

9800496-3

1 SOCKET FOR INCLINED CABLE CONNECTION ✓**FIELD OF THE INVENTION**

The present invention is related to sockets. In particular, the present
5 invention is related to wall sockets for high speed computer network cables.

BACKGROUND OF THE INVENTION

Wall sockets for telephone and computer network cables typically
comprise an electrical box which house a jack. The front of the electrical box
10 contains an opening wherethrough the patch cord of the office cable is
inserted. Traditionally, the office cable is connected to the wall socket at a
90 degree angle. Although the perpendicular approach is convenient and
useful, this arrangement requires adequate space for the office cable to
extend from the socket. If there is insufficient space or the office cable is
15 accidentally pressed, a kink may develop on the cable, which causes
interferences and distortions in the signals, particularly for high speed
cables such as unshielded twisted pair (UTP) or shielded twisted pair (FTP)
computer cables.

Another problem with normal sockets is that dust would gather inside the
20 opening if the socket is not in use. In places where humidity or particle
counts in the air is high, the dust particles not only collect inside the
exposed jack, but also stick to it, reducing the effectiveness of subsequent
electrical connections. As a result, a dust cover is sometimes provided to

protect an unused socket. A conventional dust cover feature includes a spring-loaded slidable dust cover with the spring above the dust cover such that an operator has to push the dust cover upwards to open the socket.

In order to solve the problem of kinking and dust, Panduit Corporation
5 designed a wall socket which protrudes from the front of the electrical box downwards at a 45 degree angle. This reduces the attachment angle of the office cable, such that there is less problem with kinking even when the cable is pressed down. In addition, this socket also provides a dust cover, which may be pulled outwards and downwards when a cable needs to be
10 inserted into the jack. Although this socket design alleviates the problem of a perpendicularly protruding cable by reducing the attachment angle, the protrusion of the jacket itself demands additional space, and may also be damaged by moving objects accidentally.

15 **OBJECT OF THE INVENTION**

It is therefore an object of the present invention to provide a socket to overcome the shortcomings as stated above.

It is another object to provide a socket which has a reduced space requirement.

20 It is a further objective to provide a socket with a dust cover.

SUMMARY OF THE INVENTION

The present invention provides a socket for office cables which has a face plate recessed into the front panel of the electrical box. The face plate contains an opening adapted for receiving the patch cord of an office cable
5 at an attachment angle of less than normal. A jack holder is connected to the back of the face plate for securing a jack behind the opening such that the jack is in a position to receive an office cable at an attachment angle substantially less than normal. A spring-loaded slidable dust cover is provided to protect the jack from dust. In the most preferred embodiment, the
10 attachment angle is 45 degrees.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a side cross sectional view of a prior art wall socket with the dust cover in a closed (Figure 1A) and an opened (Figure 1B) position.

15 Figure 2 is a front perspective view of a prior art inclined socket.

Figure 3 is the front (Fig. 3A) and rear (Fig. 3B) perspective views of the recessed socket according to the present invention.

Figure 4 is a side cross sectional view of a recessed wall socket according to the present invention with the dust cover in a closed (Figure 4A) and an
20 opened (Figure 4B) position.

DESCRIPTION OF THE INVENTION

The present invention provides a dust-protected and space-saving socket for office cable connections. For ease of understanding, an office cable is, for example, a telephone or computer cable which needs to be connected via a patch cord to a socket for proper functioning. A socket, for example a wall socket, comprises an electrical box with a front panel. The front panel comprises an opening for access to the jack. For ease of illustration, all drawings of the socket in this specification show only the front panel and the relevant structures. The electrical box, the jack and the cables connected to the jack are not shown. Each front panel contains a dual socket, with one dust cover in the opened position and one in the closed position for illustration. It should be understood that the dust covers are spring biased, and should be closed under normal operating condition unless a cable is connected.

