendicularly between the first common edge and a second common edge where longitudinal edges of the first planar surface and the arcuate surface meet, and this first length may be regarded as a first radius r_1 of the first body **151b**. It is to be noted that the second common edge may be parallel to the shaft **151a**.

[0071] With reference to **FIG. 15**, regarding the rotatable piece **151** within the fifth example embodiment **150**, there may be a second length that extends perpendicularly between the first common edge and a third common edge where longitudinal edges of the second planar surface and the arcuate surface meet, and this second length may be regarded as a second radius r_2 of the first body **151b**. It is to be noted that the third common edge may be parallel to the shaft **151a**.

[0072] With reference to **FIG. 15**, regarding the rotatable piece **151** within the fifth example embodiment **150**, within the first body **151b**, the first radius r_1 and the second radius r_2 are of different lengths. By way of example, within the first body **151b**, the first radius r_1 may have a length that is longer than the second radius r_2 .

[0073] With reference to **FIG. 15**, regarding the rotatable piece **151** within the fifth example embodiment **150**, the first body **151b** may be further formed with an aperture that extends

along an axis that is perpendicular to the first interior surface of the fifth example embodiment **150**. In particular, the aforementioned aperture is located along the first body **151b** in such a way that is substantially adjacent to the first planer surface, a second planar surface, and the first common edge of the first planer surface and the second planar surface. This aperture shall allow the first body **151b** to be mounted upon the shaft **151a**. In particular, there may be frictional contact or frictionless contact between the shaft **151a** and the aperture of the first body **151b**. It may be preferable that there is frictional contact between the shaft **151a** and the aperture of the first body **151b**, so that the first body **151b** may rotate about the shaft **151a** while substantially maintaining its current relative angular position with respect to the shaft **151a**.

[0074] With reference to **FIG. 15**, within the fifth example embodiment **150**, the second body **151c** of the rotatable piece **151** may be a piece that may be attached to, or integrally formed with, the first body **151b**. The second body **151c** may be substantially flat and/or angled so that it conforms to both the first planar surface and the second planar surface of the first body **151b**. Furthermore, the second body **151c** may substantially extend along an axis that is perpendicular to the first interior surface in such way that it has a length that is longer than an overall longitudinal length of the first body **151b**.

[0075] With reference to **FIG. 15**, by having the rotatable piece **151** of the fifth example embodiment **150** configured as described, the rotatable piece **151** may exhibit an eccentric rotational motion, as the first body **151b** rotates with respect to the shaft **151a**.

[0076] With reference to **FIG. 15**, within the fifth example embodiment **150**, for the first protrusion **152**, it may have a body that projects from the first interior surface and a second interior surface, wherein the first interior surface and the second interior surface are perpendicular with respect to each other. In particular, the first protrusion **152** may be defined to have any one or a combination of (i) a pair of vertical portions and, (ii) a lateral portion that connects both vertical portions. The vertical portions may project from the first interior surface and the second interior surface, while the lateral portion may project from the first interior surface.

[0077] With reference to **FIG. 15**, within the fifth example embodiment **150**, for the second protrusion **153** and the third protrusion **154**, they may each have a body that projects from

the first interior surface along an axis that is perpendicular to the first interior surface. Furthermore, the second protrusion **153** and the third protrusion **154** may each have a discontinuous profile at each of their bottom portion, which includes a first segment and a second segment. In particular, for the second protrusion **153** and the third protrusion **154**, each of their first segment and each of their second segment are at relatively different protruding height levels with respect to each other. By way of example, for each of the second protrusion **153** and the third protrusion **154**, each of their first segment may project from the first interior surface along an axis that is perpendicular to the first interior surface, and subsequently be recessed to define the second segment and further extend therealong in a manner of the same. These segments, or more specifically, the first segment, may influence a depth of the data card **200** in relation to the cover **100** when it is attached upon the cover **100** of the fifth example embodiment **150**.

