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(54) **CONFIGURABLE INTERFACE FOR MODULAR ELECTRONIC COMPONENTS**

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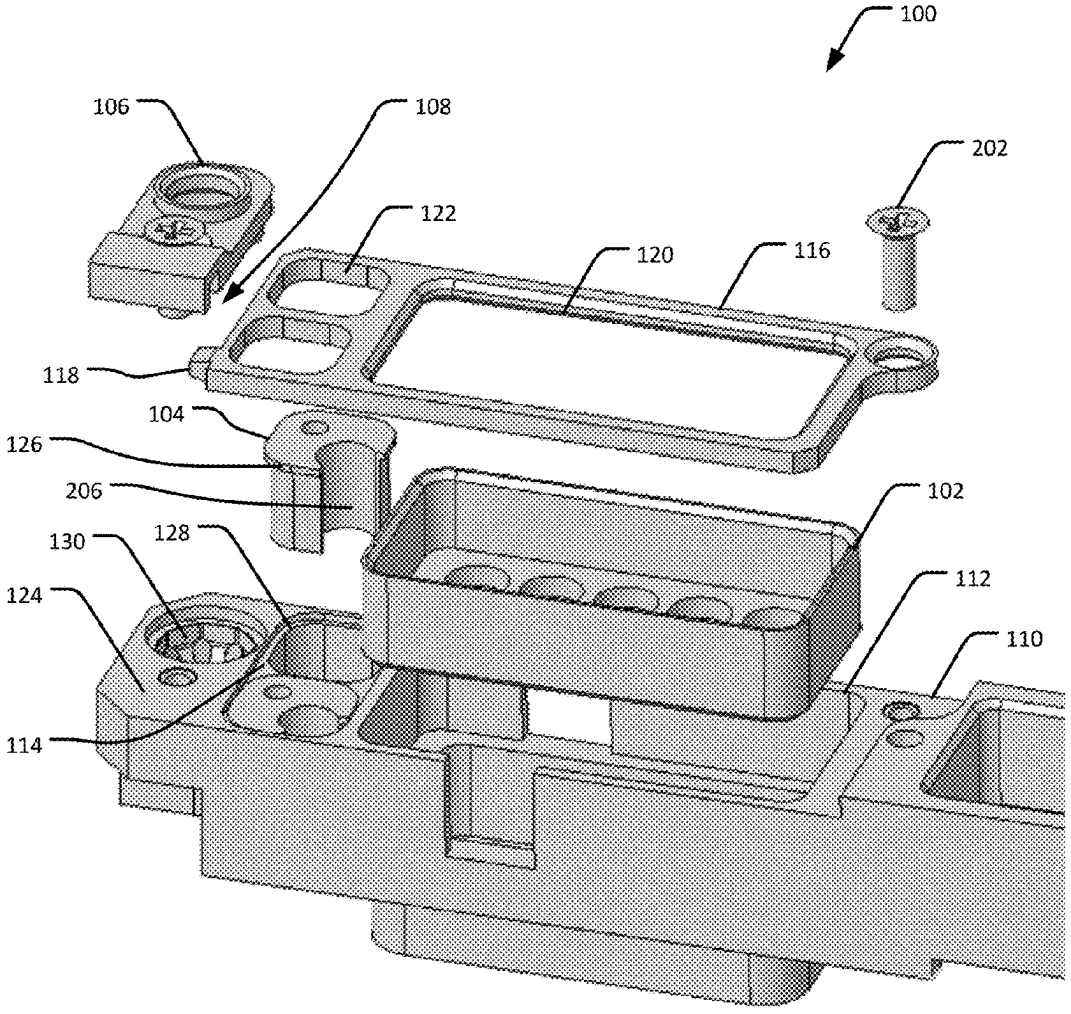
(57) **ABSTRACT**

A configurable interface for an electronic component includes a keying insert and an interface plate. The keying insert is configured to provide multiple keying options. The interface plate has an opening for receiving the keying insert. The interface may further include additional features, such as guidance for blind mate scenarios, any of a basket, a busing having a recess, and a retention cover. In one example, the retention cover has a tab configured to extend into the recess of the bushing to secure one end of the retention cover to the bushing. The keying insert can include a keyway offset from an axis passing through a center of the keying insert. The retention cover is configured, while secured to the interface plate, to secure the basket in one opening of the interface plate and to secure the keying insert in another opening of the interface plate.



