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# COVER ASSEMBLY FOR A TELECOMMUNICATIONS CONNECTOR


## Abstract

A cover assembly (**100**) is disclosed that can be installed onto and removed from a telecommunications connector (**200**) without requiring the connector (**200**) from being removed from its mounted position and without requiring an associated cover plate (**120**) from being removed from its mounted position. The cover assembly (**100**) can include a base portion (**150**) that defines an opening that entirely surrounds a cover portion (**110**). In one example, the cover portion (**110**) is attached to the base portion (**150**) via a living hinge (**118**). In one aspect, the base portion (**150**) acts as a color cap while the cover portion (**110**) acts as a dust cover. In one example, the base portion (**150**) is provided without a cover portion (**110**) such that the cover assembly (**100**) simply acts as a color cap.



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## Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION [0001] This application is a Continuation of U.S. patent application Ser. No. 17/206,960, filed Mar. 19, 2021, which is a Continuation of U.S. patent application Ser. No. 16/727,412, filed on Dec. 26, 2019, now U.S. Pat. No. 10,958,012, which is a Continuation of U.S. patent application Ser. No. 15/562,397, filed on Sep. 27, 2017, now U.S. Pat. No. 10,522,939, which is a National Stage Application of PCT/ES2016/070212, filed on Mar. 26, 2016, which claims the benefit of Spanish Patent Application No. P201530418, filed on Mar. 27, 2015, the disclosures of which are incorporated herein by reference in their entireties. To the extent appropriate, a claim of priority is made to each of the above disclosed applications.

TECHNICAL FIELD
[0002] The present disclosure relates to color caps attached to telecommunications connectors that include a dust caps for protecting an unused telecommunications connector.
BACKGROUND
[0003] Electrical connectors, for example RJ-type connectors, are useful for providing wall sockets where electronic data cables can be terminated and mating electrical plugs can be inserted. A problem with such electrical connectors can occur when dust, dirt or other contaminants come into contact with electrically conductive elements inside the connector. Such contaminants may cause corrosion, unintended conduction or adhesion of components that impedes their movement. Ingress of contaminants into the electrical connector may be particularly likely when the connector is placed in a wall cavity. This may be the case when building works generate abrasions and contaminants, for example.
[0004] Some electrical connectors, such as some RJ-type connectors, are assembled in such a way that an exposed cavity containing one or more conductive elements of the electrical connector is not covered once installed. This exposed cavity may be prone to accumulation of contaminants. It is generally desirable to overcome or ameliorate one or more of the above described difficulties, or at least provide a useful alternative.
[0005] Another concern regarding connectors is the provision of identification means on the connectors such that a user can more quickly identify an appropriate connector. Although some connectors are provided with color caps for this purpose, many are installed one the connector in such a way that their removal and replacement the field is difficult or impossible without removing the connector from its mounting location.

SUMMARY

[0006] A cover assembly is disclosed. The cover assembly is for covering a jack receptacle located at a front face of a telecommunications connector, the cover assembly includes: a base portion including at least one attachment feature for securing the base portion to the front face of the telecommunications connector, the base portion having a front face that defines an opening; a cover portion connected to the base portion via a living hinge, the cover portion being movable between a closed position and an open position: when the cover portion is in the closed position, a front face of the cover portion covers the opening and is coplanar with the front face of the base portion; when the cover portion is in the open position, the opening is at least partially uncovered by rotating the cover portion about the living hinge with the at least a portion of the base portion remaining unobscured by the cover portion.

[0007] A telecommunications system is disclosed. The system includes: a connector defining a jack receptacle located at a front face of the connector; a mounting panel to which the connector is mounted; a cover plate having a front face defining an opening, the cover plate being placed in a mounted position; a cover assembly removably secured to the connector and located at least partially within the covering plate opening. The cover assembly is similar to that as described above.

[0008] A method of attaching a cover assembly for a telecommunications jack is disclosed. The method can include the steps of: providing a connector defining a jack receptacle located at a front face of the connector; mounting the connector to a mounting panel; mounting a cover plate that has a front face defining an opening to a surrounding structure; providing a cover assembly of the type described above; and mounting the cover assembly to the connector.

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## Description

DESCRIPTION OF THE DRAWINGS

[0009] Non-limiting and non-exhaustive embodiments are described with reference to the following figures, which are not necessarily drawn to scale, wherein like reference numerals refer to like parts throughout the various views unless otherwise specified.

