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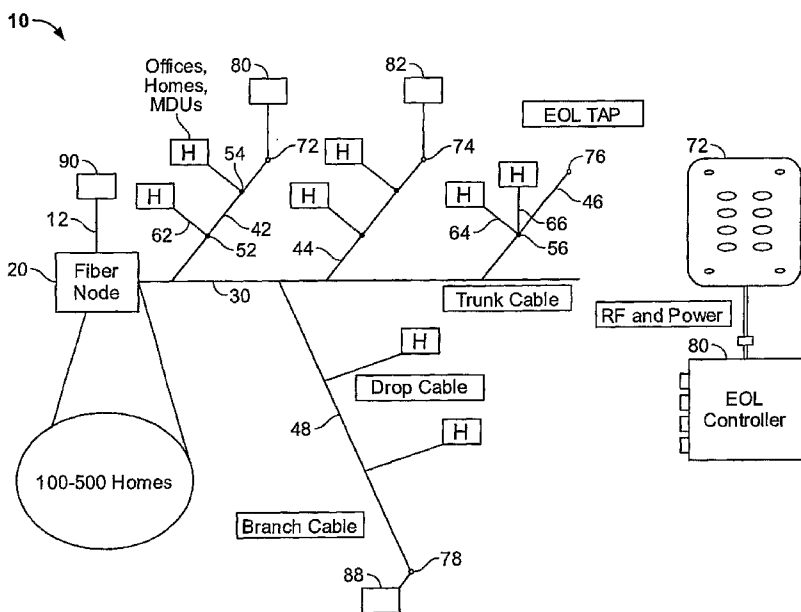
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[Continued on next page]

(54) Title: CABLE INDICATORS, CABLE MAPPER, AND CABLE SYSTEM



(57) Abstract: A cable system includes a fiber node, a truck cable off the fiber node, branch cables off the truck cable, and a plurality of location indicators connected to the branch cables or the trunk cable, each location indicator including a cable modem and being powered by the branch cable or trunk cable. A cable indicator, a cable system mapper and software for a cable system are also provided.

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## CABLE INDICATORS, CABLE MAPPER, AND CABLE SYSTEM

[0001] This claims priority to U.S. Provisional Application No 60/850,246 filed October 5, 2006 and hereby incorporated by reference herein.

### BACKGROUND

[0002] Cable systems generally include a fiber backbone, for example a fiber ring, with a plurality of nodes. Off each node, a main trunk cable delivers RF cable signals over a coaxial cable. This trunk cable typically includes power of 60 to 90 volts of alternating current at 20 amp, as well as the RF signal.

[0003] The trunk cable may send signals to branch cables off the trunk cable. The branch signals generally will have a plurality of taps, often for eight cables which feed directly to the home or office. The branch cable typically will have power similar to the trunk cable, but after the tap, the power is disconnected so as not to provide power into a dwelling or office. The tap will typically have an inlet for the branch cable, and then an outlet for the branch cable to continue.

[0004] At an end-of-line location, a cable company typically will have a tap into which the branch or trunk cable is fed, but without an output. These so-called end-of-line (EOL) taps are often found on telephone poles or outside.

### SUMMARY OF THE INVENTION

[0005] The present invention provides a cable system having a fiber node, a truck cable off the fiber node, branch cables off the truck cable, and a plurality of location indicators connected to the branch cables or the trunk cable, each location indicator including a cable modem and being powered by the branch cable or trunk cable.

[0006] The present invention also provides a cable indicator including a cable modem and an AC-DC power converter, the power converter supplying the cable modem with DC power.

[0007] The present invention also provides a cable system mapper comprising a plurality of location indicators located on a cable system and being located separately from service recipients at known locations, and a database storing the location of each location indicator and a MAC address of the location indicator.

#### DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

[0008] Fig. 1 shows a cable system 10 with a fiber optic loop 12. A fiber node 20 provides cable signals and power to a trunk cable 30, off of which a plurality of branch cables 42, 44, 46, 48, each also having cable signals and power, branch. Typically a fiber node will supply 100 to 500 homes via the trunk and branch cables.

