ELMDENE PSUs Security System User Guide

Contents

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Product Information

Specifications:

- **Design:** High-quality components assembled reliably
- **Enclosure:** Compatible, designed for various integration possibilities
- **Airflow:** Ensures system remains cool
- **Key Component:** Capacitors with stress-tested for higher temperatures

Product Usage Instructions

Design and Quality Control for Security System PSUs:
The overall design of the PSU needs to be made up of high-quality components assembled reliably and tested extensively for environmental conditions. Ensure the enclosure is compatible and provides sufficient airflow for cooling.

Life-Extending Components:
Key components like capacitors are crucial for quality and longevity. Choose a manufacturer that uses high-quality capacitors stress-tested for higher temperatures to extend lifespan and ensure reliability.

FAQ

- **Why is it important to choose a PSU with high-quality components?**
  High-quality components ensure reliability, longevity, and protection for your security system. Choosing low-quality components can compromise the system's performance and lifespan.

- **How can I ensure my security system PSU remains cool?**
  Ensure the PSU enclosure allows for proper airflow. Keep the system in a well-ventilated area and avoid blocking air vents to prevent overheating.

INTRODUCTION

- Entire security systems with all the advanced features that come with them rely on the power supply! So it goes without saying that insisting on a high-quality PSU built for reliability and longevity is the obvious choice.
- From design through to integration – make sure you work with manufacturers that keep the risks of losing everything connected to a power supply as a priority. Let's expand…

WHAT MAKES A GOOD QUALITY POWER SUPPLY?

Design and Quality Control for Security system PSUs

- Put simply – the overall design of the PSU needs to be made up of high-quality components assembled reliably and then tested extensively to ensure it can withstand your installation's environmental conditions.
- When it comes to the enclosure used for the system, compatibility should be another priority factor. Always ensure that the enclosure is big enough to be fit for its purpose and is designed to cater for a wide variety of integration possibilities.
- Airflow is also an important consideration when it comes to design. PSUs need enough breathing room to ensure that the system remains cool. Reputable manufacturers like Elmdene ensure that the PSU enclosure facilitates life-extending airflow!

Specifications of Life-Extending Components

Within any product, there are key components that need to be carefully considered from the perspective of quality and longevity, design and integration.

In Security system PSUs, majorly key components are the capacitors:

- The cost of a PSU's capacitors is a significant proportion of the total product cost. When looking for cost savings, manufacturers have the option to select low-cost, low-quality capacitors to make big savings, but this can greatly affect the lifespan and reliability of the PSU, leaving your premises vulnerable to intruders in the future. Reputable manufacturers, such as Elmdene, know this and do not opt for the cheapest components.
- Consider that the design lifetime of capacitors can vary from as little as 1,000 hours to well over 10,000 hours, which makes it critical to know what you're dealing with when opting for one PSU over another.

- To avoid getting into detail about how capacitors work – the important thing is to ensure your chosen manufacturer specifies capacitors that are stress tested to cope with higher temperatures than they would ever need to realistically deal with. This extends lifespan remarkably and leaves you with the peace of mind that your access control and intrusion systems will be powered for longer.
- Another vital component is the Field Effect Transistor (FET), a three-terminal electronic device used to control the flow of current in a semiconductor by the voltage applied to its gate terminal. It is, of course, a little more complicated than that, which brings us to our point: Often, with increased complexity and electric fields, more specifically, there is an increased importance of ensuring there are no weak links in the micro-system. If the longevity of a PSU isn't clearly defined within ambitious temperature ranges – don't be shy to ask your manufacturing partner questions surrounding capacitors and FETs!

PROTECT YOUR SECURITY POWER SUPPLIES FROM VARYING TEMPERATURES

What to look out for in hot climates

- Firstly, the surrounding environment, whether an indoor room or an outdoor shed, needs to be considered when choosing a power supply.
- Make sure that your power supply is rated to withstand temperatures higher than the environment where it will be used. By doing this, you can ensure that your power supply will be able to hold up to the environment it will be placed in.
- Here are key considerations to know when selecting and installing your PSU in a hotter environment:
    - If a PSU needs to be used at temperatures greater than 40°C, example; at 45°C, then consider selecting a higher power PSU and derate it .i.e. if you need 3A use a 5A PSU and run it at 3A. It will run cooler at

