FREQUENTLY ASKED QUESTIONS

Intergy Network Energy Source (NES)

Why is power supply security important?

The convergence of telecom and computing services and the emergence of e-commerce and other Internet services are driving the need for increased reliability. Simply put, reliable power is quickly becoming the most vital element in today's networked economy.

Power reliability is usually stated as a percent of time the power is available. For example, the power grid system in the United States provides "three nines" reliability. This means the power is available for 99.9% of the time. Telephone network services require at least five nines of reliability.

Reliability Average	Non-availability per Year
99%	88 hours
99.9%	8.8 hours
99.99%	53 minutes
99.999%	5.3 minutes
99.9999%	32 seconds
99.99999%+	3.2 seconds

Why use the Network Energy Source (NES) instead of a UPS?

The NES is a 48 V DC standby power supply. Like all DC standby plant it is technically simple, modular and easily scaleable. It has a smaller footprint and has built-in N+1 redundancy for extra security. It also provides superior charging of the battery, which extends battery life and reduces the risk of early failure.

What is redundancy?

Redundancy is the inclusion of one or more extra rectifier modules to provide the highest possible levels of system reliability. In the unlikely event that one rectifier module fails then the remaining modules can carry the load. N+1 redundancy means there is one extra rectifier module.

Is 48 V DC more reliable than a UPS?

There are three major differences between DC standby power and UPS that affect reliability.

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One is that there are generally four to ten times as many cells connected in series in a UPS battery compared to one in a DC standby power system. This means that the possibility of a fault in a UPS battery is up to four to ten times more likely. The result is lower availability and more service-affecting incidents such as fires or post meltdowns. Higher ripple currents and deeper discharges can also cause higher maintenance and replacement costs for batteries in UPS installations.

The second main difference between DC standby power and UPS is that UPS have an extra conversion stage (DC to AC) between the battery and the load. DC standby systems just have a plain copper connection between the battery and the load. This simplicity of the DC power system means that it is more reliable than a UPS.

The third major difference is that modular DC power systems can easily have additional (redundant) rectifier modules added. This gives a major increase in overall reliability.

Do I need redundancy?

Power disruptions of even a single minute are costly - even disastrous. Outages, surges and power interruptions cause data losses, disconnections and frustrations for customers.

“High 9s” reliability power is increasingly recognized as an essential part of business survival.

Using a modular standby power system like the NES, with one or more redundant power modules, is the most cost-effective way to achieve these high levels of reliability.

Is 48 V DC more efficient than a UPS?

The NES is more efficient than a UPS because it is a DC power plant and has one less conversion stage than a UPS. There is a further efficiency gain because there are lower losses in the secondary DC-DC conversion (in the equipment being powered) rather than in an AC-DC conversion.

These greater efficiencies also mean that less heat is produced, so air conditioning cooling costs are lower.

Is the NES expandable?

Yes, because of its modular design the NES is expandable. It can accommodate up to four rectifier modules and six batteries.

How do I supply legacy AC powered equipment?

AC inverter options are available for older equipment that do not have 48 V DC inputs.

Can I use the NES for non-VoIP solutions?

Yes, the NES is suitable for any equipment that accepts 48 V DC input. This included servers and routers providing e-commerce or other mission critical services.

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Why is reliability and back-up time important?

The NES ensures that network communications remain running during power disturbances and outages. It increases the availability of telephony systems, including primary line communications such as 911 emergency calls. In order to match the level of reliability demanded in traditional telephone networks, these devices must be provided with battery backup technology.

The need for perpetual power - or "webtone" - has never been more critical. The Internet; high-speed broadband access; wireless data transmissions; e-business; and next generation technologies such as video-on-demand and voice over the Internet: All of these technologies depend on sophisticated networks powered by electricity. As more business is conducted via these types of services, and more revenue is derived from them, so it becomes vital that there are no outages or disruptions to services.

In fact, power reliability is the number one infrastructure priority for today's communications providers and information-based businesses.

How do I calculate my load requirements for a VoIP solution?

Just add the power requirements for all the equipment with an average figure of 10W per VoIP port. Then follow the three simple steps described in the Intergy NES Configuration Guide. It couldn't be easier.

What if I have more than nine separate loads?

Up to nine separate loads can be connected to each Intergy Network Energy Source. If you have more than nine loads then contact your Intergy representative to discuss sub-distributions and other options.

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Why is DC backup power used for telecom systems?

In contrast to IT equipment, telecommunications equipment traditionally uses DC power. Rectifiers convert the commercial AC power to a DC voltage, typically 48 V. Batteries floating on the 48 V DC bus make this an uninterruptible DC supply with a typical reserve time of three to eight hours. The 48 VDC power is distributed to the telecom equipment, where it is converted to the low-voltage DC power used by the integrated digital circuits, typically by point-of-use power supplies.

With only one AC-to-DC conversion stage and a solid connection from the battery to the load, the system has inherently high reliability and conversion efficiency. This system has been used for telecom systems for nearly one hundred years.

What is backup time?

The battery backup time (sometime called battery reserve time or battery autonomy) is the length of time the battery will supply power to the load during a power failure. Typically it is up to the point when the battery is discharged down to 1.75 V per cell.

What is battery recharge time?

The battery recharge time is the number of hours required to return the battery to approximately 90% of its full capacity after a complete discharge. This is usually between 3 to 6 hours. If a battery has only been partially discharged (by a short power outage) then it will recharge more quickly.

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