[0009] At taps 52, 54, 56, delivery to homes, multiple dwelling units, office, etc. occurs. Tap lines 62, 64, 66 for example, branch off the taps, and typically do not include power, but solely cable signals.

[0010] The tap 52 for example may have eight ports for the tap lines to eight homes.

[0011] At the end of each branch and trunk cable typically is an end of line tap 70, 72, 74, 76, shown at the right as well.

[0012] As shown in Fig. 2, the end of line tap 72 receives power and a signal from cable 42 at an inlet 73, and has a serial outlet with power and a signal at 75.

[0013] A location indicator 80 can be connected to the outlet 75, via a coaxial cable. As shown in Fig. 1, a plurality, but not necessarily all of the branch cables and the trunk cable, will have a location indicator 80, 82, 88 attached.

[0014] Each location indicator 80 receives power and a signal at an input 81. As shown in Fig. 3, the input is split so power passes to an AC-DC power converter circuit 86

which converts the 60-90V AC power supplies by the cable into a 12VDC output to power both a microcontroller 84 and a cable modem 82.

[0015] The microcontroller 84 may be programmed to send a modem signal at a known interval, for example every 10 minutes, as a function of the MAC address of the cable modem. The microcontroller 84 also could send a dynamically or statically assigned IP address (typically inked to the MAC address), assigned for example at a head end by the cable service provider.

[0016] When each location indicator 80 is installed, at the cable service provider, a database is updated assigning the location, by for example address or branch or trunk cable indicator, to the MAC address of the location indicator, for example as follows:

[0017] MAC	LOCATION
[0018] 111111...	end of branch cable 1
[0019] 112112...	125 Maple Drive, on branch cable 3
[0020] 123123...	350 Elm Drive.

[0021] The cable company may or may not need the actual location or branch cable information, depending on the mapping they require.

[0022] As shown in Fig. 1, to provide a map, a mapper 90, for example a processor with software, or circuitry, of the cable system sends a request to the cable modems of location indicators 80, 82, 88 (for example via a dynamically assigned IP addresses linked to the MAC addresses) to send back a replies. If for example, the location indicator 88 fails to respond, the cable company can know that a problem is occurring on branch cable 48. The cable company also knows that cables 42 and 44 are fine, if proper signals are received.

[0023] The use of the power directly from the cable system has a great advantage in that power outages from the utility grid need not affect the location indicator, nor does unplugging by customers. This is also an advantage of having the location indicator located apart from service recipients, such as away from an office or home and at the end-of-line tap. The power converter may be for example convert the cable power to 12 volts at 300 milliamps, and may include a transformer or recitifier.

[0024] The cable modem may be one commercially available for example from Scientific-Atlantic or Cisco.

[0025] The location indicators preferably, but need not, be located at the end-of-line taps. The indicators 80, 82 need also not be location indicators, but could be used for other service possibilities, such as indicating signal power or other characteristics of the cable.

## WHAT IS CLAIMED IS:

1. A cable system comprising a fiber node, a trunk cable off the fiber node, branch cables off the trunk cable, and a plurality of location indicators connected to the branch cables or the trunk cable, each location indicator including a cable modem and being powered by the branch cable or trunk cable.
2. The cable system as recited in claim 1 wherein the location indicators are located at the end of the trunk or branch cables.
3. A cable indicator including a cable modem and an AC-DC power converter, the power converter supplying the cable modem with DC power.
4. The cable indicator as recited in claim 3 wherein the cable indicator indicates a whether signals are received at a location of the cable indicator.
5. A cable system mapper comprising a plurality of location indicators located on a cable system and being located separately from service recipients at known locations, and a database storing the location of each location indicator and a MAC address of the location indicator.
6. Software for a cable system accessing a database storing the location of a plurality of fixed location indicator installed by the cable system operator to be at fixed location apart from service recipients and a MAC address of the location indicator

