

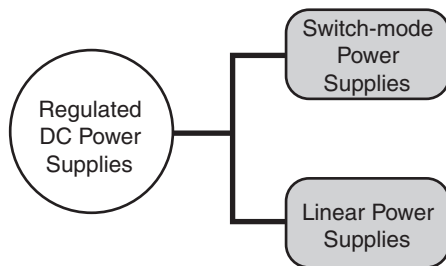
Overview of Power Supplies

What is a Power Supply?

Commercial AC power distributed from power plants cannot be supplied directly to the ICs and other electronic components built into electronic devices in automated office and factory equipment without destroying the components due to the high voltage of commercial AC power. Devices called power supplies or regulated DC power supplies are therefore required to convert commercial AC power into regulated DC power to drive ICs and other electronic components.

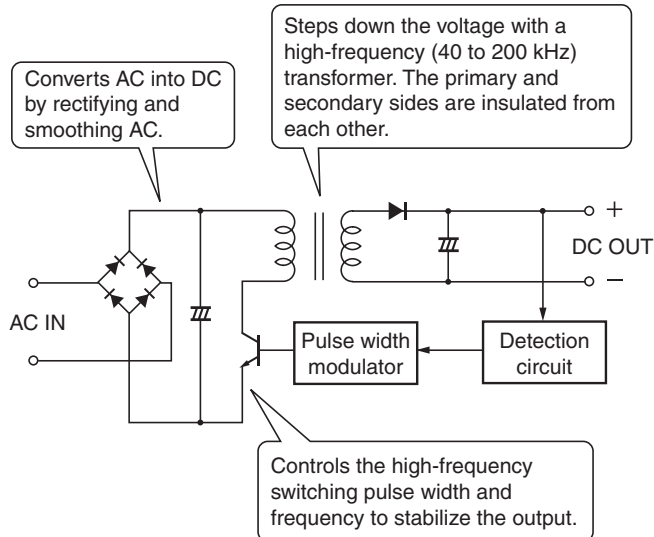
Regulated DC Power Supplies

The methods for controlling Regulated DC Power Supplies can be largely classified into the following two types. Switch-mode power supplies and linear power supplies are generally referred to as power supplies. Currently, switch-mode power supplies are the most prevalent.



Switch-mode Power Supplies

Switch-mode power supplies convert commercial AC power into the required high-frequency DC power using the high-speed switching of semiconductors. Switch-mode power supplies are so compact, light, and efficient that they are used as power supplies by most electronic devices.



Advantages

- Highly efficient.
- Compact, and light.
- A wide input voltage range.

Disadvantages

- Switching noise is generated.
- Large inrush current on primary side.

Power Supply Selection

Basic Selection Points

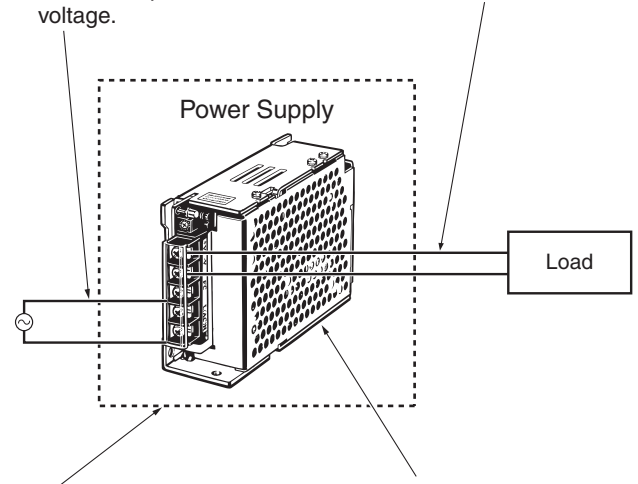
Factors to consider when selecting a Power Supply are provided in the following diagram.

(1) Input Voltage

Each Power Supply has an input voltage range. Select the Power Supply according to the available input voltage.

(2) Output Capacity (Voltage × Current)

The maximum load capacity must be less than the maximum output capacity of the Power Supply.



(3) Safety Standards

Models are available that comply with either UL, CSA, and VDE standards or EN standards.

(4) Shape and Mounting Method

Power Supplies of various shapes are available. Use the most suitable Power Supply according to the application. Various mounting brackets are also available.

Functions

The following functions are available: overcurrent protection, overvoltage protection, harmonic current control, and alarm outputs. The functions that are provided depend on the model. Check the function specifications.

Overcurrent Protection

All models provide overcurrent protection. The protection method that is used will affect startup characteristics.

Life Expectancy

The warranty period and life expectancy of the Power Supply depend on the model. Select a model with suitable specifications for your application. Periodic maintenance is required for the cooling fan.

Installation

Install the Power Supply so that there is sufficient space for air to flow around it. The mounting direction and space requirements are specified for each model. The load rate may have to be reduced depending on the installation method.

Inrush Current

Select the newest models to allow for the inrush current of the Power Supply. Make sure that the circuit breaker will not be tripped by inrush current. Even for the same model, the inrush current will be different for 100 VAC and 200 VAC.