this load and allow for higher ambient temperatures.
    - The batteries are much more vulnerable to high temperatures than the actual PSU, and so this must be considered when assessing the service life of batteries for power supplies that are used for batteryback-up.
    - Ensure the PSU enclosure is mounted vertically on the wall, with batteries lowermost within the enclosure
      “PRO TIP”
        - Choose a larger enclosure for more airflow, and, ideally, don’t pack the enclosure full of other electronics.
        - Don’t stack adjacent PSUs like bricks! Allow for at least 100mm between adjacent units but ideally more, and if they must be close together then ideally place them side-by-side, in preference to one above the other.

Elmdene’s Heat Management Implementations:

- Elmdene only manufactures products using high-quality, proven and continuously verified components. We stress-test our products at a wide range of temperatures.
- We rate our products at 40°C.
- We always design enclosures with airflow and heat management.
- Elmdene uses V0-rated plastic for all our plastic components.
  This is one of the safest plastics to use as it is fire-resistant.

What to look out for in cold climates

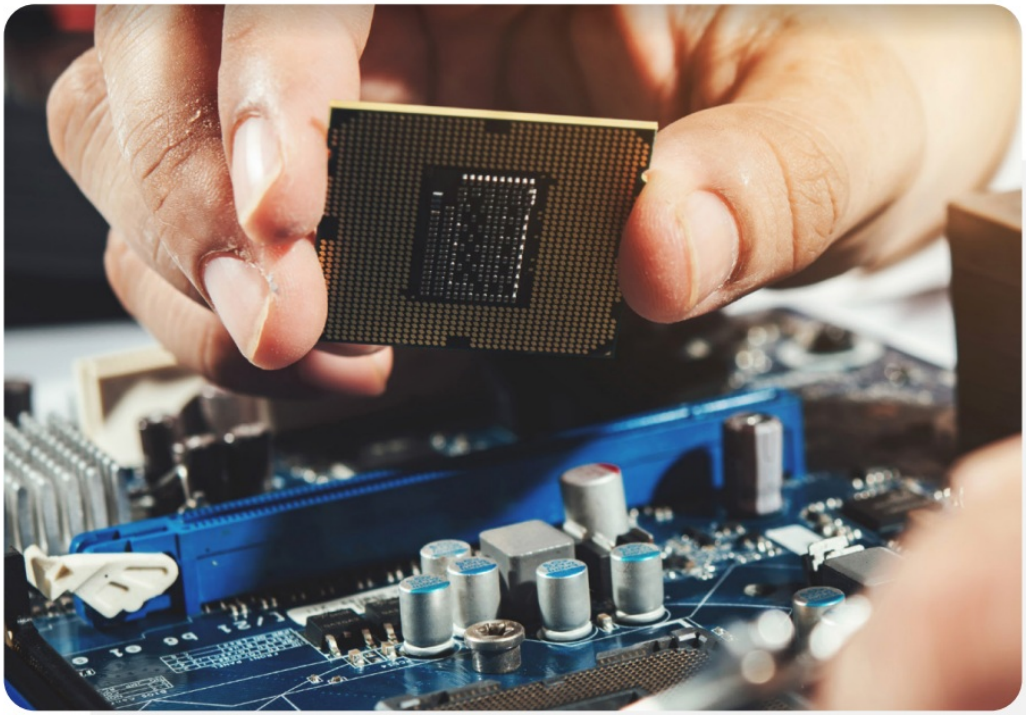
- Just as it is important to ensure your PSUs can perform in hotter environments, you need to protect them in colder environments as well.
- Considerations for installing your PSU in colder environments:
    - Cold temperatures are usually much less of a problem for the PSU. However, batteries are affected by low temperatures.
    - At the very least, loss of stored capacity will be quite noticeable, and the charging can also be severely affected.
      “PRO TIP”
      As a best practice, try to keep your power supply installations in a well-protected, sheltered area. Ideally, this would be out of reach from the elements and would also prevent anyone from tampering with the PSU.

Elmdene PSUs incorporate the following protection features:

1. Vented module enclosures and vented power supply enclosures, heatsink and component thermal wicking/transfer design.
2. Electronic temperature compensation is built into the PSU modules for stability.
3. Battery temperature monitoring to control charging characteristics factored into PSU designs, specifically EN54-4 certified Fire PSUs and new Lithium power technology.
4. Overcurrent shutdown protection to stop PSU overheating in hot environments.