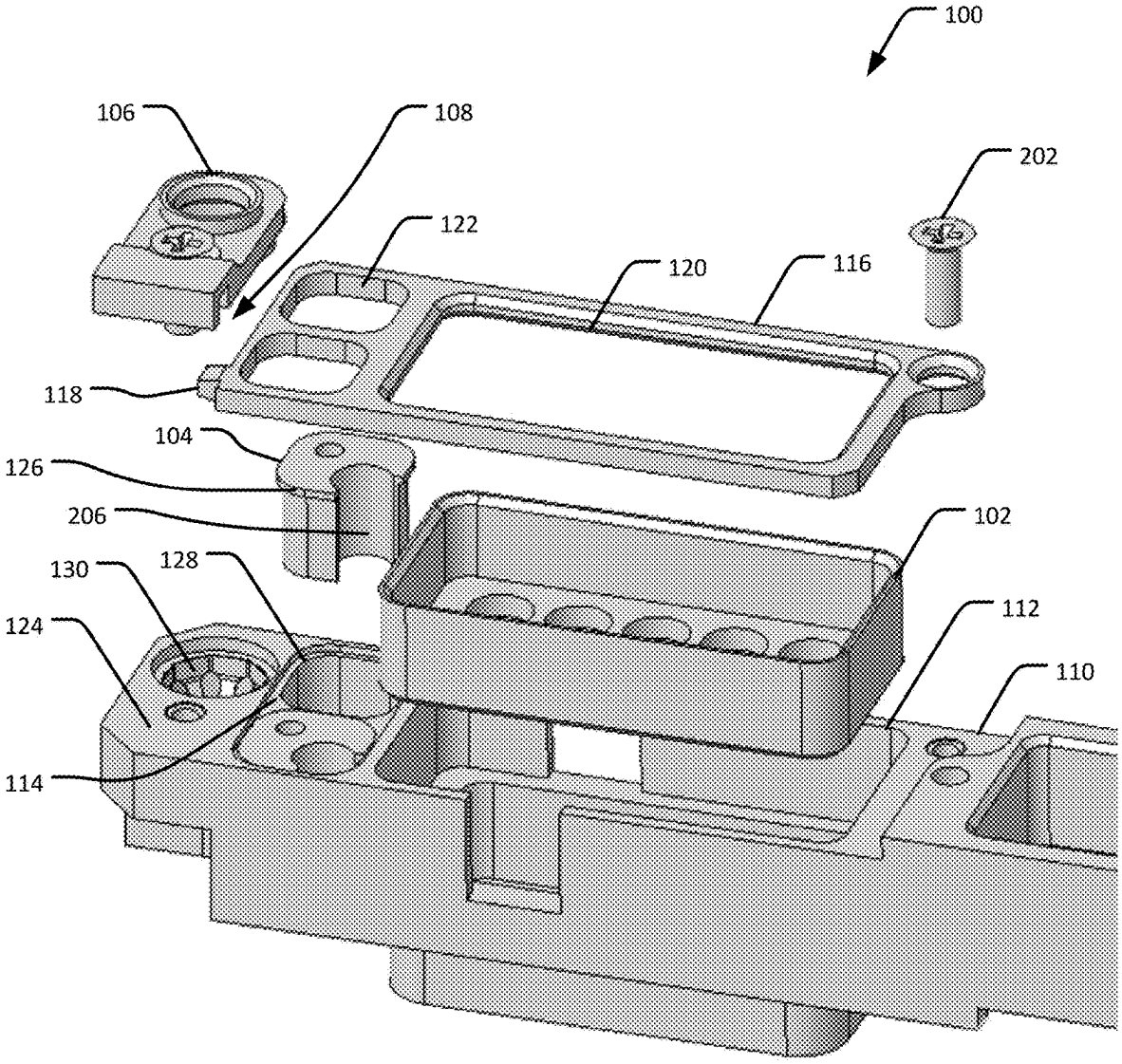

100
106
108
202
122
120
116
118
104
126
206
102
130
128
112
124
110
114

FIG. 1

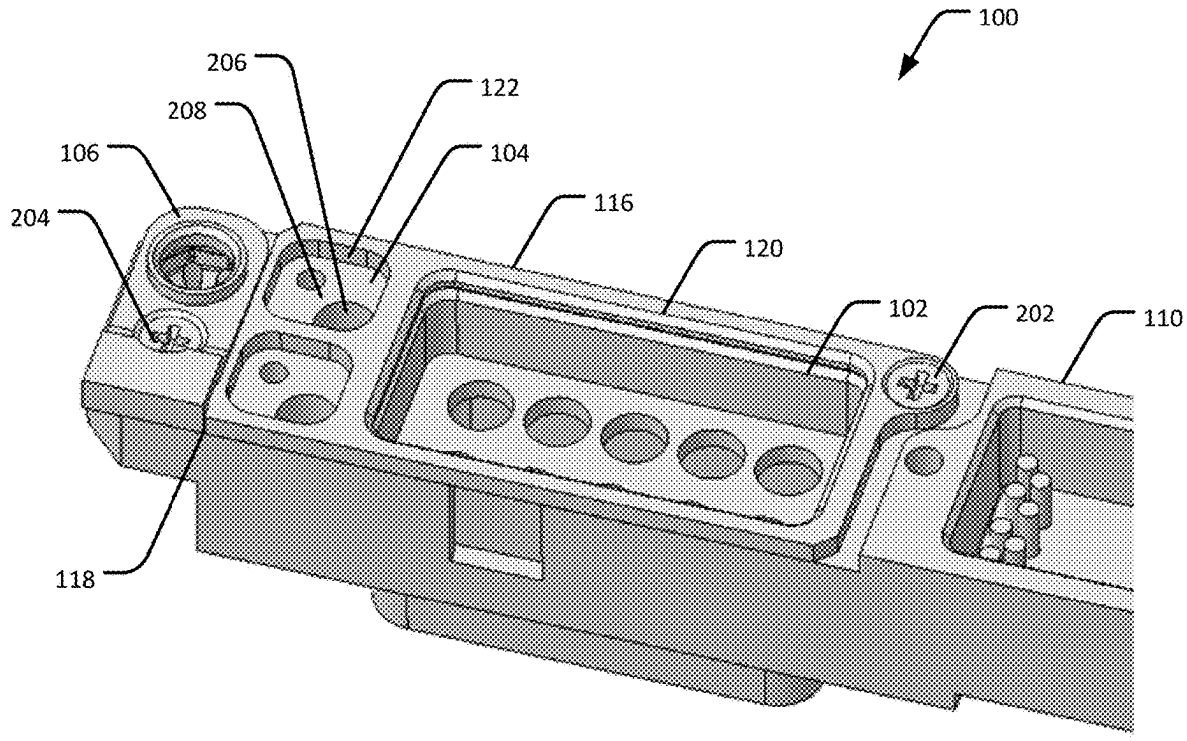


FIG. 2

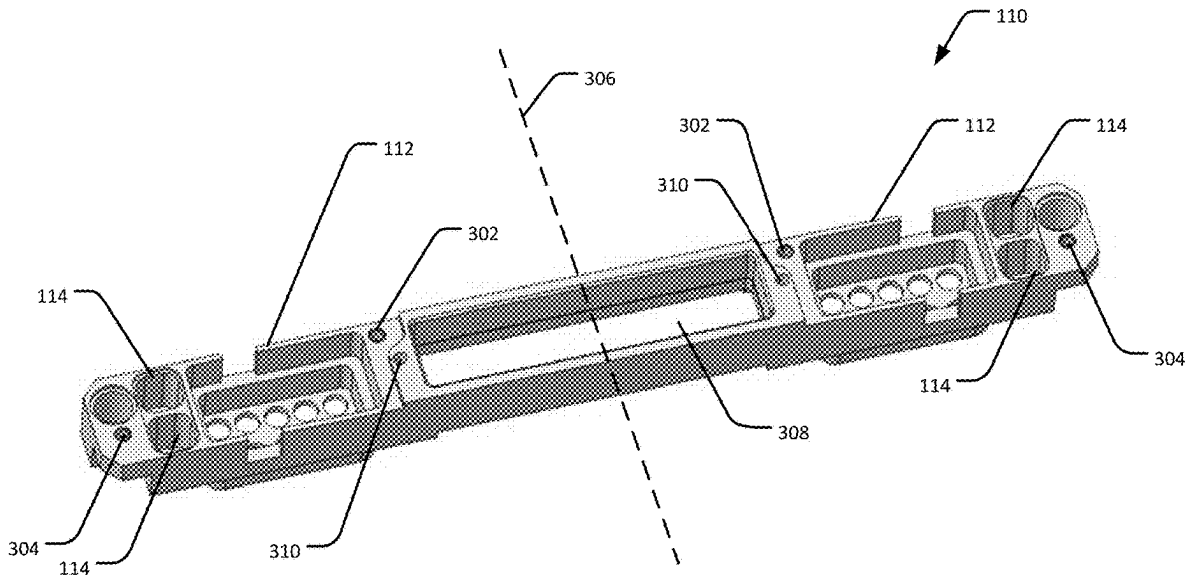