[0078] With reference to **FIG. 15**, the positional relationship of the rotatable piece **151**, the first protrusion **152**, the second protrusion **153**, and the third protrusion **154** within the fifth example embodiment **150** shall now be described. In particular, the rotatable piece **151** may be located relatively above the first protrusion **152**. Furthermore, the second protrusion **153** may be located relatively at a left side of the first protrusion **152**, while the third protrusion **154** may be located relatively at a right side of the first protrusion **152**.

[0079] **FIGS 16 – 18** further illustrate the cover **100** of the fifth example embodiment **150** during its intended use.

[0080] With reference to **FIGS 16 – 18**, for a data card **200** to be attached to the fourth example embodiment **140**, a user may manipulate the data card **200** for lateral side portions of the data card **200** to fit to the fifth example embodiment **150** in a manner such that (i) a bottom surface of the data card **200** is substantially adjacently above the lateral portion of the first protrusion **152**, or portions thereof, and (ii) lateral sides of the data card **200** are in contact with the first segment and/or the second segment of each of the second protrusion **153** and third protrusion **154**, and their portions thereof.

[0081] With reference to **FIG. 16**, regarding the fifth example embodiment **150**, prior to the data card **200** being fitted as described, the rotatable piece **151** may be rotated by the user to

be at a first position wherein the arcuate surface of its first body **151b** is substantially at a distance away from the lateral portion of the first protrusion **152**.

[0082] With reference to **FIGS 17 – 18**, regarding the fifth example embodiment **150**, after the data card **200** is fitted as described, the rotatable piece **151** may be rotated by the user to be at a second position wherein the arcuate surface of its first body **151b** is substantially in contact with a top portion of the data card **200** and is made to become substantially nearer, closer to, or adjacent to, the lateral portion of the first protrusion **152** compared to the first position. With this, the first body **151b** of the rotatable piece **151** may substantially secure the data card **200** onto the fifth example embodiment **140**.

[0083] With reference to **FIGS 16 – 18**, for the data card **200** to be removed from the fifth example embodiment **150**, the user may rotate the rotatable piece **151** for it to be at a first position as per **FIG. 16**, and then interact with the data card **200** and pull its free end to release the attached lateral side portions of the data card **200** from the protrusions **152 – 154**.

[0084] With reference to **FIGS 16 – 18**, by way of example, once the data card **200** is fitted onto protrusions **152 – 144** of the fifth example embodiment **150**, the user may interact with the rotatable piece **151** for rotating it in an anti-clockwise direction for (i) the second common edge between the arcuate surface of the first body **151b** and the first planar surface, and/or (ii) longitudinal portions of the arcuate surface of the first body **151b** near to the second common edge, to become substantially near or adjacent to (i) a top surface of the data card **200**, and/or (ii) the lateral portion of the first protrusion **152**. With that, the arcuate surface of the first body **151b** may become in contact with the top surface of the data card **200**. Further rotation of the rotatable piece **151** along the anti-clockwise direction may cause the rotatable piece **151** to further exert a pressure force onto the top surface of the data card **200**. This is due to the eccentric motion of the rotatable piece **151** that arises from a difference in radii that extend between (i) the first common edge, and (ii) the second common edge and the third common edge of the first body **151b**. In particular, the second common edge may be substantially nearer or adjacent to the lateral portion and/or vertical portions of the first protrusion **152** compared to the first common edge.

[0085] With reference to **FIGS 16 – 18**, by way of example, once the data card **200** is desired to be removed from the protrusions **152 – 154** of the fifth example embodiment **150**, the user

may interact with the rotatable piece **151** for rotating it in a clockwise direction for (i) the second common edge between the arcuate surface of the first body **151b** and the first planar surface, and/or (ii) longitudinal portions of the arcuate surface of the first body **151b** near to the second common edge, to become substantially away from (i) a top surface of the data card **200**, and/or (ii) the lateral portion of the first protrusion **152**. This may relieve a pressure that is exerted by the first body **151b** onto the data card **200**. With that the data card **200** may then be removed from the fifth example embodiment **150** accordingly. In particular, the second common edge may be further from the lateral portion and/or vertical portions of the first protrusion **152** compared to the first common edge.