[0010] FIG. **1** is a front perspective view of a connector and a separated connector cover assembly having a color cap and a dust cap, the assembly having features that are examples of aspects in accordance with the principles of the present disclosure.

[0011] FIG. **2** is a front perspective view of the connector and cover assembly shown in FIG. **1**, with the cover assembly shown as being mounted to the connector.

[0012] FIG. **3** is a front perspective view of the connector and cover assembly shown in FIG. **2**, with the dust cap in a partially open position.

[0013] FIG. **4** is a front perspective view of the separated connector and cover assembly shown in FIG. **1**, with the connector shown as being mounted to a mounting panel and a cover plate.

[0014] FIG. **5** is a front perspective view of the connector and cover assembly shown in FIG. **4**, with the cover assembly shown as being mounted to the connector.

[0015] FIG. **6** is a front perspective view of the connector and cover assembly shown in FIG. **5**, with the dust cap of the connector assembly being in an open position.

[0016] FIG. **7** is a front perspective view of the cover assembly shown in FIG. **1**, with the dust cap shown being in a fully open position.

[0017] FIG. **8** is a front perspective view of the cover assembly shown in FIG. **1**, with the dust cap shown being in a partially open position.

[0018] FIG. **9** is a front perspective view of the cover assembly shown in FIG. **1**, with the dust cap shown being in a fully closed position.

[0019] FIG. **10** is a rear perspective view of the cover assembly shown in FIG. **1**, with the dust cap

shown being in a fully closed position.
[0020] FIG. **11** is a front perspective view of a connector and a second embodiment of the cover assembly in which the cover portion is not provided, the cover assembly having features that are examples of aspects in accordance with the principles of the present disclosure.
[0021] FIG. **12** is a front perspective view of the cover assembly shown in FIG. **11**.
[0022] FIG. **13** is a front perspective view of the cover assembly shown in FIG. **11**, with the connector shown as being mounted to a mounting panel and a cover plate.
DETAILED DESCRIPTION
[0023] Various embodiments will be described in detail with reference to the drawings, wherein like reference numerals represent like parts and assemblies throughout the several views. Reference to various embodiments does not limit the scope of the claims attached hereto. Additionally, any examples set forth in this specification are not intended to be limiting and merely set forth some of the many possible embodiments for the appended claims.
[0024] Referring now to FIGS. **1-4**, an example cover assembly **100** is shown. Cover assembly **100** is for providing a visual port indication to identity they type of connector **200** (and/or type of service) to which the assembly **100** is attached. In this manner, an array of connectors **200** can be provided with differently colored cover assemblies **100** such that the purpose or identity of each connector can be easily understood by a user (e.g. a blue color cover **100** for a first data connector, a green color cover **100** for a second data connector, and a red color cover **100** for a telephone connector). Cover assembly **100** is also for protecting a jack receptacle **206** of the connector **200** from dust and other contaminants when the modular connector is not engaged with a plug **300**. One type of modular connector suitable for use with cover assembly **100** is an RJ type connector, for example, an RJ45 type connector which can be connected to a cable **201**. In one aspect, the jack receptacle **206** includes contact springs **208** on the inside of the jack for contacting a mating plug (not shown). One skilled in the art will appreciate that the cover assembly **100** may be used in conjunction with a wide variety of modular type connector jacks, for example fiber optic adapters. In the embodiment shown, cover assembly **100** includes a cover portion **110** rotatably connected to a base portion **150** via a living hinge **118** to open or close an opening **120** defined by the base portion that corresponds to the shape of the jack receptacle **206**. As shown, the opening **120** is entirely circumscribed by the base portion **150** such that the opening **120** is an enclosed opening.
[0025] As most easily viewed at FIGS. **7** to **10**, the cover portion **110** has a front face **110***a* and a rear face **110***b*. When the cover assembly **100** is mounted on a jack **200**, the cover portion **110** is oriented such that the front face **110***a* is outward facing while the rear face **110***b* faces towards the jack receptacle **206** in a main body **202** of the jack **200**. Located on the front face **110***a* of the cover portion **110** is a handle **112** configured to allow a user to manipulate the cover portion **110** such that the cover assembly **100** can be moved from a closed position to an open position. The cover assembly **100** is shown as being in the closed position at FIGS. **1**, **2**, **4**, **5** and **9-10**, and as being in an open position at FIGS. **3**, **6**, **7**, and **8**. In the example embodiment shown, the handle **112** is configured to allow this action to be initiated by using a single phalange (i.e. a finger and/or a fingernail).
[0026] As shown, the cover portion **110** and the base portion **150** are connected to each other by a living hinge **118**. By use of the term “living hinge” it is meant to mean a relatively thin, flexible hinge made from the same material as the cover portion **110** and the base portion **150**. This configuration allows for the cover assembly **100** to be produced in a single manufacturing step, as no assembly of the base portion **150** and the cover portion **110** is required.
[0027] In one aspect, the cover portion **110** is provided with one or more securing features **116** that engage with the interior surfaces of the jack receptacle **206**. Securing feature **116** is for retaining the cover portion **110** in the closed position and may also act as an alignment guide when moving the cover portion **110** from the open to the closed position. The securing feature **116** has a width w**1** such that, when the cover portion **110** is moved to the closed position, the ends of the securing