FIG. 3

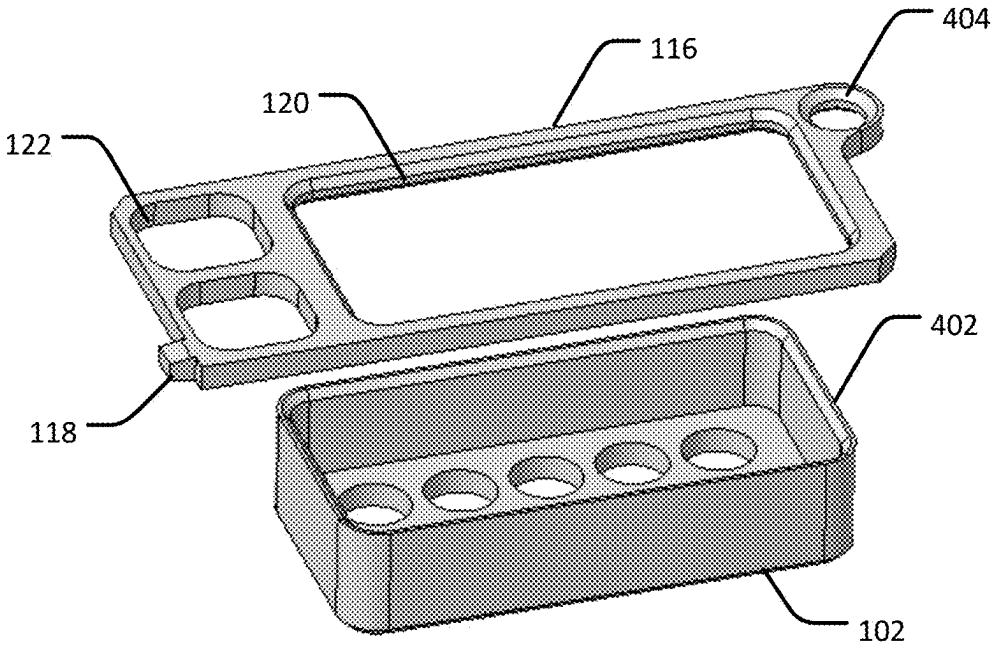


FIG. 4A

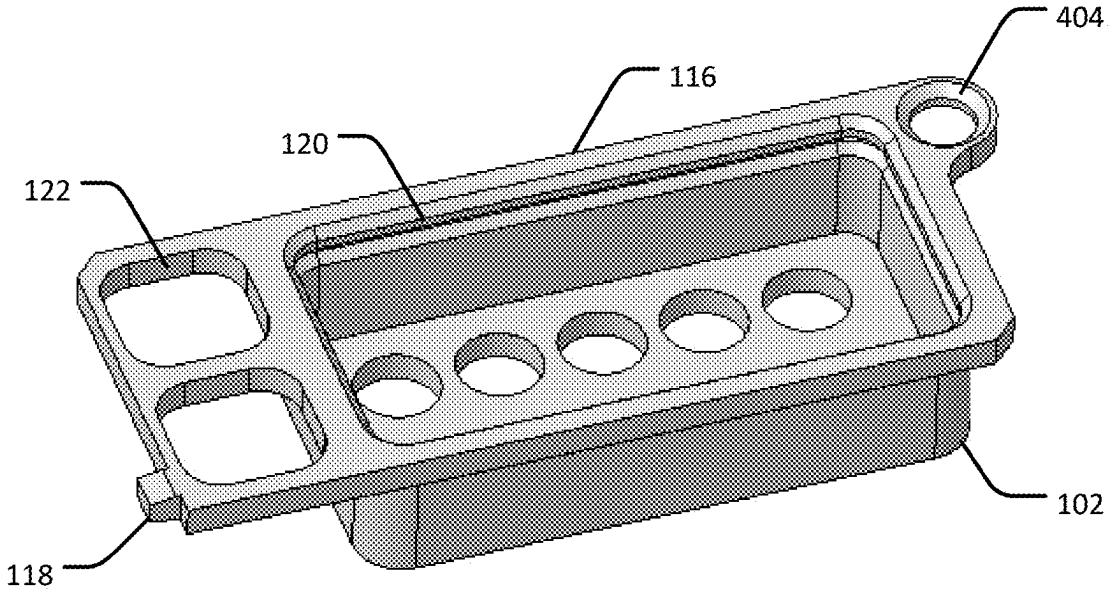


FIG. 4B

FIG. 5A

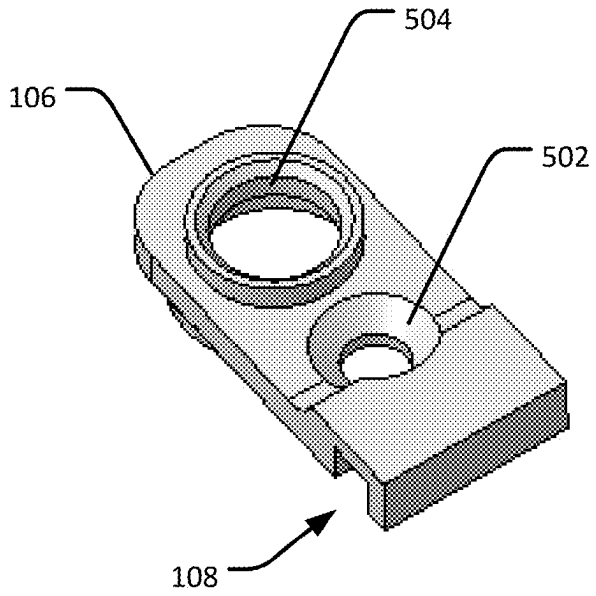
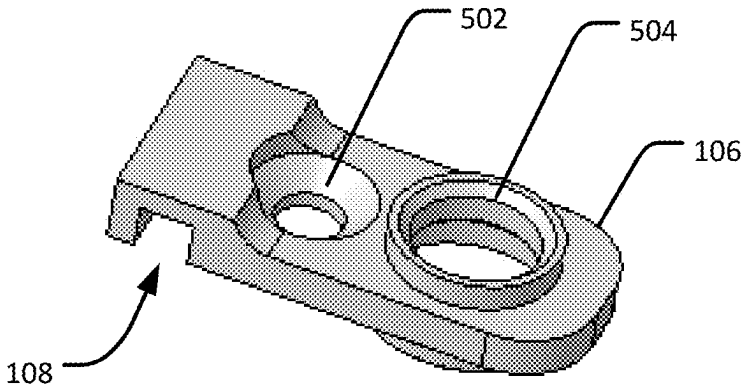


