

CABLE TESTING SYSTEMS**DETAILED DESCRIPTION OF THE INVENTION**

Referring now to the drawings, the invention comprises a multi-network cable tester 10 which is connected to a coupling device 11 through a four pair cable line 30 having a jack 31 at one end to engage receptacles 19a, 19b. The coupling device includes a plurality of output cables 12. Each of the cables 12 includes an RJ45 connector 13 at one end, which connects to a jack 14 in a patch panel 15. A network cable terminator 16 is connected to the patch panel 15 to test various cables 12 for continuity. This arrangement is shown in FIG. 1.

With the foregoing arrangement, it is possible to test a plurality of lines 12 with a network terminator 16 by merely connecting the terminator 16 to an outlet 32 which terminates on the patch panel 15 rather than each individual cable 12 resulting in considerable savings in time and effort. Ordinarily, an operator would have to connect and disconnect the tester 10 to check different cable wires 12.

FIG. 2a shows a plan view of the coupling device 11, in one embodiment, with an internal printed circuit board 17 and a plurality of 110 type terminals 18 connected to the board 17. The individual cable wires 12 are grouped on each terminal 18 as shown in FIG. 2c with the color-coded wires 12 being affixed with a coupling tool (not shown). A typical 110-type termination block 18 is shown in FIG. 2c with the wire colors indicated thereon. The terminals 18 are lined up in two parallel arrays with a pair of RJ45 jack receptacles 19a, 19b at one end of the coupler. The jacks 19a, 19b are connected to each other and to the terminals 18 so that twice the number of lines can be tested with one hookup.

FIG. 3a depicts the test coupler 11 with board 20 connected to a category V or VI cable 21. A plurality of apertures 22 are located at one end of the test coupler 11 to receive the cables 12, which are connected to the various terminal blocks 23. FIG. 3c illustrates the

connection of the 110-type termination 23 to an RJ45 coupling 21. FIG. 3d shows the RJ45 connection 21 on a circuit board 25.

FIG. 4a shows a side view of the coupler 11 with the RJ45 jacks 19a, 19b at one end and various category V cables 12 extending outwardly from the other end terminating in RJ45 plugs 33. In the view of FIG. 4b, five lines are shown with five lines directly below not shown for a total of ten lines.

Preferably, a circuit board 17 is used in the coupler 11 since it essentially provides a maintenance free product. Each line can be replaced or omitted if it goes bad with no impact on the unit 11 or its function. This embodiment is shown in FIGS. 5a and 5b with the outlet jacks 25 being mounted in a series of six jacks 25 on top of a second series of six jacks. The unit 11 can operate effectively without the defective line. The line can be replaced later.

The 110 termination 18 is employed for production and assembly purposes. The assembly time is reduced considerably with the 110-type termination 18.

In the category V and VI applications, the only modifications are as follows; an enhanced CAT VI cable must be used along with enhanced RJ45 plug, jack and circuit board.

Thus, with the invention, it is possible to test ten lines in rapid succession or simultaneously with two terminators 16. An operator plugs the terminator 16 into a wall plate or other outlet and moves the terminator 16 rapidly from one line to the next. There is no need to go back and reconnect the tester 10. After the connected lines have been tested, the coupler is moved to a second series of lines. This procedure is especially efficient in offices with hundreds of lines and where the lines terminate at distances or on other floors. It also eliminates the need for additional expensive testers 10. The coupler may also include lights to identify lines being listed and may be used with a ring out to test continuity.

While the invention has been explained by a detailed description of certain specific embodiments, it is understood that various modifications and substitutions can be made in any of them within the scope of the appended claims, which are intended also to include equivalents of such embodiments.

CLAIMS

What is claimed is:

1. A multi-unit network cable tester for rapidly testing a plurality of lines comprises:

5 a multi-unit tester having a four pair outlet cable including a jack at one end of the cable;

a coupling device including one or more input jacks, a plurality of input cables to be tested connected to the coupling device and having a jack mounted on at least one end of said cable;

10 a patch panel having a plurality of jacks to connect with jacks on said cables; and,

a cable terminator connected to the patch panel to test the plurality of lines connected to the coupling device without connecting and disconnecting the tester to the individual cables.

- 15 2. A multi-unit network cable tester for rapidly testing a plurality of lines in accordance with Claim 1 wherein:

the coupling device comprises a printed circuit board having a plurality of jacks mounted at one end to connect to the cables to be tested.

3. A multi-unit network cable tester for rapidly testing a plurality of lines in accordance with Claim 2 wherein:

20 the plurality of jacks are mounted in a double array of six jacks with a first array mounted on top of a second array, said second array being mounted to the printed circuit board.

4. A multi-unit network cable tester for rapidly testing a plurality of lines in accordance with Claim 1 wherein:

the printed circuit board comprises a plurality of 110 type terminals mounted thereon, said terminals having individual cable wires mounted on each terminal in a predetermined layout.

5 5. The method of testing cable lines in rapid succession or simultaneously comprising the steps of:

providing a network cable terminator;

connecting the terminator to an outlet on a patch panel;

connecting one end of a plurality of cable lines to be tested from the patch panel to a coupling device and said lines being coupled to the terminator at the other
10 end;

connecting a testing unit to the coupling device to rapidly test the cable lines without connecting or disconnecting each line to the terminator

6. The method of testing cable lines in rapid succession or simultaneously in accordance with Claim 5 wherein:

15 the terminator includes a jack which is connected to a jack on the coupling device; and,

the plurality of cable lines each include a jack at one end thereof which is removably connected to the coupling device, said device including a plurality of jacks to connect with the cable lines.

20 7. A multi-unit network cable tester for rapidly testing a plurality of lines in accordance with Claim 1 wherein:

the input jacks comprise two RJ45 jacks.

ABSTRACT OF THE INVENTION

A cable testing system comprises a network tester connected to a multi-line test

coupler, which includes a plurality of output cables connected to a patch panel. A terminator is also connected to the patch panel to selectively test lines by engaging wall outlets etc., with the terminator. With this system it is not necessary to connect the tester to each individual line thereby saving considerable time and expense.

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CROSS-REFERENCE TO RELATED APPLICATIONS

This application is related to provisional application 60/199,167 filed April 24, 2000.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Research and development of the present invention and application have not been
10 federally sponsored, and no rights are given under any Federal program.

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

This invention relates to multi-line CAT V cable pairing testing and particularly to a
tester connected multi-line test coupler which is connected to a patch panel having a plurality
15 of lines which are tested by network cable terminator. This system avoids the necessity of
connecting each line individually to the cable terminator.

DESCRIPTION OF THE RELATED ART INCLUDING INFORMATION DISCLOSED UNER 37 CFR §§1.97-1.98

In the prior art, it was necessary to connect and test lines individually with a network
20 cable terminator. This procedure took considerable time and effort as the technician had to
connect and reconnect lines before applying the cable terminator for continuity test purposes.

The prior art relates to test devices and couplers. The present invention discloses a
multi-line cable tester, which includes a multi-line coupler, which is connected to a plurality
of cable pairs through a patch panel for testing purposes. A cable terminator is applied to the
25 pairs at their outlet to rapidly test the pairs.