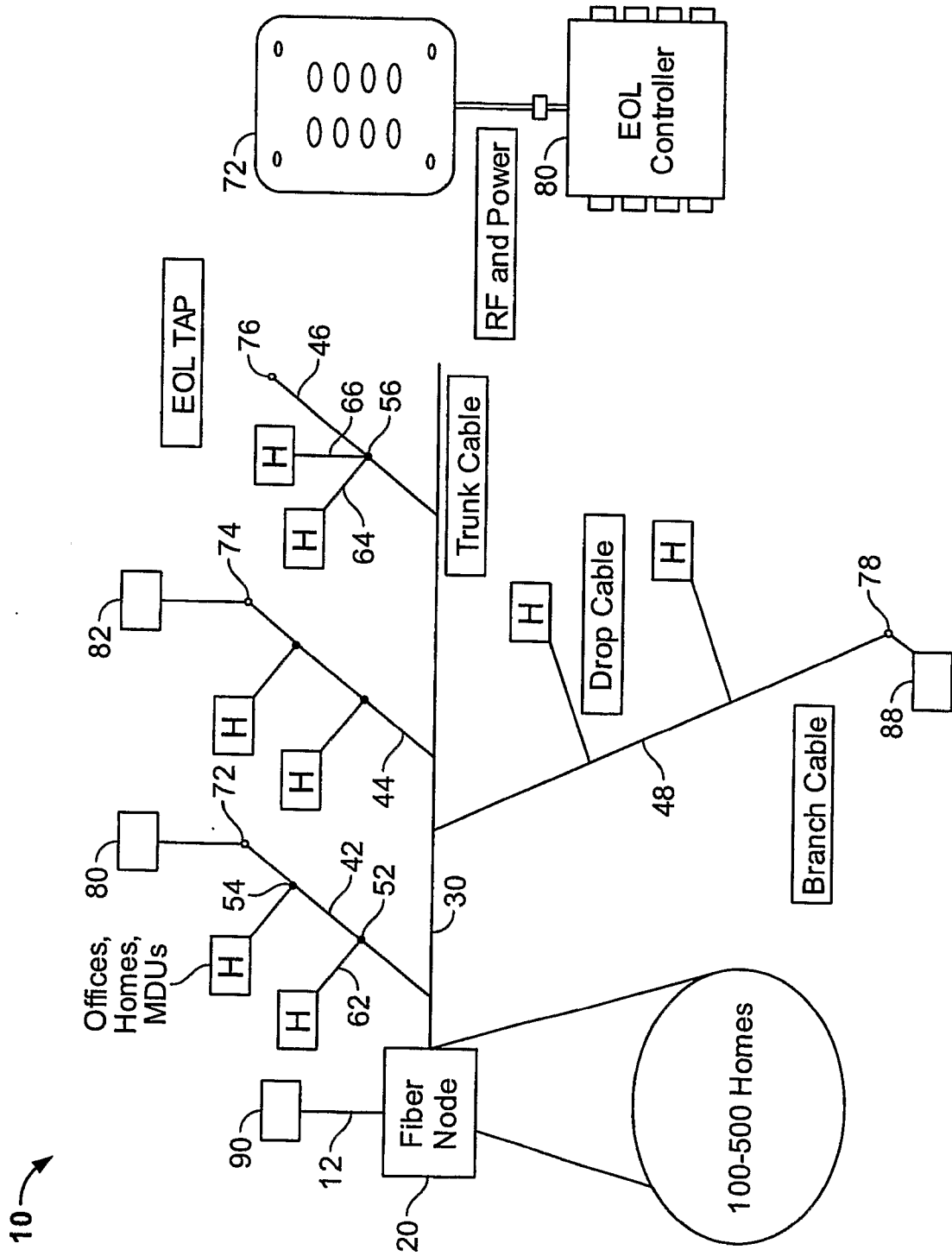


FIG. 1



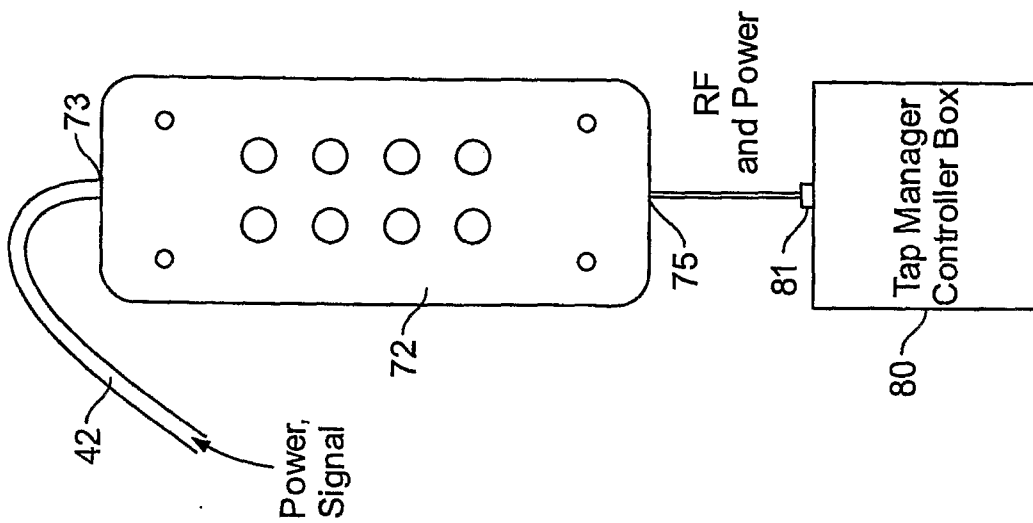