FIG. 5B



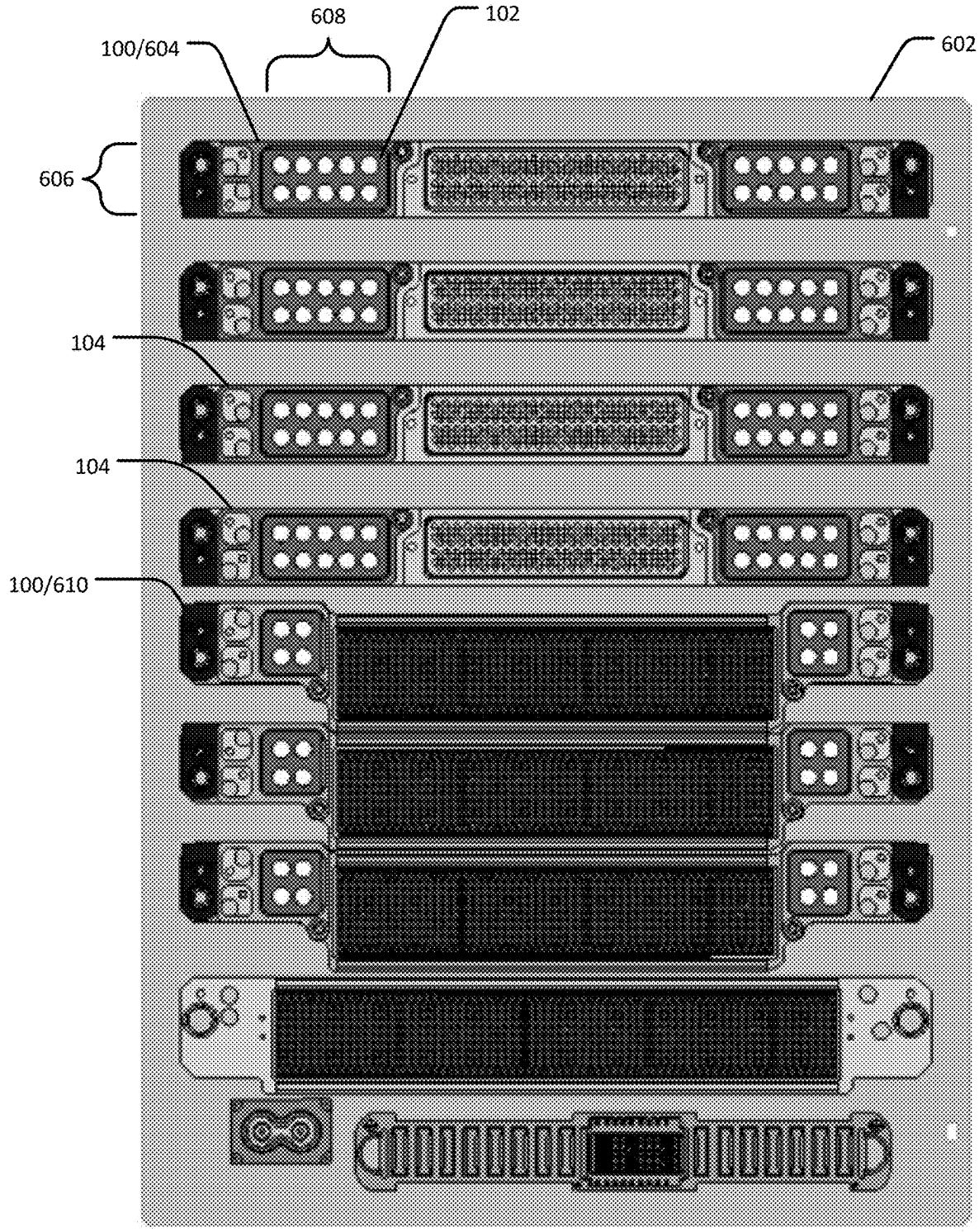


FIG. 6

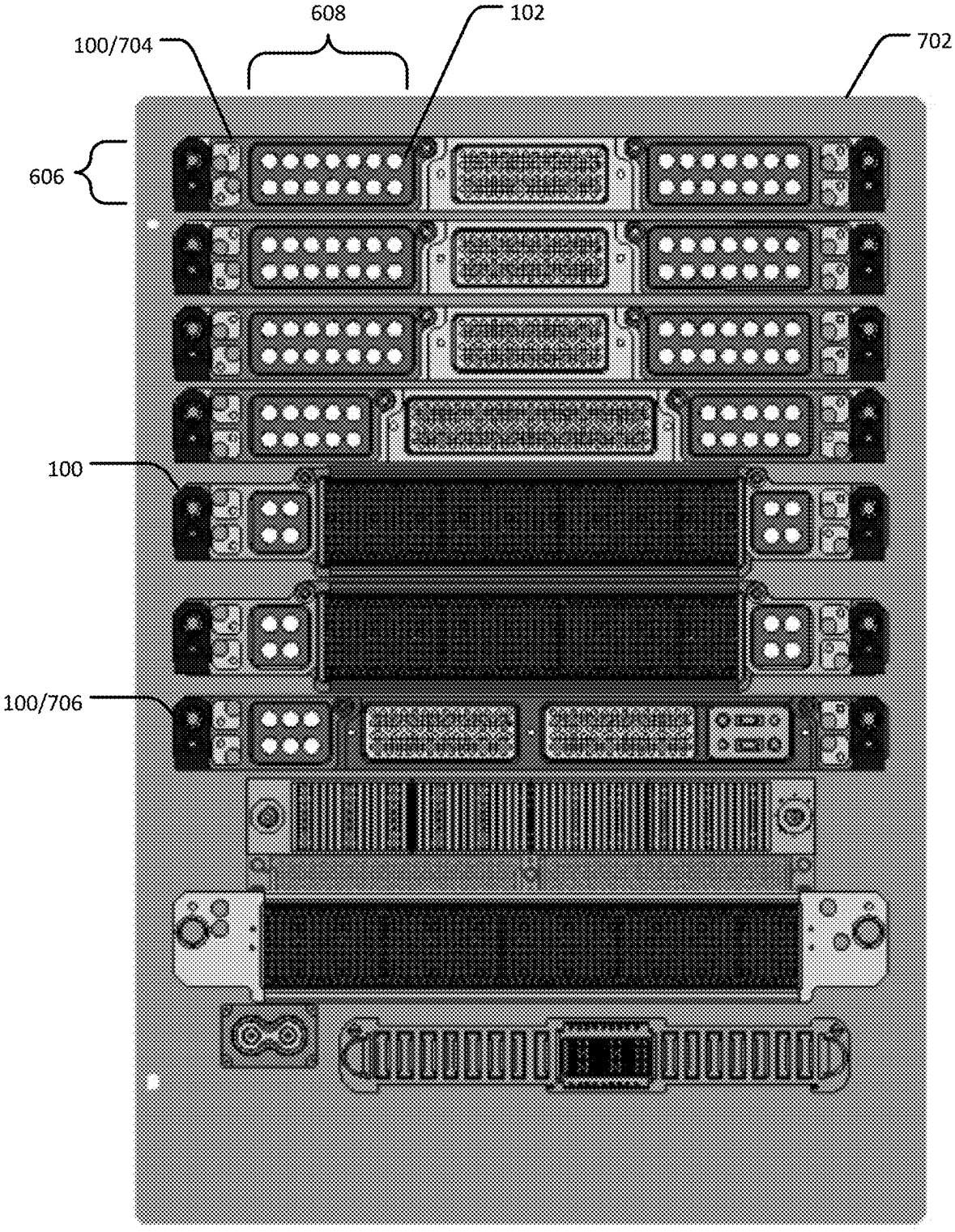


FIG. 7

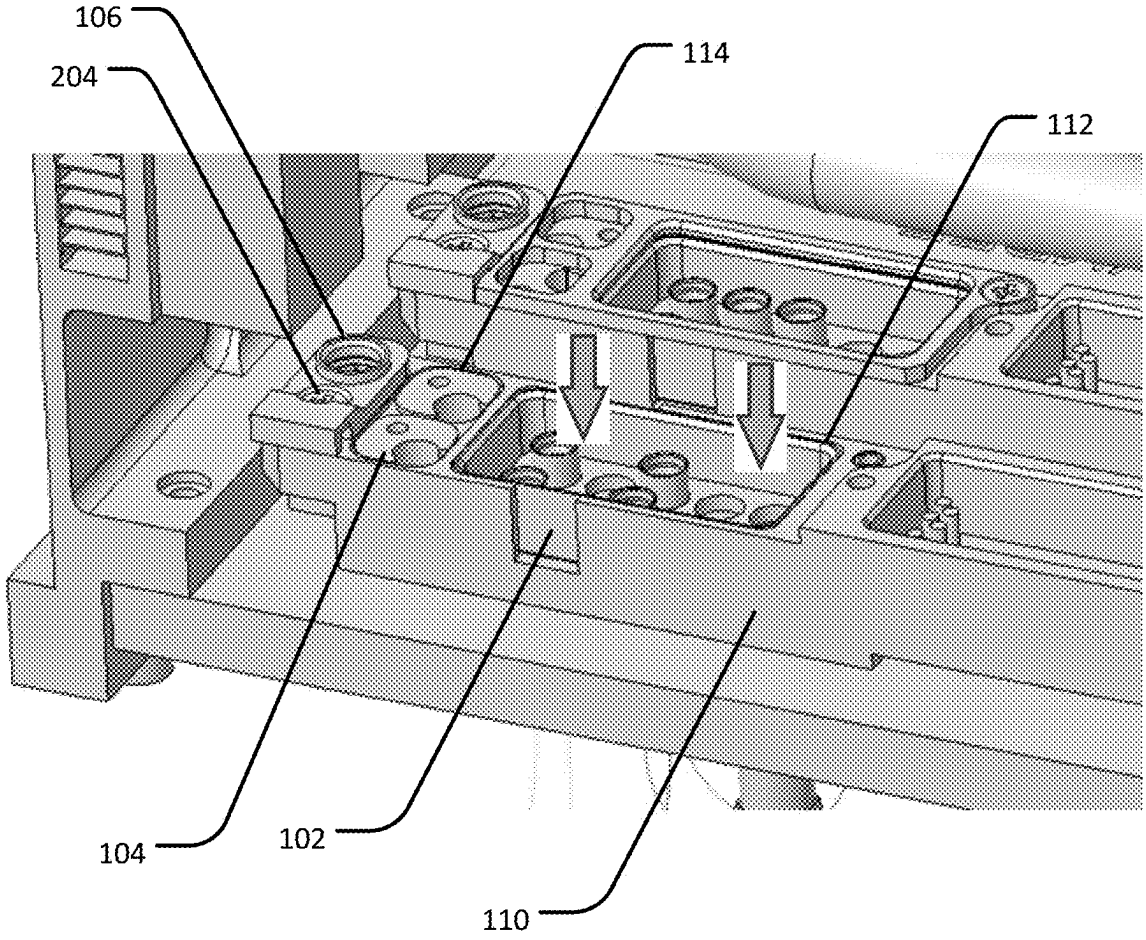


FIG. 8A

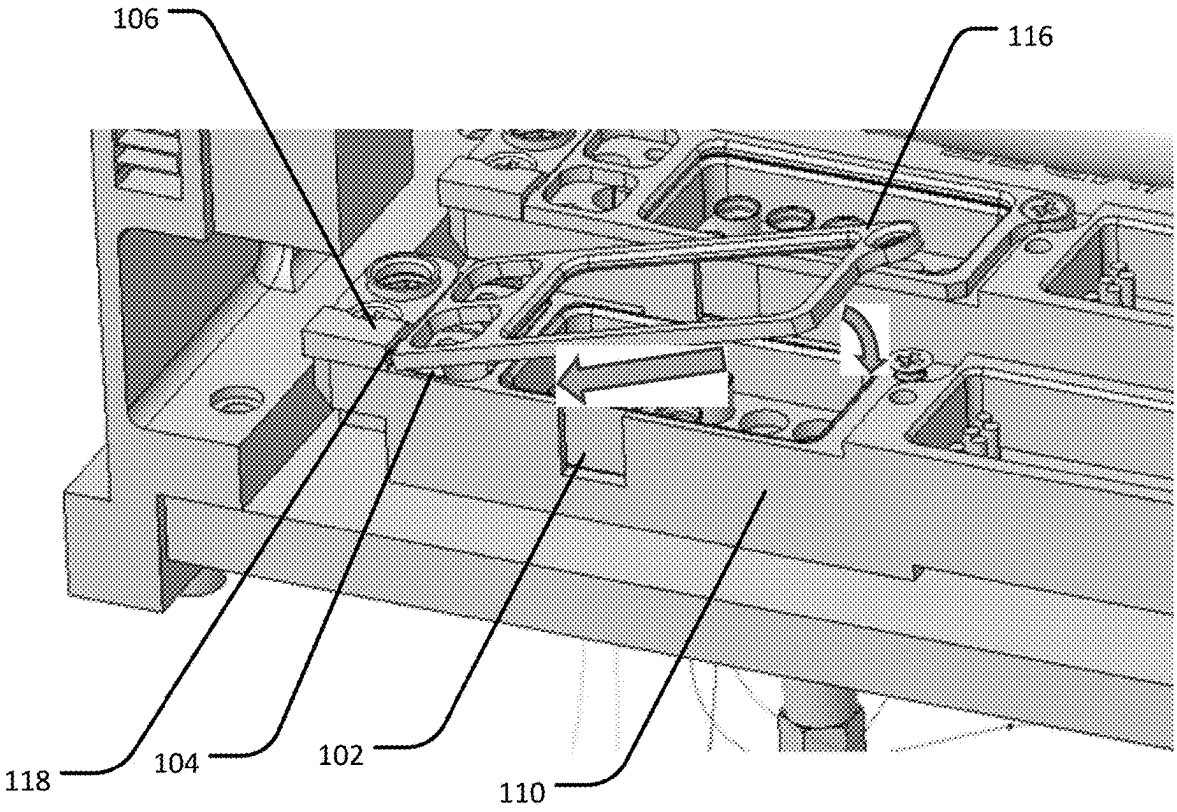


FIG. 8B

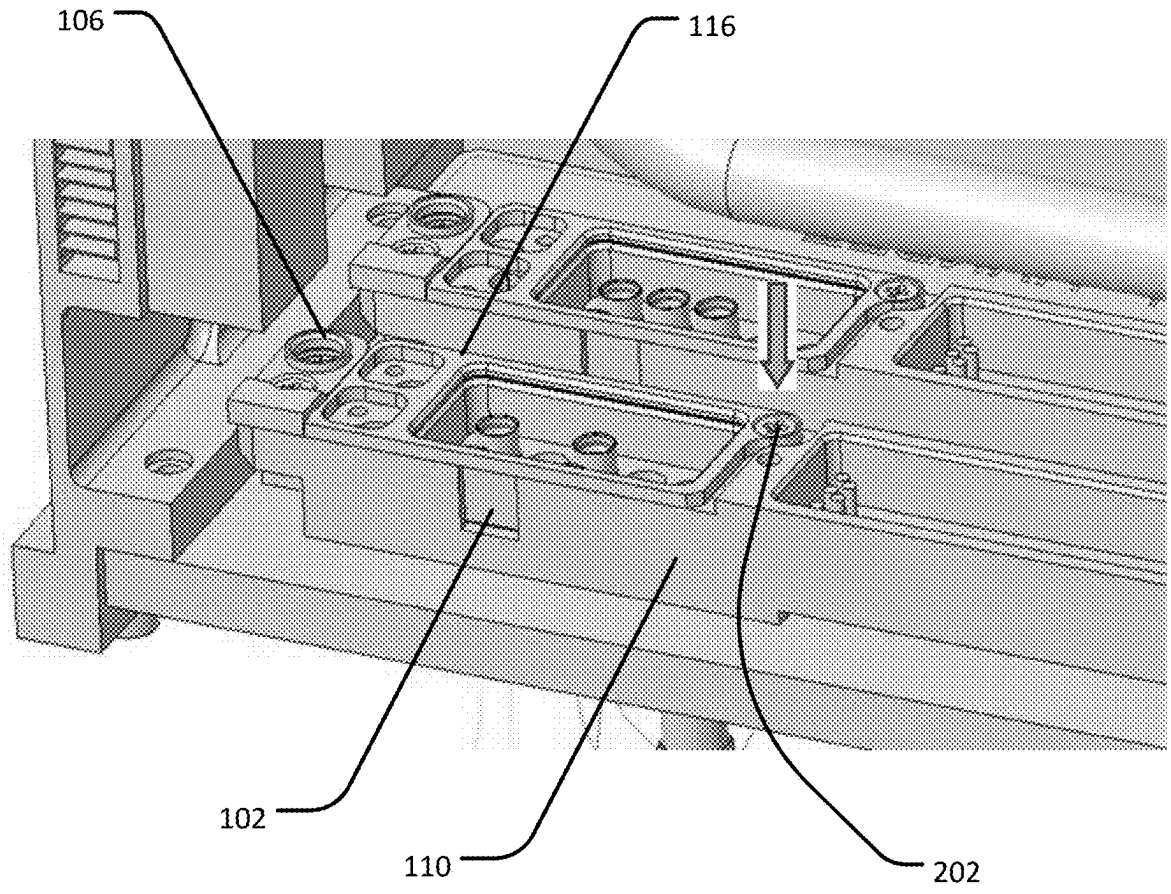


FIG. 8C

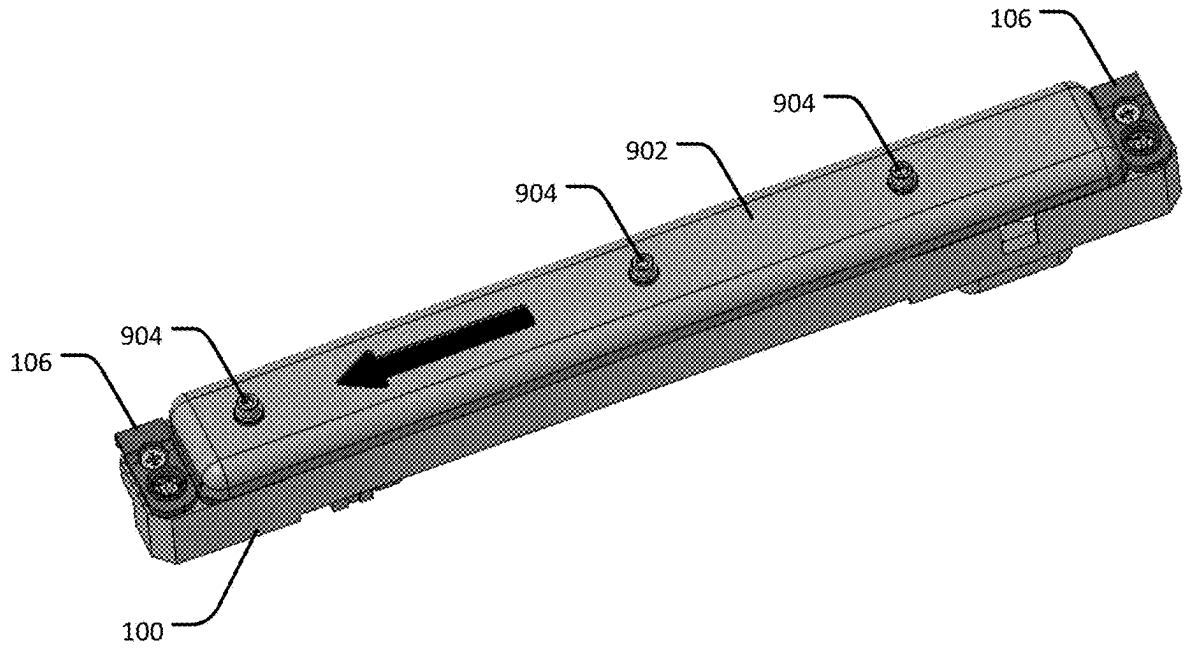


FIG. 9

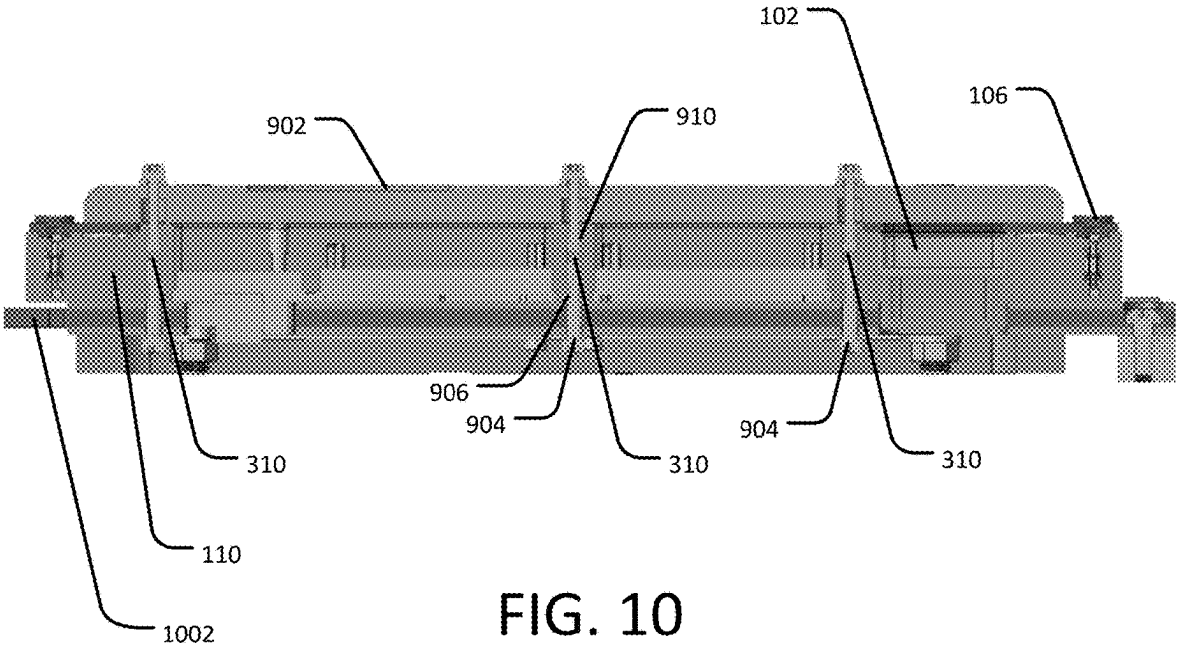


FIG. 10

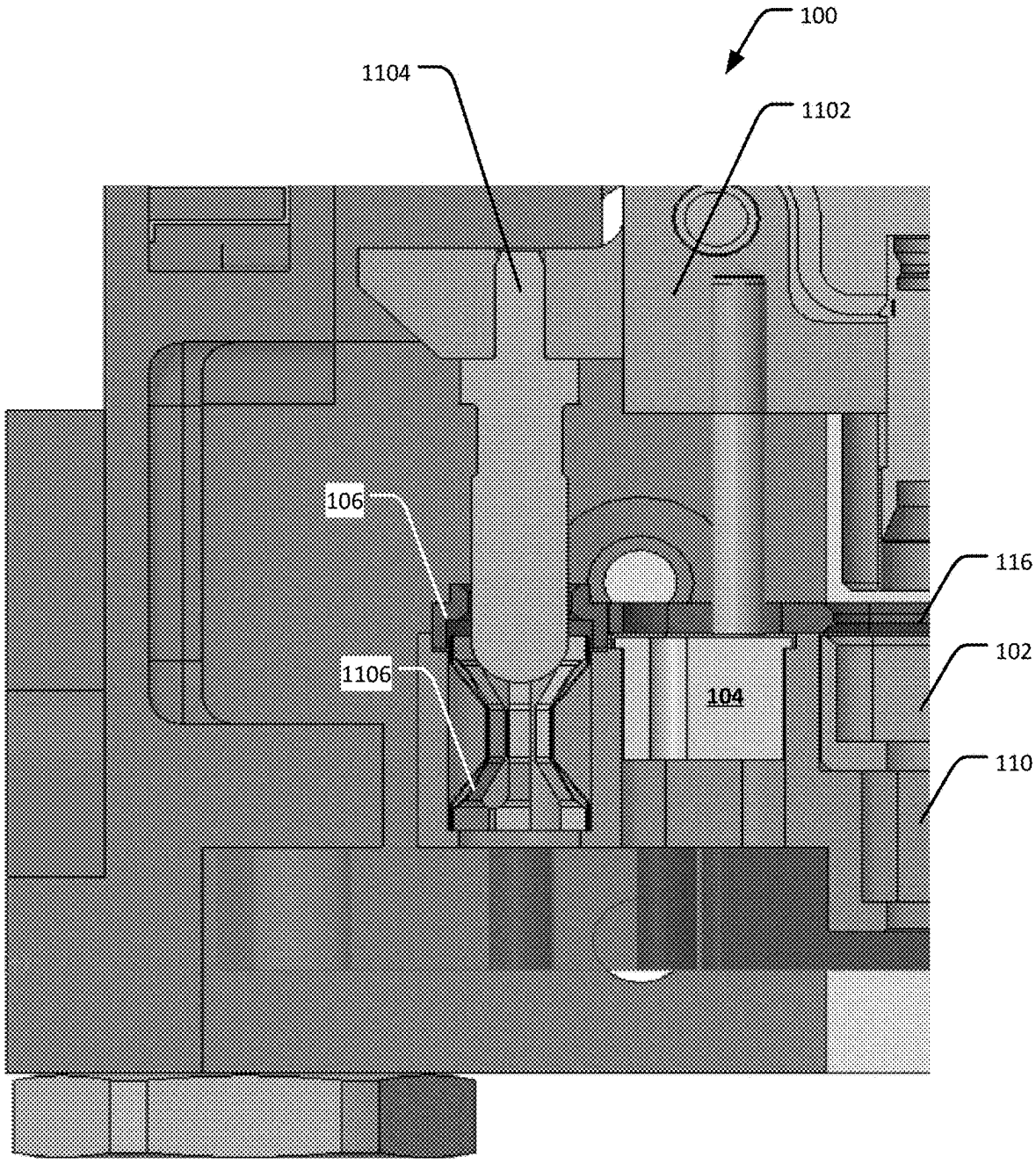


FIG. 11

CONFIGURABLE INTERFACE FOR MODULAR ELECTRONIC COMPONENTS

FIELD OF DISCLOSURE

[0001] The present disclosure relates to a modular electronic components, and more particularly, to a configurable interface for electronic components.

BACKGROUND

[0002] Certain electronic components are assembled as units or modules having electrical and/or optical interfaces, and mechanical interfaces for connecting several components together. For example, several components can be attached to a backplane or other connection point via the electrical interfaces to facilitate inter-component communications and/or to supply electrical power to the components. Such interfaces permit components having compatible connectors to be interchangeably connected as modules of a larger circuit, device, or system. Connectors can have a wide range of designs to suit different applications and uses, which can increase the cost and complexity of the interfaces with respect to standardized implementations. Thus, there remain a number of non-trivial challenges with respect to designing and manufacturing modular interfaces for electronic components.

BRIEF DESCRIPTION OF THE DRAWINGS

[0003] FIG. **1** is a perspective exploded view of part of a configurable interface for an electronic component, in accordance with an example of the present disclosure.

[0004] FIG. **2** is a perspective view of the interface of FIG. **1** in an assembled state, in accordance with an example of the present disclosure.

[0005] FIG. **3** is a perspective view of an interface plate of the interface of FIGS. **1** and **2**, in accordance with an example of the present disclosure.

[0006] FIGS. **4**A and **4**B are perspective views of a basket and a retention cover of the interface of FIGS. **1** and **2**, in accordance with an example of the present disclosure.

[0007] FIGS. **5**A and **5**B are perspective views of a bushing of the interface of FIGS. **1** and **2**, in accordance with an example of the present disclosure.

[0008] FIG. **6** is a plan view of a backplane having one or more of the interfaces of FIGS. **1** and **2** in various configurations, in accordance with an example of the present disclosure.

[0009] FIG. **7** is a plan view of an interface backplane having the interface of FIGS. **1** and **2**, in accordance with examples of the present disclosure.

[0010] FIGS. **8**A, **8**B, and **8**C illustrate how various components of the interfaces of FIGS. **1**-**7** can be assembled, in accordance with an example of the present disclosure.

[0011] FIG. **9** is a perspective view of the interface of FIG. **1** with a cover attached, in accordance with an example of the present disclosure.

