CLAIMS

1. A station-building power supply device that is provided in each of station buildings of electric railways ~~and supplies~~, that has a power conversion unit that converts power supplied from an overhead wire to low-voltage AC power, and that supplies low-voltage AC power to station building facilities in each of the station buildings, ~~the station-building power supply device comprising:~~ wherein

the power conversion unit operates in both

a regenerative mode in which, when regenerative power regenerated by a train and supplied to ~~an~~ the overhead wire becomes surplus, the surplus regenerative power supplied via the overhead wire and power supplied from a high-voltage distribution line are used together so as to supply the low-voltage AC power corresponding to an amount of normal power consumption of the station building; and

a standby power supply mode in which the low-voltage AC power corresponding to an amount of emergency power of the station building is supplied by using power supplied from the overhead wire, when a power outage of the high-voltage distribution line occurs~~.~~, and

when an operation is to be switched from the regenerative mode to the standby power supply mode, the power conversion unit is controlled to stop an operation in the regenerative mode before a first switch that switches to or not to use the power supplied from the high-voltage distribution line is off-controlled, and the power control conversion unit is controlled to start an operation in the standby power supply mode after the first switch is off controlled.

2. The station-building power supply device according to

claim 1, further comprising~~:~~ a control unit that sets, in the regenerative mode, the ~~a~~ first switch ~~that switches to or not to use the power supplied from the high-voltage distribution line;~~ and a second switch that switches to or not to use the power supplied from the overhead wire~~;~~ to an on-controlled state, and

~~a control unit that sets, in the regenerative mode, the first switch and the second switch to on-controlled state, and~~ sets, in the standby power supply mode, the first switch to an off-controlled state and sets the second switch to the on-controlled state.

3. The station-building power supply device according to

claim 2, ~~further comprising~~

~~a power conversion unit that converts DC power supplied from the overhead wire to the low-voltage AC power,~~ wherein

the control unit

controls, in the regenerative mode, the power conversion unit so as to generate the low-voltage AC power corresponding to a part of the amount of normal power consumption corresponding to the surplus regenerative power, and

controls, in the standby power supply mode, the power conversion unit so as to continuously generate the low-voltage AC power corresponding to an entire amount of the emergency power.

4. The station-building power supply device according to claim 3, further comprising

an overhead-wire voltage detection unit that detects an overhead wire voltage, wherein

the control unit, when the overhead wire voltage exceeds a predetermined voltage threshold in the regenerative mode, determines that the surplus regenerative power is generated and controls the power conversion unit.

5. A method of controlling the station-building power supply device according to claim 3, the method comprising:

a step of detecting a power outage of the high-voltage distribution line, during an operation in the regenerative mode and deactivating the power conversion unit so as to stop the operation in the regenerative mode;

a step of off-controlling of the first switch;

a step of switching control software of the power conversion unit in the control unit to control software