EXHIBIT 1007

(11) Japanese Unexamined Patent Application Publication No. 6-189535
(43) Publication Date: July 8, 1994
(21) Application No. 4-163230
(22) Application Date: June 23, 1992
(71) Applicant: NEC Fukushima Corporation
(72) Inventor: Hisanori SATOU
(74) Agent: Patent Attorney, Kyoumoto et al.

(54) [Title of the Invention] SWITCHING REGULATOR PROVIDED WITH CO-AXIAL CABLE CONNECTION PROTECTION FUNCTION

(57) [Abstract]

[Object] An object of the invention is to eliminate the risk of an electric shock hazard and a short circuit hazard due to misoperation in the work, poor connector connection, or the like at the time of the detaching of a co-axial cable through which the power-supplying side is connected to the power-consuming side with the superposing of a direct-current voltage onto a signal voltage, thereby ensuring safety.

[Construction] An output voltage variable circuit 16 and a co-axial cable connection signal detection circuit 14 are provided inside a switching regulator 6, which is provided with a co-axial cable connection protection function. If

the co-axial cable, through which the power-supplying side is connected to the power-consuming side, is in a state of non-connection to the power-consuming side, the co-axial cable connection signal detection circuit 14 detects that there is no load current and sends a detection signal to the output voltage variable circuit 16 to stabilize the level of an output voltage at a low voltage level. When the co-axial cable has now been connected thereto, the co-axial cable connection signal detection circuit 14 detects the presence of a load current. A detection signal is transferred from the output voltage variable circuit 16 to the output voltage stabilization circuit 15. An output voltage is increased up to a high level required at the power-consuming side. It is outputted as a stabilized voltage.

[Claim]

[Claim 1] A switching regulator provided additionally with a co-axial cable connection protection function for removing a potential short circuit hazard and a potential electric shock hazard at the time of detaching of a co-axial cable when a direct-current output voltage is sent from a power-supplying side to a power-load side in order to transmit power with superposing on the co-axial cable, through which a signal voltage is sent, comprising:

an output voltage variable circuit that performs output voltage variable control in accordance with information on the detaching of the co-axial cable; and

a co-axial cable connection detection circuit that detects a state of absence/presence of a load current corresponding to a state of the detaching of the co-axial cable and supplies the detaching information to the output voltage variable circuit.

[Detailed Description of the Invention]

[0001]

[Field of Industrial Application] The present invention relates to a switching regulator provided additionally with a co-axial cable connection protection function. More particularly, the invention relates to a switching regulator provided with a co-axial cable connection protection function for removing a potential short circuit hazard and a

potential electric shock hazard at the time of the detaching of a co-axial cable when the direct-current voltage of the switching regulator is applied to a signal line utilizing a co-axial cable to transmit power.

[0002]

[Description of the Related Art] A method that is commonly used in the art for supplying power with the application of a voltage from a switching regulator to a co-axial cable connected to a signal line is illustrated in Fig. 4.

[0003]

Specifically, at a power-supplying side 1, a regulator voltage is superposed from a switching regulator 18 via a power line 7 onto a signal voltage on a signal line 3. This voltage-superposed power is transmitted to a power-consuming side 2 via a co-axial cable 5.

[0004]

At the power-consuming side 2, separation processing is performed to take out an alternating-current component onto a signal line 4 and a direct-current component onto a power line 8. The power is supplied in this way.

[0005]

As illustrated in Fig. 5, the switching regulator 6 includes a PWM (Pulse Width Modulation) control circuit 17 and a switching element 9 at its primary side. Its secondary-side output transformed by a transformer 10 is

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.