feature **116** frictionally engage with side walls **206***a* and **206***a* of the jack receptacle **206**. Additional or alternative securing features may be provided, for example, the securing features disclosed in United States patent application publication 2013/0260582, the entirety of which is incorporated by reference.

[0028] In one aspect, the base portion **150** includes a main body **152** having a front face **152***a* and a rear face **152***b*. When the cover portion **110** is in the closed position with respect to the base portion **150**, the front face **152***a* is flush (i.e. coplanar) with and faces in the same direction as the front face **110***a* of the cover portion **110**. In one aspect, attachment features can be provided on the rear face **152***b* to secure the cover assembly **100** to the front face **204** of the jack **200**. Examples of suitable attachment features can be most easily seen at FIG. **10**, wherein it can be seen that the rear face **152***b* is provided with a pair of protrusions **160**, **162** and a pair of locking features **164**, **166**. The connector **200** can be provided with recesses **224**, **226** which respectively receive protrusions **160**, **162** and can be provided with locking features **220**, **222** which respectively engage with the locking features **164**, **166**.

[0029] As shown, the locking features **164**, **166** are respectively each provided with a lock portion **164***a*, **166***a* and a recess portion **164***b*, **166***b* while the locking features **220**, **222** are respectively each provided with a complementarily shaped lock portion **220***a*, **222***a* and a recess portion **220***b*, **222***b*. When engaged, the lock portions **164***a*, **166***a* engage with the recess portions **220***b*, **222***b* while the lock portions **220***a*, **222***a* engage with the recess portions **164***b*, **166***b*. As such, the locking features **164**/**220**, **166**, **222** lock the cover assembly **100** to the connector **200** such that the cover assembly is constrained from moving horizontally away from the front face **204** proximate the engaged locking features **164**/**220**, **166**/**222** and is constrained from moving vertically in a direction from the engaged locking features **164**/**220**, **166**/**222** towards the jack receptacle **206**. The protrusions **160**, **162** frictionally engage with the recesses **224**, **226** to prevent the cover assembly **100** from moving horizontally away from the front face **204** and also prevent the cover assembly **100** from moving in any direction parallel to the plane defined by the front face **204**.

[0030] To install the base portion **150** onto the front face **204** of the connector **200**, the locking features **164**, **166** can be first engaged with the locking features **220**, **222** on the connector main body **202** and the cover assembly **100** can be rotated about the engaged locking features **164**/**220** and **166**/**222** such that the protrusions **160**, **162** are pressed into the recesses **224**, **226** located on the front face **204** of the connector **200**. In this position, the locking features **164**/**220** and **166**/**222** are unable to disengage as long as one or both of the protrusions **160**, **162** are engaged with the recesses **224**, **226**. Removal of the cover assembly **100** is the reverse of installation, such that the base portion **150** must first be pulled away at the end opposite the locking features **164**, **166** to pull the protrusions **160**, **162** out of recesses **224**, **226**. Once this step is completed, the base portion **150** can then be displaced downwardly in a direction towards the locking features **164**, **166** to release the locking features **164**, **166** from locking features **220**, **222**.