[0012] FIG. **10** is an elevational cross-section of the interface of FIG. **9** with the cover attached, in accordance with an example of the present disclosure.

[0013] FIG. **11** is a partial elevational cross-section of the interface of FIG. **1** showing an alignment feature, in accordance with an example of the present disclosure.

[0014] Although the following detailed description will proceed with reference being made to illustrative embodiments, many alternatives, modifications, and variations thereof will be apparent in light of this disclosure.

DETAILED DESCRIPTION

[0015] A configurable interface for an electronic component is provided. In an example, the interface includes an or several openings for a connector, alignment holes, a keying insert and an interface plate having an opening for receiving the keying insert. The keying insert can be configured to provide a plurality of distinct keying options. In some cases, the configurable interface may include a basket, wherein the interface plate has another opening for receiving the basket. The interface may further include a bushing having a recess. In some cases, the interface includes a retention cover having a tab configured to extend into the recess of the bushing. In some cases, the basket includes a plurality of openings for receiving an electrical connection therethrough. In some cases, the keying insert can provide **2** to **4** distinct keying options, depending on its orientation within the opening of the interface plate. The configurable interface can include a first fastener configured to secure the bushing to a planar surface of the interface plate, and a second fastener configured to secure the retention cover to the planar surface of the interface plate. The keying insert can include, in some examples, a keyway offset from an axis passing through a center of the keying insert, wherein the keying insert further includes a lip that is substantially flush with the interface plate while the keying insert is received in the second opening. The retention cover can include, in some examples, a third opening corresponding to the first opening of the interface plate, and a fourth opening corresponding to the second opening of the interface plate. The retention cover is configured, while secured to the interface plate, to secure the basket in the first opening of the interface plate and to secure the keying insert in the second opening of the interface plate. Numerous other embodiments and variations of the device will be apparent.

General Overview

[0016] As noted above, modular components can be electrically coupled via compatible connectors to provide power and/or signals between the components as well as mechanical alignment and proper mating and mounting for the modules to the backplane. A particular type of interface is called a blind mate interface. A blind mate interface facilitates alignment of the connector during mating. For example, a connector—sometimes referred to as a keyed connector—can include pins, cutouts, ears, or other features that restrict the connector to a single mating orientation. A blind mate interface includes additional features that help to align the connector in the correct orientation as it is mated to another, complementary connector, such as mounted on a backplane or a circuit board. Blind mate interfaces used in modular component applications can have a wide range of designs to suit different applications and uses, such that each interface is unique.