FIG. 2

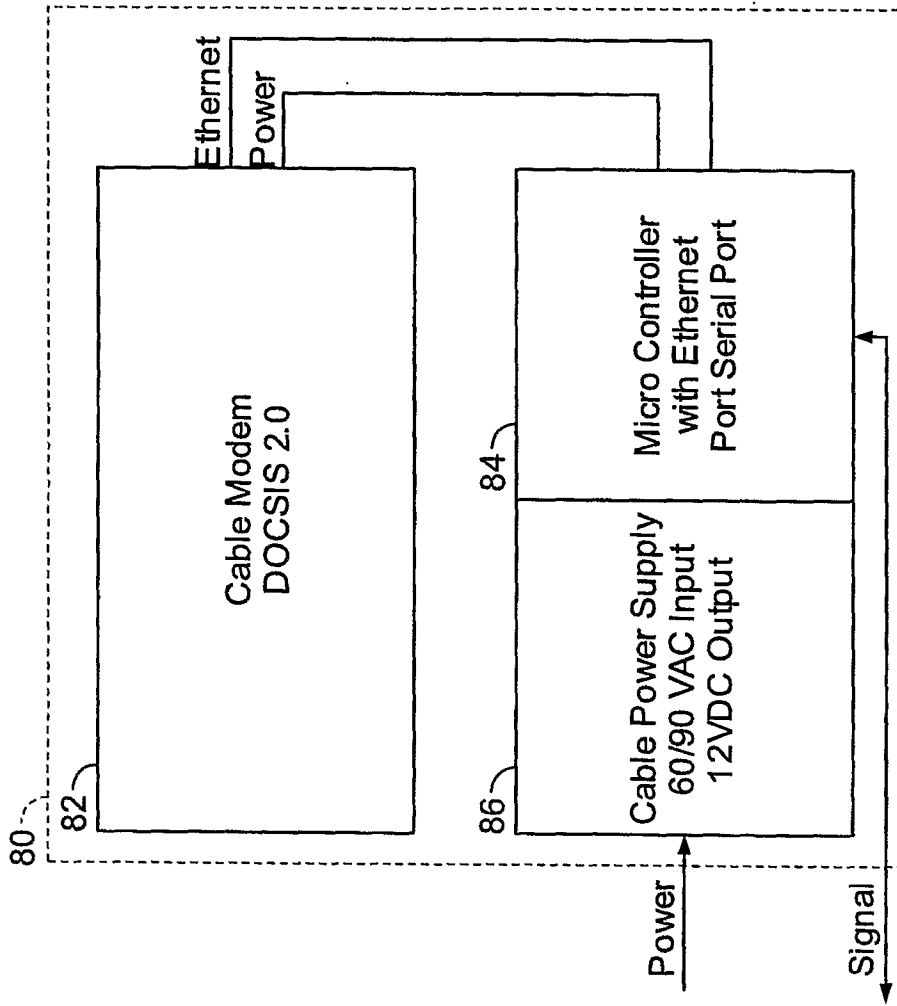


FIG. 3