

UNITED STATES PATENT APPLICATION

For

RAPID COAX CUTOVER

INVENTOR:

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Description

Rapid tap connector for cutover maintenance to reduce outage time. Develop a modular, snap cover, sealed tap that allows rapid cutover to new hardline and maybe taps too. This tap can be made a part of existing taps, amplifiers, nodes, or anywhere that coax needs to connect.

Switch mechanism can be as simple as an actuator to move an insulating material from one connector to the other, covering the shield and conductor both if and as needed. It can be electronically actuated too, using a relay or like switch, or an electrical switch, etc. It can also be configured to not completely isolate but allow high impedance isolation which is not complete, and would allow testing of a cable too. The insulation material can be added during the cutover process if and as needed, or installed into the tap body. Replacement as needed is desirable. It can also be a physical switch of two connectors (center conductor and outside conductor) so that the disengaging of the conductors on one side engages the conductors on the other as the conductors are coupled physically to do so, or electronically to do so, or by other means. There can even be a switch that allows three settings: conductor on one side, while high impedance on the other, or complete disengagement on the other. The switching can be done with a screwdriver in a very simple form, but more capable and partially automated switching can be done to, say by electronically coupling the switches on either end of a bridge connection used for these purposes. Once the cover is replaced, the switch should be sealed, inaccessible, and reliable to stay in the desired settings. LED or other indicators can be added for more assurance of which connection is active.

This method can also allow field technicians to better isolate network faults in the outside plant by rapidly switching in a temporary drop (which can be configured to closely match existing plant if needed to help CMs stay online) and confirming the fault location in the network while not losing service for many customers. This can help detect, localize, and isolate faults without removing customers from service, if properly and quickly done.

The terminators can slide into the tap body and either snap into place or be screwed down securely or both. The terminators would be shaped to align with the tap body to fit snugly and securely, and many shapes are possible. A securing cover could be added to wrap over the tap and secure it by snap, screw, or any of a number of fastener choices. The terminators can even be threaded if desired. If threaded, the terminators can but do not need to snap into place but can be connected as is standard today, as long as the switch mechanism still works as described, and removal of old cable does not disrupt the connections of the new or isolation of the old.

Can be applied to a tap for hardline or drop, can be applied to side of home for drop, can be applied at the node or amplifier too.

Method flow:

1. Based on available information including PNM data, identify potential fault and isolate to a likely section of plant for further identification, localization, and isolation.
2. Terminate a new cable as needed or otherwise configure the temporary or new cable.

3. Open tap case by removing cover, remove terminator blanks if installed, slide the terminator into tap case body, do same at other end.
4. If needed, slide in the switch mechanism at both ends.
5. If needed, remove the censure screw and any other hard connections, leaving only the switched in connection mechanism.
6. Coordinate switch either by a signal in RF to switch over both ends at same time or by cell phone signal or by technicians coordinating by voice or cell phone, etc.
7. If needed, secure the censure screw and other permanent connections on the new connected cable.
8. Remove old cable from tap body when ready.
9. If needed, remove the switch mechanism that is temporary. Note the switch may have a temporary removable part and a permanent part, be completely permanent, or completely removable without impacting connections.
10. Secure parts, replace tap case cover, seal up the plant and clean up.

Background

Cut over of new HFC equipment takes time, and causes an outage. If we are going to increase service reliability and decrease downtime, we have to find simple, cheap or free, and easy ways to reduce downtime. This method can do that, and be used to enable testing of the outside plant by quickly and safely separating it from service.

Abstract

New coax connector design which allows rapid cutover of new plant components to better maintain service, increase availability, and increase reliability of DOCSIS services.