#### **Reliable Power Supplies**



# The key to reliable security systems

# When Planning A New System....

- How much time do you spend researching the active components that you intend to use?
- How often do you seek advice from manufacturers/distributors about those components?
- And PSUs? Do you ever seek advice on them?
  - Or do you think of them as simply metal boxes that house a PCB and a battery and they are all the same
  - Or do you just put in the specification, 'PC Sum' for PSUs, fixings and cable'?

## Wrong Answer!!

 You are wasting all many installer/user advantages if you treat PSUs as 'all the same' and, providing they give out 12 or 24VDC

#### **Cheapest is Bestest!**

 You are missing out on recent, innovative power technology advancements that enable any system to perform more effectively, reliably and economically.

# **Modern Power Supplies**

- The key advance has been the introduction of 'switched-mode' technology
- In addition to substantial cost savings in the amount of electricity used, there are a host of other benefits that make this technology the only one that you should consider

#### Switched-Mode Benefits

- Greater efficiency, as the switching transistor dissipates little power in the saturated state and the off state compared to the semiconducting state
- Smaller size and lighter weight as the high-weight low frequency transformers have been eliminated
- Stable output to limit of stated capacity ripple less than 50mV p/p
- >90% efficiency, which means lower running costs and less energy wasted on heat – these units run cool compared to linear designs

#### Switched-Mode Benefits

- Very little heat to dissipate means increased ability to install in consoles, cupboards, ceiling voids and other places that are better for cabling.
- These units are ideal for use in hot climates as no cooling fans are required
- Totally integrated PCB "transformerless" design
- Smaller footprint
- Built-in AC connector

#### Switched-Mode Benefits

- Easy-fit plug-on battery connector leads
- AC power input surge and transient protection
- Power supply overheating protection
- Power supply over-current protection
- Under and over limit AC power protection
- Battery reverse connection and charge over-current protection

# For All Systems

- All DC power outputs/inputs protected by auto resettable fuses
- Powerful and flexible battery-learn feature to automatically configure the number of batteries used to suit different power supply backup requirement
- Power supply monitoring:
  - Battery low voltage monitoring
  - Power supply operational status check
- AC power monitoring

# For All Systems

- On board status display for:
  - Power supply OK
  - Battery OK
  - AC power supply OK
- Normally closed floating alarm outputs for:
  - AC Power fault
  - Battery fault
  - PSU fault

## For Access Systems

- IAS frequently specify 1Amp units but ACS typically require 3A and 5Amp units
  - Conventional linear 3Amp and 5Amp PSUs produce significant amounts of heat which means that they tend to fitted in the open to ensure sufficient ventilation
  - Switched-mode 3Amp and 5Amp units produce virtually no heat and, therefore, can be sited in ceiling voids and cupboards making them more secure and less obtrusive

## For Access Systems

- Unlike Intruder systems (IAS), access control systems (ACS) contain devices which need considerably more power than those used in IAS. These higher power devices, e.g. magnetic door releases and electric door strikes, often create substantial electrical 'spikes' when operating.
  - If you use a linear IAS PSU, this 'spike' can be sufficient to trip a fuse resulting in the door remaining open or locked shut
  - A switched-mode unit has additional filtering to avoid this so that the door remains operational at all times
  - Additionally, even in the event of a major 'spike', its electronic fuses automatically reset without the need for manual intervention

# For CCTV Systems

- Most conventional power supplies operate on 50kHz, the same frequency as conventional PSUs
  - This can lead to interference lines on the video image
  - Better quality switched-mode PSUs operate on 66kHz
    - No interference on images!

## For CCTV Systems

- Some cameras operate on a very narrow voltage band
- Conventional PSUs cannot guarantee such an accurate voltage delivery and therefore the use of such cameras is limited
- A switched-mode alternative has a facility that lets you accurately set and maintain any voltage between 12 and 15VDC
  - It can even maintain that voltage when the main power is lost and the system is relying ion standby batteries
  - Even if the battery voltage drops below 12VDC!

#### " ELECTRICTY COSTS SET TO RISE AGAIN....."

And in future, by how much more again ????



# How much energy do your systems waste?

#### Let's check...

- If you specify, install or use PSUs for any of the following systems:-
  - Intruder Alarms
  - · CCTV
  - Access Control Devices
  - Monitoring and Communication Devices
  - IP Network Peripherals
  - BMS systems

 then you're probably wasting over 45% more of your customers' electricity than necessary...

In fact, any 12 or 24Velectrical / electronic device that uses a conventional linear PSU will cost YOUR customers, **SERIOUS MONEY** in the future!



# Let's weigh up how much and why !

#### A conventional linear 1A PSU's energy usage

- Efficiency = <30% (though typically 25%)
- Output power = 13.6W
- Input power. = 30W
- Electricity used p.a. = 262 kWh

#### A switched-mode 1A PSU's energy usage

- Efficiency = >90%
- Output power = **13.6W**
- Input power. = 15W
- Electricity used p.a. = **131 kWh** (worst case)
- Annual saving (kWh) = 262 131 = 131 kWh

#### In hard cash?

- Take your local tariff per kWh as A
- The number of 1Amp PSUs on site as B
- Multiply A x B x 131 (the annual energy savings in kWh)
- Scary answer, isn't it?
- I bet you didn't realise how much energy your clients have to buy just to use your security system 24/7/365!



#### How green is that?

- I bet your clients change light bulbs to save a few watts and reduce bills.....
- I bet they don't realise how much more they'd save if they switched off your security systems......
- I bet your larger, security conscious customers all have an ongoing 'carbon footprint' reduction programme......

• I bet they don't know that your company has an easy way to help them do all this!

#### **The Green Solution**

• Switched-mode is science, not magic!

 It regulates voltage by rapidly switching a transistor so it is either fully ON when there is no voltage passing through or fully OFF when there is no current passing through

 Result? Minimal power in the device, so very little is wasted as heat!

 Additionally, the devices are smaller because they do not use mains transformers or heat sinks



#### And the cost?

•The same or very little more than conventional linear PSUs!

Can you afford not to join the switched-mode revolution?

#### Thank You!

 If you want to talk more come and see me on the Dycon Stand C720 in the IFSEC Hall