[0031] In the embodiment shown, the height H and width W of the base portion **150** and the height H and width W of the connector **200** are the same, as can be seen at FIGS. **2** and **3**. This allows for the connector **200** to be installed into a mounting panel **300** and into a cover plate **304** with the cover assembly **100** already mounted to the connector **200**. This mounted configuration is shown at FIG. **5**, where it can be seen that the connector **200** is mounted through an opening **302** of the mounting panel **300** and is secured to the mounting panel **300** via a mounting clip **230** of the connector **200**. The cover plate **304**, which is typically mounted to a surrounding structure, also defines an opening **306** through which the cover assembly extends **100** such that the front face **110***a* of the cover assembly **100** and the front face **152***a* of the base portion are flush with a front face **304***a* of the cover plate **304**. As also there is also a small clearance gap **308** between the bottom of the cover assembly **100**/connector **200** and the opening **306**, the cover assembly **100** can be easily removed from the connector **200** without requiring removal of the cover plate **304** or requiring removal of the connector **200** from the mounting panel **300**. Likewise, the cover assembly

**100** can be installed onto the connector **200** without requiring removal of the cover plate **304** or removal of the connector **200** from the mounting panel **300**, as shown in FIGS. **4** and **5**. This functionality represents a significant improvement over many prior art embodiments which cannot be replaced without removing the connector from the mounting panel and/or cover plate to facilitate replacement and over prior art embodiments which have dust covers or color caps that are larger than the body of the connector and can therefore prevent the connector from being able to be installed from either the rear or the front side of the mounting panel **300**.

[0032] In the embodiment shown, the rear face **152***b* has a surface area that is generally equal to the surface area defined by the front face **204** of the connector **200** (i.e. cover portion **110** and front face **204** have the same width and height H and W). As such, even when the cover portion **110** is moved to an open position, the base portion **150** remains visible to a user and unobscured by the cover portion **110**, as can be seen at FIGS. **6** to **8**. As such, the base portion **150** can be provided with a color (or other indicia) to function as a cap that provides a visual indication as to the connector identity or type. In some embodiments, the cover portion **110** is provided with the same color or indicia as the base portion **150**, and can be integrally molded with the base portion **150** such that the cover assembly **100** is a formed as a single part. As such, the disclosed cover assembly **100** has the advantage of being an integrally formed, field replaceable unit that simultaneously serves as a dust cover and color cap. As shown at FIGS. **11-13**, the cover assembly **100** can be provided without the cover portion **110** such that the cover assembly functions purely as a color cap.

[0033] In example embodiments, the components of the cover assembly **100** may be made of a plastic material, such as injection molded polyethylene and polypropylene. Other materials can be used.

[0034] The various embodiments described above are provided by way of illustration only and should not be construed to limit the claims attached hereto. Those skilled in the art will readily recognize various modifications and changes that may be made without following the example embodiments and applications illustrated and described herein, and without departing from the true spirit and scope of the disclosure.

TABLE-US-00001 PARTS LIST 100 cover assembly 110 cover portion 110a front face 110b rear face 112 handle 116 securing feature 118 living hinge 120 opening 150 base portion 152 main body 152a front face 152b rear face 160 protrusion 162 protrusion 164 locking feature 164a lock portion 164b recess portion 166 locking feature 166a lock portion 166b recess portion 200 jack receptacle 201 cable 202 main body 204 front face 206 recess 206a sidewall 206b sidewall 208 contact springs 220 locking feature 220a lock portion 220b recess portion 222 locking feature 222a lock portion 222b recess portion 224 recess 226 recess 230 mounting clip 300 mounting panel 302 opening 304 cover plate 304a front face 306 opening 308 gap H height W width

## Claims

**1**. A cover assembly (**100**) for covering a jack receptacle (**206**) located at a front face (**204**) of a telecommunications connector (**200**), the cover assembly (**100**) comprising: (a) a base portion (**150**) including at least one attachment feature (**160**, **162**, **164**,**166**) for securing the base portion (**150**) to the front face (**204**) of the telecommunications connector (**200**), the base portion (**150**) having a front face (**152***a*) that defines an opening (**120**); (b) a cover portion (**110**) connected to the base portion (**150**) via a living hinge (**118**), the cover portion (**110**) being movable between a closed position and an open position: i. when the cover portion (**110**) is in the closed position, a front face (**110***a*) of the cover portion covers the opening (**120**) and is coplanar with the front face (**152***a*) of the base portion (**150**); ii. when the cover portion (**110**) is in the open position, the opening (**120**) is

at least partially uncovered by rotating the cover portion (**110**) about the living hinge (**118**) with the at least a portion of the base portion (**150**) remaining unobscured by the cover portion (**110**).