Configurable Interface

[0017] FIG. **1** is a perspective exploded view of a configurable interface **100** for an electronic component, in accordance with an example of the present disclosure. The interface **100** includes a basket **102**, a keying insert **104**, a bushing **106** having a recess **108**, an interface plate **110**, and

a retention cover **116** having a tab **118** at one end that is configured to extend into, and be secured within, the recess **108** of the bushing **106**. In some examples, the basket **102** may be omitted, such as for fiber optic connections or connectors with different form factors. The interface plate **110** includes a first opening **112** for receiving the basket **102** and a second opening **114** for receiving the keying insert **104**. In some examples, the interface plate **110** includes at least two of the second openings **114** for receiving multiple keying inserts **104**, such as shown in FIG. **1**. The interface plate **110** further includes one or more planar surfaces **124** that are adjacent to the bushing **106** and the retention cover **116** while the interface **100** is at least partially assembled, such as shown in FIG. **2**. The basket **102** includes multiple openings, also referred to as positions, for receiving an electrical connection therethrough. For example, the electrical connection can be a connector coupled to a cable having multiple electrical or optical conductors. The retention cover **116** includes a third opening **120** corresponding to the first opening **112** of the interface plate, and a fourth opening **122** corresponding to the second opening **114** of the interface plate **110**.

[0018] The keying insert **104** includes a lip **126** that is substantially flush with the planar surface **124** of the interface plate **110** while the keying insert **104** is fully received or otherwise installed in the second opening **114** of the interface plate **110**. When fully received in the second opening **114**, the lip **126** abuts a shoulder **128** of the second opening **114**, which limits the travel of the keying insert **104** within the second opening **114** and helps align the keying insert **104** with the keying insert opening **122** of the retention cover **116**. In this example, the keying insert **104** may be oriented in opening **114** in one of four distinct orientations, so as to provide four distinct keying options. Where multiple keying inserts **104** are used, additional keying options are possible since each keying insert **104** can have, for example, four orientations.

[0019] In some examples, the interface **100** includes an alignment spring **130** configured to receive an alignment pin of a cover plate via the bushing **106**, such as described with respect to FIGS. **9-10**.