[0086] With reference to **FIG. 16 – 18**, within the cover **100** of the fifth example embodiment **150**, it may further comprise guides **157**, **158** that protrude from interior surfaces of the fifth embodiment **150**, for assisting the user in guiding the data card **200** to be attached to, or removed from, the fifth example embodiment **150**.

[0087] **FIG. 19** is a diagram illustrating a front interior view of the cover **100** of the present invention in its sixth example embodiment **160**, with it holding the data card **200**. As shown, the sixth example embodiment **160** may be substantially similar to the third example embodiment as shown in **FIGS 9 – 11**. However, in the sixth example embodiment **160**, its first protrusion **161** and its fourth protrusion **164** are at a further distance away from the other protrusions **162**, **163**, **165** and **166** for a frictional piece **400** to be installed below, or more specifically, below lateral surfaces of the first protrusion **161** and its fourth protrusion **164**. With that, as the data card **200** is installed onto the sixth example embodiment **160**, the frictional piece **400** may substantially hold the data card **200** via friction, for a top surface of the data card to be adjacent to the frictional piece **400**, and for a bottom surface of the data card to be adjacent to the other protrusions **162**, **163**, **165** and **166**. It is to be noted that the frictional piece **400** may be installed or be part of any one of the aforementioned embodiments of the cover **100**. Similarly, the sixth example embodiment **160** also includes guides **167**, **168** for assisting the user in guiding the data card **200** to be attached to, or removed from, the sixth example embodiment **160**.

[0088] It is to be noted the cover **100**, together with its holders, may either be (i) moulded as a single piece, (ii) assembled from one or more individual pieces, or (iii) a combination thereof.

[0089] Furthermore, it is noted that the holders, or portions thereof, may further have, or be installed with a frictional layer or frictional coating, which may be, by way of example, silicon, rubber, or the like, for the data card **200** to be attached thereonto in a more secure manner with minimal risk of falling off. An example of this frictional layer may be the frictional piece **400** as previously described.

[0090] Moreover, or alternatively, the holders, or portions thereof, may be made of resilient material, which may be, by way of example, silicon, rubber, or the like, so that they may be deformed by the data card **200** that is attached to them, and they may return to their original shape once the data card **200** is removed.

[0091] It is to be noted that the characteristics of each cover **100** of the various embodiments **110 – 160** may not be limited to as described or illustrated. It is to be noted that each or a combination of characteristics of one embodiment may also be part of another different embodiment, so long as the cover **100** reasonably performs its intended functionalities.

[0092] With this, the details pertaining to a cover **100** for a vehicular installation **300** have been described. The present disclosure includes as contained in the appended claims, as well as that of the foregoing description. Although this invention has been described in its preferred form with a degree of particularity, it is understood that the present disclosure of the preferred form has been made only by way of example and that numerous changes in the details of construction and the combination and arrangements of parts may be resorted to without departing from the scope of the invention.

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CLAIMS

1. A cover for a vehicular installation, comprising
at least one holding mechanism having one or more holders, wherein each holder, or parts thereof, are disposed along one or more interior surfaces of the cover that are to be adjacent to the vehicular installation when the cover is mounted thereupon;
wherein the holding mechanism is configured to receive any one or a combination of a top surface of a data card and a bottom surface of the data card, for the data card to be attached to the cover, so that a free end of the data card is received by the vehicular installation as the cover is mounted thereupon.
2. The cover according to claim 1, wherein the holders comprise a first protrusion and a second protrusion, which each project from a first interior surface and a second interior surface, wherein the first interior surface and the second interior surface are substantially perpendicular with respect to each other.
3. The cover according to claim 2, wherein
the first protrusion is formed with a first recessed portion; and
the second protrusion is formed with a second recessed portion;
wherein the first recessed portion and the second recessed portion are substantially aligned or non-aligned with respect to each other.
4. The cover according to claim 3, wherein the first recessed portion and the second recessed portion, or portions thereof, each receive the top surface of the data card and the bottom surface of the data card, for the data card to be attached to the cover.
5. The cover according to claim 1, wherein the holder includes one or more groups of protrusions, with each group of protrusions comprising
a first protrusion, which projects from a first interior surface along an axis perpendicular to the first interior surface;
a second protrusion and a third protrusion, which each project from the first interior surface and a second interior surface, wherein the first interior surface and the second interior surface are substantially perpendicular with respect to each other;

wherein the second protrusion is relatively located at a left side of the first protrusion, and the third protrusion is relatively located at a right side of the first protrusion.