Figure 1 shows a conventional socket with a front panel 20, and an opening 22 on the front panel. A jack holder 24 is provided behind the front panel for the attachment of the jack perpendicular to the front panel (operating position of the jack is shown in dotted lines). A slidable dust cover 25 is provided to close the opening when the socket is not in use. A gap 26 is provided between the holder and the front panel for the insertion of spring 28 above the dust cover. This spring 28 biases the dust cover in the closed position until the dust cover is pushed up as shown in Figure 1B. The spring is typically fixed above the dust cover because the opening of the socket is normally provided in the lower half of the socket, and more space is available in the upper half of the electrical box for the spring. It is clear that

this prior art design may not be easily adaptable for a inclined jack, as the spring and the jack holder would then have to protrude out.

Figure 2 shows a prior art inclined socket. The front panel has a protruding shoulder 32 and an inclined opening 34. A jack is secured at the back of the shoulder such that a cable may be connected at an attachment angle 36 of 45 degrees. A spring-loaded rotatable dust cover 38 closes the opening in the resting position, and may be opened by pulling downwards along its hinges. This prior art design solves the problem of the sliding dust cover by providing a rotatable dust cover. However, due to the space required for the full rotation of the dust cover, this socket must protrude out from the front panel.

Figure 3 shows the preferred embodiment of the present invention. Referring to Figure 3A, the front panel has a v-shaped face plate 42 with opening 44. The face plate is fixed onto the front panel such that the opening faces downwards. Figure 3B shows how a jack holder 46 is attached onto the face plate 42. A bracket 48 extends from holder 46 wherein spring 50 is housed. Clips 52 are also provided such that a jack may be secured onto the holder. A slidable dust cover 54 is provided above the spring to close the opening when the jack is not in use.

Figure 4 is a side cross-sectional view of the preferred embodiment of the present invention. The face plate 42 is recessed into the front panel 40, and may be a single molded piece together with the front panel or a separate molded part. The opening 44 and the jack holder 46 are inclined such that a jack (shown in dotted lines) would be attached at a tilted position to receive an office cable at an attachment angle 48 of less than normal. In

the preferred embodiment, the attachment angle 48 is between 70 and 30 degrees. In the most preferred embodiment, the attachment angle 48 is at 45 degrees.

While the present invention has been described particularly with
5 references to Figs 1 to 4 with emphasis on a socket for high speed office
cables, it should be understood that the figures are for illustration only and
should not be taken as limitation on the invention. In addition it is clear that
the method and apparatus of the present invention has utility in many
applications where socket connections are required. It is contemplated that
10 many changes and modifications may be made by one of ordinary skill in
the art without departing from the spirit and the scope of the invention
described. For example, the socket may be used for category 3, 5, 6 or 7
modular or keystone jacks.



CLAIMS

- 1 1. A wall socket for cables comprising :
 - 2 a face plate having a front, a back and a recess, said recess including
 - 3 an inclined opening, said opening adapted for receiving a patch cord
 - 4 of a cable at an attachment angle of less than normal;
 - 5 a jack holder connected to the back of said face plate, said holder
 - 6 adapted for securing a jack behind said opening such that the jack is
 - 7 in a position to receive an office cable at an attachment angle
 - 8 substantially less than normal;
 - 9 a spring secured by a bracket below said opening, said bracket fixed
 - 10 to said jacket holder and further adapted for receiving a slidable dust
 - 11 cover, such that the spring biases the dust cover closed over said
 - 12 opening when said jack is not in use.
- 1 2. A wall socket according to claim 1 wherein the attachment angle is
- 2 between 70 and 30 degrees.
- 1 3. A wall socket according to claim 1 wherein the attachment angle is 45
- 2 degrees.
- 1 4. A wall socket according to claim 1 wherein the face plate is an
- 2 integral part of the front panel.
- 1 5. A wall socket according to claim 1 wherein the jack is a category 3, 5,
- 2 6 or 7 modular jack.



- 1 6. A wall socket according to claim 1 wherein the jack is a category 3, 5,
2 6 or 7 keystone jack.

- 1 7. A wall socket according to claim 1 wherein the office cable is a UTP
2 or FTP cable.