[0020] FIG. **2** is a perspective view of the interface **100** in an assembled state, in accordance with an example of the present disclosure. The interface **100** includes a first fastener **202** configured to secure the retention cover **116** to the planar surface **124** of the interface plate **110**, and a second fastener **204** configured to secure the bushing **106** to the planar surface **124** of the interface plate **110**. In the assembled state, the tab **118** is inserted into, and captured within, the recess **108** of the bushing **106** to further secure the retention cover **116** to the interface plate **110**. The retention cover **116** is configured, while secured to the interface plate **110**, to secure the basket **102** in the first opening **112** of the interface plate and to secure the keying insert **104** in the second opening **114** of the interface plate **110**.

[0021] The second opening **114** of the interface plate **110** can be dimensioned to provide a slip fit (little to no friction) or an interference (pressure or friction) fit for the keying insert **104**. For example, the dimensions of the second opening **114** are such that the keying insert **104** is not permitted substantial lateral or rotational movement while received in the second opening **114**.

[0022] The keying insert **104** includes a keyway **206**, which is offset from an axis passing through a center **208** of the keying insert **104**. The keyway **206** of the keying insert **104** is configured to receive a key or other structural member of a blind mate connector that is inserted into the interface **100**. The key prevents the blind mate connector from mating with the interface **100** in an incorrect orientation or an incorrect configuration (to prevent damage to the interface and the connector when attempting to use the wrong connector).

[0023] As described above, the interface **100** is configurable to accommodate different keying configurations of the blind mate connector and/or different types of keyed connectors. For example, the keying insert **104** can be rotated about the center **208** to lie in different positions or quadrants of the second opening **114** of the interface plate **110**, so as to provide four distinct keying options. Other examples may have fewer options or just one, while still other examples may have more options. In another example, the keyway **206** of the keying insert **104** can have different shapes, sizes, and/or positions to accommodate various types of connectors, or a blocking insert. As noted above, in some examples, multiple keying inserts **104** can be employed, with each keying insert **104** capable of being inserted into a corresponding one of the second openings **114** of the interface plate **110** to provide various keying combinations, such as shown in FIG. **2**. In yet another example, the size of the first opening **112** and the second opening **114** of the interface plate **110**, and the corresponding third opening **120** and fourth opening **122** of the retention cover **116**, can be modified to accommodate various types of connectors.

[0024] FIG. **3** is a perspective view of the interface plate **110** of FIGS. **1** and **2**, in accordance with an example of the present disclosure. The interface plate **110** includes a first bore **302** for receiving the first fastener **202** and a second bore **304** for receiving the second fastener **204**. The first bore **302** and/or the second bore **304** can be threaded to receive the first fastener **202** and the second fastener **204**, respectively. In some examples, the structure of the interface plate **110** can be at least partially symmetric about an axis **306** passing through a midpoint of the interface plate **110**, such as shown in FIG. **3**. In such a configuration, the interface plate **110** includes two first openings **112** and at least two second openings **114**. The interface plate **110** can, in some examples, include additional features, such as a connector insert opening **308** between the first openings **112** for receiving an additional connector (e.g., a blind mate or other keyed connector) therethrough.

[0025] In some examples, the interface plate **110** further includes one or more through-holes **310**. The through-holes **310** are used on the underside of the interface plate **110** to attach the interface plate **110** to the backplane and on the topside (visible in FIG. **3**) to attach a cover (see FIGS. **9-10**) to the interface plate **110**. Both sides of the hole can be threaded to receive a fastener.

[0026] FIGS. **4**A and **4**B are perspective views of the basket **102** and the retention cover **116** of FIGS. **1** and **2**, in accordance with an example of the present disclosure. In FIG. **4**A the basket **102** and the retention cover **116** are shown separated. In FIG. **4**B, the retention cover **116** is shown adjacent to the basket **102**. The third opening **120** is smaller than, or the same size as, an upper edge **402** of the basket **102** so that the retention cover **116** secures the basket **102** in the interface plate **110**. The retention cover **116**

includes the tab **118** for securing the retention cover **116** to the bushing **106** and an opening **404** for receiving the first fastener **202** therethrough.

[0027] FIGS. **5**A and **5**B are perspective views of the bushing **106** of FIGS. **1** and **2**, in accordance with an example of the present disclosure. The bushing **106** includes a first opening **502** for receiving the second fastener **204** therethrough. The recess **108** can include, for example, a notch, channel, or other opening that is sized to receive the tab **118** of the retention cover **116**. The bushing **106** further includes a second opening **504** for guiding the mating interface.

Interface Backplane

[0028] FIG. **6** is a view of an interface assembly including a backplane **602**, in accordance with an example of the present disclosure. The backplane **602** includes one or more interfaces **100**, such as described with respect to FIGS. **1**-**5**. Each interface **100** can be configured to accommodate different sizes and shapes of connectors. For example, as shown in FIG. **6**, the basket **102** of a first interface **604** has a height **606** of two unit lengths and a width **608** of five unit lengths. In this context, one unit length represents a dimension that accommodates one connector pin within the basket **102**. In another example, the basket **102** of a second interface **610** has a height **606** of two unit lengths and a width **608** of two unit lengths.

[0029] FIG. **7** is a view of an interface assembly including a backplane **702**, in accordance with an example of the present disclosure. The backplane **702** includes one or more interfaces **100**, such as described with respect to FIGS. **1**-**5**. Similar to the backplane **602** of FIG. **6**, each interface **100** can be configured to accommodate different sizes, shapes, and types of connectors, such as digital connectors, radio frequency (RF) connectors, and fiber optic connectors. For example, as shown in FIG. **7**, the basket **102** of a third interface **704** has a height **606** of two unit lengths and a width **608** of seven unit lengths. In another example, the basket **102** of a fourth interface **706** has a height **606** of two unit lengths and a width **608** of three unit lengths.

[0030] In some other examples, the basket **102** of the interface **100** has a height of one unit length, two unit lengths, three unit lengths, four unit lengths, etc., and a width of one unit length, two unit lengths, three unit lengths, four unit lengths, five unit lengths, six unit lengths, seven unit lengths, etc.

Interface Assembly

[0031] FIGS. **8**A, **8**B, and **8**C illustrate how various components of the interface **100** of FIGS. **1**-**7** can be assembled, in accordance with an example of the present disclosure. In FIG. **8**A, the basket **102** is inserted into the first opening **112** of the interface plate **110**, and one or more keying inserts **104** are inserted into the second opening(s) **114** of the interface plate **110**. The bushing **106** is attached to the interface plate **110** using the second fastener **204**.

[0032] As noted above with respect to FIG. **2**, the interface **100** is configurable to accommodate different keying configurations of the blind mate connector and/or different types of keyed connectors. For example, the keying insert **104** can be rotated to lie in different positions or quadrants of the second opening **114** of the interface plate **110**. In another example, the keyway **206** of the keying insert **104** can have different shapes, sizes, and/or positions to accommodate various types of connectors. In some examples, multiple keying inserts **104** can be employed, with each keying insert **104** capable of being inserted into a corresponding one of the second openings **114** of the interface plate **110** to provide various keying combinations, such as shown in FIGS. **6**, **7**, and **8**A-C.

[0033] In FIG. **8**B, the tab **118** of the retention cover **116** is inserted into the recess **108** of the bushing **106**. The retention cover **116** is then rotated downwards and fastened to the interface plate **110** using the first fastener **202**, as shown in FIG. **8**C, thereby securing the basket **102** and the keying insert(s) **104** to the interface plate **110**.

[0034] As noted above, module interface plates are typically long lead items and have tight tolerances. Examples of the present disclosure include interface plates having a common housing design that promotes economies of scale across multiple modules and multiple applications that utilize such modules. For example, when a package has volume constraints within the chassis (such as module cover-to-cover width), the disclosed interface plates can be customized to increase module density and promote reuse across various designs. Furthermore, configurable keying allows the same housing part number to be used on different modules with the same form factor but still prevent a module from being installed in the wrong position or orientation.

Interface Plate Cover

[0035] FIG. **9** is a perspective view of the interface **100** of FIG. **1** with a cover **902** attached and FIG. **10** is an elevational cross-section of the interface **100** with the cover **902** attached, in accordance with an example of the present disclosure. One or more fasteners **904** (e.g., threaded fasteners) can be used to attach the cover **902** to the interface **100** via the through-holes **310**, the first bore **302**, and/or the second bore **304** of the interface plate **110**, such as shown in FIG. **3**.

[0036] The cover **902** can be used in place of a module to protect the connector from foreign object damage or environmental damage such as dust. As shown in FIG. **10**, the fasteners **904** come up through the bottom of a printed circuit board (PCB) **1002** and engage with helical inserts **906** at the bottom of the interface plate **110**. Another set of helical inserts **910** in the through-holes **310** at the top of the interface plate can be used to attach the cover **902**.

Alignment Feature

[0037] FIG. **11** is a partial elevational cross-section of the interface **100** of FIG. **1** showing an alignment feature, in accordance with an example of the present disclosure. FIG. **11** shows a portion of a connector **1102**, an alignment pin **1104**, and a ground spring **1106**. The alignment pin **1104** is configured to align the connector **1102** with the bushing **106** of the interface **100** and to engage with the ground spring **1106**. The ground spring **1106** is held in place by the bushing **106**.

