

DC Power Supplies

Redundant vs. UPS



How to Choose the Right One

- Redundant – Keeps the system operating when a power supply fails
- UPS – Protects against power outages



How to Choose the Right Power Supply Solution

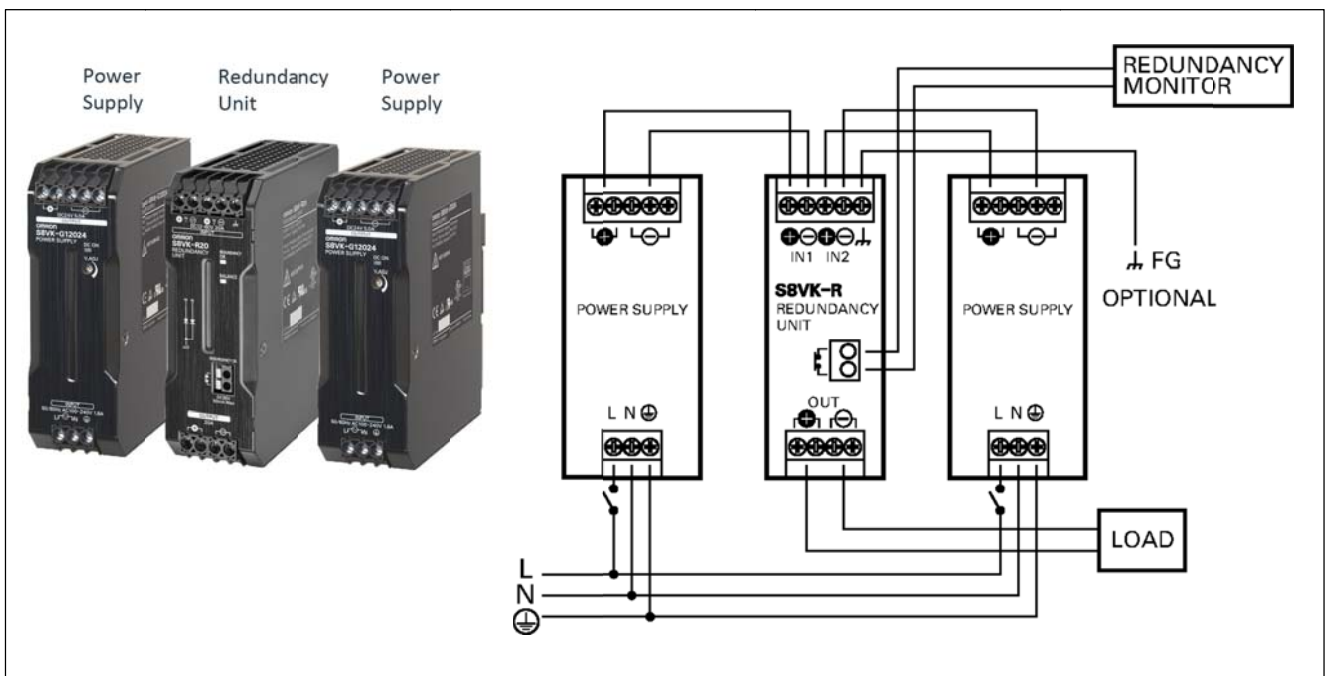
Introduction

Both a Redundant Power supply system and a DC UPS (uninterruptable Power Supply) system serve a purpose in an industrial control panel. If the 24VDC power supply fails, a UPS does not help; a redundant power supply continues to operate. When the power goes down, a redundant power supply does nothing; but a UPS allows time to take action. Understanding each system will help make a choice as to the best system to use in different applications.

Redundant Power Supply Systems

A redundant power supply system consists of two (or more) similarly sized AC - DC power supplies installed along with a diode system that prevents feedback to connected power supplies. This system is wired in a way to allow both power supplies to provide DC voltage to the same load. (Figure 1) The Omron Redundancy Units S8VK-R10 and S8VK-R20 contain the Diode system and a detection circuit to monitor the status of both power supplies.

Figure 1 Omron's Redundant Power Supplies



The Redundancy unit is designed to properly balance the output load between the two power supplies effectively using each power supply. When the power supplies are correctly sized this will extend the life of each power supply by drawing half the load current from each power supply. The Redundant unit is also in place to properly transfer the complete current load from one power supply to the other if one should fail.