WHAT IS SWITCH MODE TECHNOLOGY, AND WHY IS IT IMPORTANT?

- A switch mode power supply (SMPS) is an electronic circuit that converts power using switching devices that are turned on and off at high frequencies. Storage components such as inductors or capacitors supply power when the switching device is in its non-conduction state.
- Replacing inefficient linear technology using copper transformers, switch mode power supplies have rightfully become the industry standard because of their superior efficiency and longevity. Elmdene prides itself as being a leader in switch mode power supplies.
- Using switch mode technology, you'll consume about 40% less electricity.



CLARIFYING IMPORTANT PRODUCT STANDARDS

What are they:
EN refers to technical European standards, ratified by one of third party European standards organisations, and UL refers to US standards, which the Middle East often accept as well. Underwriters' Laboratories (UL) tests and evaluates components and products that allow a certification mark to be placed by the manufacturer.

How important are they?

- These certifications are very important, because they assure you that an objective, regulated third party has vetted and rigorously tested products according to the same standards (the same level playing field). So overall, it's important for the product to be certified by third party testers.
- Both EN and UL standards are highly credible. Compliance with these standards ensure products operate reliably and illustrate a manufacturer's dedication to safety and quality. Product costs often reflect the highest quality testing, offering peace of mind when installing critical systems. Be conscious of manufacturers who claim EN or UL but do not comply with these standards.

Power supply-specific certifications for security applications:

- **Intruder**
  - EN 50131 is a common standard for intrusion and hold-up alarm systems. EN 50131-6, is the specific standard applicable for the power supply component of such systems.
  - To be compliant with EN 50131-6, Elmdene products undergo rigorous testing by a third-party test house to ensure the reliability and performance of our power supplies within an intruder application.
  - Our power supplies are also subject to harsh environmental tests such as their performance under extreme temperatures and humidity conditions. As well as product testing, the notified test body also carries out a Factory
  - Production Control (FPC) audit to ensure our products continue to adhere to these standards.
- **Elmdene has a range of EN 50131-6 power supplies.**

Find out more

- **Access Control**
  UL 294 is a common standard for Access Control System Units, evaluating the construction, performance, and operation of physical access control equipment and systems, including power supplies.
- **Elmdene has a range of UL 294 certified products.**

Find out more

THE RISKS OF INSTALLING POOR QUALITY PSUS FOR SECURITY SYSTEMS

- Security and access control systems are vital to keeping intruders out. The safety of a building and the people that occupy them are crucial, and if you're investing in poor quality PSUs, there are serious risks that you could face.
- Here are the risks that you could face when choosing to use poor quality PSUs for security systems:
  - **Safety of people –** The failure of a security system could put people at risk to intruders. However, the consequence of a fire system failure could potentially be life-critical.
  - **Risk to property –** There is a risk of potential theft, vandalism, or general destruction because of PSU failure.
  - **Risk to reputation –** Safety has become more important than ever for anyone that enters a building. End-users will quickly lose faith in their system integrators if complete systems or sections fail.
  - Costly to End-Users and Unnecessary Out of Hours Engineer Call-Outs Due to System Power Failure.
  - Legal Risks Associated with Service Inadequacy.

WE LOOK FORWARD TO STAYING IN TOUCH!

- With the best practices for Security system power supply selection in mind, use our PSU Selector to easily find the perfect solution to your system specification.

Use our PSU Selector

- To discover more about Elmdene, or any of our product ranges, get in touch with our team of experts who will be happy to talk about finding an ideal solution for your unique needs.

Get in touch

- To stay up-to-date with our latest news and updates, follow us on social media, or visit our website.
  - https://web.facebook.com/ElmdeneInternationalLtd/
  - https://www.linkedin.com/company/elmdene-international-ltd/
  - https://twitter.com/ElmdeneIntLtd
  - https://www.instagram.com/elmdeneint/
  - https://www.youtube.com/user/ElmdeneInternational

Documents / Resources

	ELMDENE PSUs Security System [pdf] User Guide PSUs Security System, Security System, System

References

- User Manual