6. The cover according to claim 5, wherein
the second protrusion is formed with a lateral portion and a vertical portion; and
the third protrusion is formed with a lateral portion and a vertical portion;
wherein the vertical portions of the second protrusion and the third protrusion are located nearer to the first protrusion compared to free ends of the lateral portions of the second protrusion and the third protrusion.
7. The cover according to claim 6, wherein
the first protrusion, or portions thereof, is adjacent to the top surface of the data card;
and
the lateral portions of the second protrusion and the third protrusion, or portions thereof, are adjacent to the bottom surface of the data card;
as the data card is attached to the cover.
8. The cover according to claim 5, wherein the first protrusion is formed with a lateral portion and a vertical portion, and wherein the second protrusion is located at a left side of vertical portion of the first protrusion, and the third protrusion is located at a right side of the vertical portion of the first protrusion.
9. The cover according to claim 8, wherein
the lateral portion of the first protrusion, or portions thereof, is adjacent to the top surface of the data card; and
the second protrusion and the third protrusion, or portions thereof, are adjacent to the bottom surface of the data card;
as the data card is attached to the cover.
10. The cover according to claim 5, wherein
the first protrusion, or portions thereof, is adjacent to the top surface of the data card;
and

the second protrusion and the third protrusion, or portions thereof, are adjacent to the bottom surface of the data card;
as the data card is attached to the cover.

11. The cover according to claim 1, wherein the holder includes at least one rotatable piece comprising

a shaft that projects from a first interior surface, along an axis that is substantially perpendicular to the first interior surface; and
a first body in connection with the shaft.

12. The cover according to claim 11, wherein the first body comprises
surfaces that include arcuate surface, a first planar surface, and a second planar surface;

a first common edge in which edges of the first planar surface and the second planar surface meet;

a second common edge in which edges of the first planar surface and the arcuate surface meet; and

a third common edge in which edges of the second planar surface and the arcuate surface meet.

13. The cover according to claim 12, wherein the first body further comprises

a first length that extends perpendicularly between the first common edge and the second common edge; and

a second length that extends perpendicularly between the first common edge and the third common edge;

wherein the first length is longer than the second length.

14. The cover according to claim 12 or 13, wherein the first body is further formed with an aperture that allows the first body to be received by the shaft, for the first body to substantially rotate with respect to the shaft.

15. The cover according to any one of claims 12 to 14, wherein the holder further includes one or more protrusions that include a first protrusion having one or a combination of

a pair of vertical portions that project from the first interior surface and a second interior surface; and

a lateral portion that projects from the first interior surface and in connection with the vertical portions.

16. The cover according to claim 15, wherein the lateral portion of the first protrusion, or portions thereof, is adjacent to the bottom surface of the data card; and the first body is rotated for its second common edge to become substantially nearer or adjacent to the lateral portion and/or vertical portions of the first protrusion compared to its third common edge, in which its arcuate surface is in contact with the top surface of the data card; for the data card to be attached to the cover

17. The cover according to claim 15 or 16, wherein the first body is rotated for its second common edge to become substantially away from the lateral portion and/or the vertical portions of the first protrusion, for the data card to be removed from the cover.

18. The cover according to any one of claims 15 to 17, wherein the holder further includes a second protrusion and a third protrusion, which each project from the first interior surface along an axis perpendicular to the first interior surface

19. The cover according to claim 18, wherein the second protrusion and a third protrusion are each formed with a first segment and a second segment at their bottom portion, wherein the data card is in contact with the first segment and the second segment as the data card is attached to the cover.

20. The cover according to any one of claims 11 to 19, wherein the rotatable piece further comprises a second body connected to the first body and conforms to the planar surfaces of the first body, which allows a user to interact therewith to rotate the first body about the shaft.