Further Example Embodiments

[0038] The following examples pertain to further embodiments, from which numerous permutations and configurations will be apparent.

[0039] Example 1 provides a configurable interface for an electronic component, comprising a keying insert

configured to provide a plurality of distinct keying options; and an interface plate having an opening for receiving the keying insert.

[0040] Example 2 includes the subject matter of Example 1, wherein the opening is a first opening, the configurable interface further comprising a basket, wherein the interface plate has a second opening for receiving the basket.

[0041] Example 3 includes the subject matter of Example 2, further comprising a bushing having a recess.

[0042] Example 4 includes the subject matter of Example 3, further comprising a retention cover having a tab configured to extend into the recess of the bushing.

[0043] Example 5 includes the subject matter of Example 4, further comprising a first fastener configured to secure the bushing to a planar surface of the interface plate, and a second fastener configured to secure the retention cover to the planar surface of the interface plate.

[0044] Example 6 includes the subject matter of any one of Examples 4 and 5, wherein the retention cover includes a third opening corresponding to the first opening of the interface plate, and a fourth opening corresponding to the second opening of the interface plate.

[0045] Example 7 includes the subject matter of Example 6, wherein the retention cover is configured, while secured to the interface plate, to secure the basket in the second opening of the interface plate and to secure the keying insert in the first opening of the interface plate.

[0046] Example 8 includes the subject matter of any one of Examples 2-7, wherein the basket includes a plurality of openings for receiving an electrical connection therethrough.

[0047] Example 9 includes the subject matter of Example 8, wherein the basket has a height of one or more unit lengths and a width of one or more unit lengths.

[0048] Example 10 includes the subject matter of any one of Examples 1-9, wherein the keying insert includes a keyway offset from an axis passing through a center of the keying insert, and wherein the keying insert further includes a lip that is substantially flush with the interface plate while the keying insert is received in the opening.

[0049] Example 11 includes the subject matter of any one of Examples 1-10, wherein the keying insert can provide two or more distinct keying options, depending on an orientation of the keying insert within the opening.

[0050] Example 12 provides a method of assembling a configurable interface for an electronic component, the method comprising inserting a keying insert into an opening of the interface plate; attaching a bushing having a recess to the interface plate; and inserting a tab of a retention cover into the recess of the bushing.

[0051] Example 13 includes the subject matter of Example 12, further comprising securing the bushing to a planar surface of the interface plate using a first fastener, and securing the retention cover to the planar surface of the interface plate using a second fastener; and/or securing the keying insert in the opening of the interface plate while the retention cover is secured to the interface plate.

[0052] Example 14 includes the subject matter of any one of Examples 12 and 13, wherein the keying insert includes a keyway offset from an axis passing through a center of the keying insert, and wherein the keying insert further includes a lip that is substantially flush with the interface plate while the keying insert is received in the opening; the retention cover includes a third opening corresponding to the opening of the interface plate.

[0053] Example 15 provides a configurable interface, comprising a basket; a keying insert; a bushing having a recess; an interface plate having a first opening for receiving the basket and a second opening for receiving the keying insert; and a retention cover having a tab configured to extend into the recess of the bushing.

[0054] Example 16 includes the subject matter of Example 15, further comprising a first fastener configured to secure the bushing to a planar surface of the interface plate, and a second fastener configured to secure the retention cover to the planar surface of the interface plate.

[0055] Example 17 includes the subject matter of any one of Examples 15 and 16, wherein the keying insert includes a keyway offset from an axis passing through a center of the keying insert, and wherein the keying insert further includes a lip that is substantially flush with the interface plate while the keying insert is received in the second opening.

[0056] Example 18 includes the subject matter of any one of Examples 15-17, wherein the retention cover includes a third opening corresponding to the first opening of the interface plate, and a fourth opening corresponding to the second opening of the interface plate, and wherein the retention cover is configured, while secured to the interface plate, to secure the basket in the first opening of the interface plate and to secure the keying insert in the second opening of the interface plate.

[0057] Example 19 includes the subject matter of any one of Examples 15-19, wherein the basket includes a plurality of openings for receiving an electrical connection therethrough, and wherein the basket has a height of two unit lengths and a width of one of: one unit length, two unit lengths, three unit lengths, four unit lengths, five unit lengths, six unit lengths, and seven unit lengths.

[0058] Example 20 provides a system comprising a backplane and one or more of the configurable interface of any one of Examples 15-19, each of the one or more of the configurable interface being attached to the backplane.

[0059] The terms and expressions which have been employed herein are used as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described (or portions thereof), and it is recognized that various modifications are possible within the scope of the claims. Accordingly, the claims are intended to cover all such equivalents. Various features, aspects, and embodiments have been described herein. The features, aspects, and embodiments are susceptible to combination

with one another as well as to variation and modification, as will be appreciated in light of this disclosure. The present disclosure should, therefore, be considered to encompass such combinations, variations, and modifications. It is intended that the scope of the present disclosure be limited not by this detailed description, but rather by the claims appended hereto. Future filed applications claiming priority to this application may claim the disclosed subject matter in a different manner and may generally include any set of one or more elements as variously disclosed or otherwise demonstrated herein.

What is claimed is:

1. A configurable interface for an electronic component, comprising:

a keying insert configured to provide a plurality of distinct keying options, the keying insert including a keyway offset from an axis passing through a center of the keying insert; and

an interface plate having an opening for receiving the keying insert.

2. The configurable interface of claim **1**, wherein the opening is a first opening, the configurable interface further comprising a basket, wherein the interface plate has a second opening for receiving the basket.

3. The configurable interface of claim **2**, further comprising a bushing having a recess.

4. The configurable interface of claim **3**, further comprising a retention cover having a tab configured to extend into the recess of the bushing.

5. The configurable interface of claim **4**, further comprising a first fastener configured to secure the bushing to a planar surface of the interface plate, and a second fastener configured to secure the retention cover to the planar surface of the interface plate.

6. The configurable interface of claim **4**, wherein the retention cover includes a third opening corresponding to the first opening of the interface plate, and a fourth opening corresponding to the second opening of the interface plate.

7. The configurable interface of claim **6**, wherein the retention cover is configured, while secured to the interface plate, to secure the basket in the second opening of the interface plate and to secure the keying insert in the first opening of the interface plate.

8. The configurable interface of claim **2**, wherein the basket includes a plurality of openings for receiving an electrical connection therethrough.

9. The configurable interface of claim **8**, wherein the basket has a height of one or more unit lengths and a width of one or more unit lengths.

10. The configurable interface of claim **1**, wherein the keying insert further includes a lip that is substantially flush with the interface plate while the keying insert is received in the opening.

11. The configurable interface of claim **1**, wherein the keying insert can provide two or more distinct keying options, depending on an orientation of the keying insert within the opening.

12. A method of assembling a configurable interface for an electronic component, the method comprising:

inserting a keying insert into an opening of an interface plate, the keying insert including a keyway offset from an axis passing through a center of the keying insert;

attaching a bushing having a recess to the interface plate; and

inserting a tab of a retention cover into the recess of the bushing.

13. The method of claim **12**, further comprising:

securing the bushing to a planar surface of the interface plate using a first fastener, and securing the retention cover to the planar surface of the interface plate using a second fastener; and/or

securing the keying insert in the opening of the interface plate while the retention cover is secured to the interface plate.

14. The method of claim **12**, wherein:

the keying insert further includes a lip that is substantially flush with the interface plate while the keying insert is received in the opening; and

the retention cover includes a third opening corresponding to the opening of the interface plate.

15. A configurable interface, comprising:

a basket;

a keying insert including a keyway offset from an axis passing through a center of the keying insert;

a bushing having a recess;

an interface plate having a first opening for receiving the basket and a second opening for receiving the keying insert; and

a retention cover having a tab configured to extend into the recess of the bushing.

16. The configurable interface of claim **15**, further comprising a first fastener configured to secure the bushing to a planar surface of the interface plate, and a second fastener configured to secure the retention cover to the planar surface of the interface plate.

17. The configurable interface of claim **15**, wherein the keying insert includes a keyway offset from an axis passing through a center of the keying insert, and wherein the keying insert further includes a lip that is substantially flush with the interface plate while the keying insert is received in the second opening.

18. The configurable interface of claim **15**, wherein the retention cover includes a third opening corresponding to the first opening of the interface plate, and a fourth opening corresponding to the second opening of the interface plate, and wherein the retention cover is configured, while secured to the interface plate, to secure the basket in the first opening of the interface plate and to secure the keying insert in the second opening of the interface plate.

19. The configurable interface of claim **15**, wherein the basket includes a plurality of openings for receiving an electrical connection therethrough, and wherein the basket has a height of two unit lengths and a width of one of: one unit length, two unit lengths, three unit lengths, four unit lengths, five unit lengths, six unit lengths, and seven unit lengths.

20. A system comprising a backplane and one or more of the configurable interface of claim **15**, each of the one or more of the configurable interface being attached to the backplane.

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