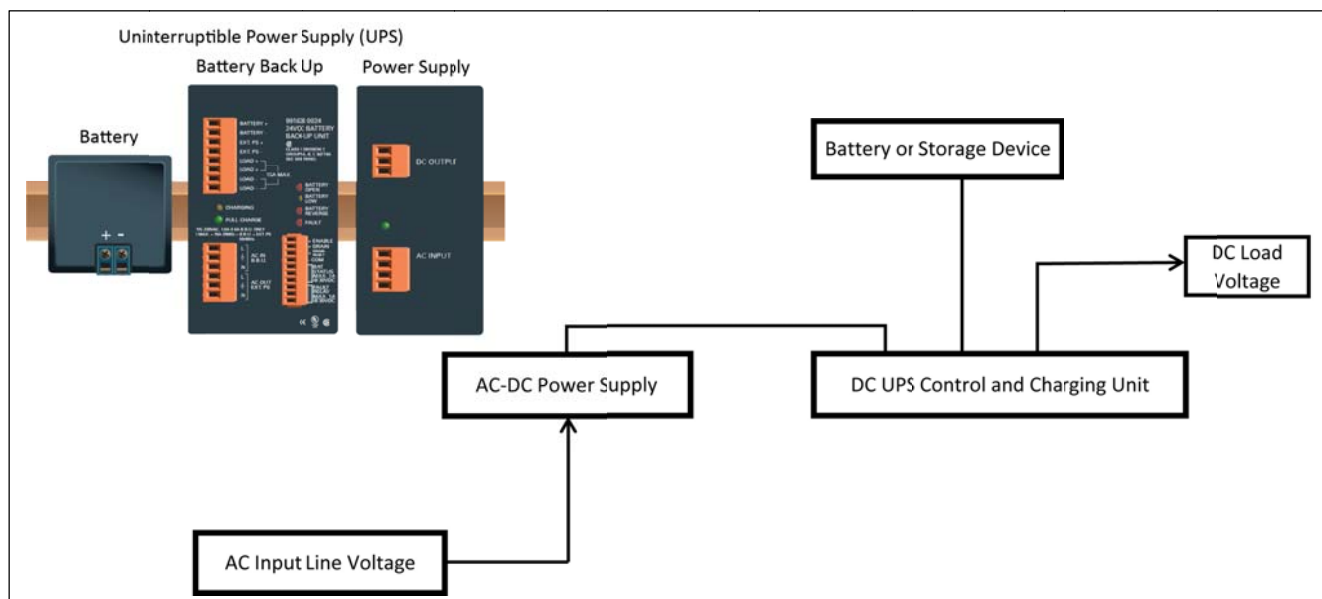
The Omron redundancy units (S8VK-R10 and S8VK-R20) have a redundancy monitor system that includes a redundancy operating LED, voltage balance LED and a signal output for failure of a power supply. The redundancy operating LED will turn ON when the input voltage difference is 2.4V or less. The led will turn off if a power supply fails or a connection error causes one power supply not to provide voltage. The voltage balance LED indicates when the voltage difference

is 50mV or less. By adjusting the input voltage until the LED is ON the output current of each power supply will be balanced. By balancing the load the operating life of each power supply should be more than twice when compared to using only one power supply.

DC Uninterruptible Power Supply (UPS) Systems

The DC UPS system consists of an AC-DC power supply; UPS control unit and a lead acid battery. (Figure 2) These 3 parts can help provide power up to 40A for 30 minutes. This system will continue to operate when there is a power outage but may not provide power if one of the 3 parts fails. The system will operate until the computers can proper save and safely shutdown the equipment. The proper sizing of the DC UPS Charging unit and the battery size is required and could increase the cost of the complete system.

Figure 2 Uninterruptible Power Supply (UPS)



The UPS system will require weekly and monthly maintenance to make sure the system is operating properly. Just like a Monthly test of a battery operated exit light system the UPS system should be tested to make sure the battery is charged and the UPS control unit is properly directing power to the load.

When to Use Each Type

The Redundant power supply system is a cost effective way for industrial applications like food & beverage packaging, material handling or conveyors to always operate during standard hours of manufacturing. In most automated manufacturing and distribution facilities if the complete plant power goes out then the operators cannot work. A redundant system helps eliminate any down time due to component failure.

If the system has a critical memory component or must finish a process during a power outage then a DC UPS system should be used. The UPS system will keep the computers up and running until a proper save operation and safe shut down mode can be reached. The cost will increase with the amount of equipment requiring power from the UPS battery.

The two systems, redundant power supplies and DC UPS do not offer a solution to the same industrial manufacturing problem. Carefully choosing the correct solution can keep the manufacturing up and running and save money at the same time.

Would you like to know more?

OMRON Automation and Safety

 (847) 843-7900

 omron247.com

Stay in touch

 twitter.com/OmronProduct

 youtube.com/user/OmronAutomationTech

 linkedin.com/company/omron-electronics

OMRON AUTOMATION AND SAFETY • THE AMERICAS HEADQUARTERS • Chicago, IL USA • 847.843.7900 • 800.556.6766 • www.omron247.com

OMRON CANADA, INC. • HEAD OFFICE

Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • www.omron247.com

OMRON ELECTRONICS DE MEXICO • HEAD OFFICE

México DF • 52.55.59.01.43.00 • 01-800-226-6766 • mela@omron.com

OMRON ELECTRONICS DE MEXICO • SALES OFFICE

Apodaca, N.L. • 52.81.11.56.99.20 • 01-800-226-6766 • mela@omron.com

OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE

São Paulo, SP, Brasil • 55.11.2101.6300 • www.omron.com.br

OMRON ARGENTINA • SALES OFFICE

Cono Sur • 54.11.4783.5300

OMRON CHILE • SALES OFFICE

Santiago • 56.9.9917.3920

OTHER OMRON LATIN AMERICA SALES

54.11.4783.5300

OMRON EUROPE B.V. • Wegalaan 67-69, NL-2132 JD, Hoofddorp, The Netherlands. • +31 (0) 23 568 13 00 • www.industrial.omron.eu