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Hub24 Usage

The Hub24 uses new dimmer technology to provide exceptional dimming performance in a convenient package. The following document highlights a few important points to note in order to get the most out of this product.

Dimming

The Hub dimmer circuitry uses IGBT devices to provide the dimmer function. IGBT stands for "Insulated Gate Bipolar Transistor" – in essence this means transistors are used to control the dimming instead of the more usual SCR or Triac plus choke. This results in a dimmer with lower weight and acoustic noise output than an equivalent thyristor product. However these devices have limitations that mean they cannot be used with impunity in all cases that thyristor dimmers are used.

Heating

Like all dimmers, the Hub24 generates heat during normal operation. The amount of heat generated by any phase control dimmer depends predominantly on two things:

- The load connected to the channel, and
- The drive level.

Unlike a thyristor/choke dimmer where the maximum dissipation occurs at a 100% drive, a Hub24 dimmer channel dissipates maximum heat at around 55% drive. For reference each channel of a Jands Hub24 dissipates approximately the same amount of energy that a thyristor based 120us dimmer does, however the 15 channels in a Hub24 means the maximum power is 25% greater under worst case conditions.

Cooling

Because the Hub24 was designed to take advantage of the low noise characteristics of the IGBT dimmer circuitry, the chassis has been designed to operate primarily using convection cooling. While fans are present in the chassis, these fans only operate under extreme conditions.

Convection cooling uses the flow of air generated by the heat that causes the air to rise. For this to work the dimmer must:

- Have adequate ventilation at the inlets and exhausts
- Be oriented vertically, that is so that the cable bin is uppermost.

Additionally because convection requires gravity, the Hub24 must not be used in low gravity environments eg Space stations etc.

Loads

The design of the Hub24 dimmer circuitry means a large amount of leakage current can flow when the dimmer channel driven is at 0% (off). This is normal and has very little impact expect that it can cause low wattage lamps to glow or low wattage motors to turn slowly when the drive is around 0%. The Hub specifications state a minimum load of 60W, however if necessary a 100W lamp can be used to consume the leakage current and minimize the above effects.

Additionally caution should be exercised when driving transformer type loads such as strobes or neon lamps. Two IGBTs are used for each channel of the Hub24 dimmer circuit and under fault conditions the DC output generated can cause damage to such loads. For this reason it is not recommended that transformer loads of any kind are driven by the Hub24 dimmer output.

Power supply

In general the Hub24 is designed to run from a standard three phase power supply. However in the international market certain differences exist in the standards for these supplies. The Hub24 has not been designed to run from "IT" type power supplies and should under no circumstances be connected to them.

Summary

The following points should be kept in mind when using a Hub24:

- Always orient the Hub24 in its normal vertical position ie cable tray uppermost, during operation.
- Always ensure both the top and bottom vent holes are clear. Care should be exercised when using the Hub24 on thick carpet to ensure the vent holes in the base have a clear flow of air.
- If the fans activate during normal operation there is a ventilation problem which should be rectified.
- Always remove all items from the cable tray before use to ensure the ventilation holes are clear
- If possible do not run the Hub24 with large loads for extended periods at around 50%.
- Add a 100W lamp in parallel if a very low wattage lamp is used.
- Do not use the Hub24 with transformer loads.
- Don't drive the Hub from an IT power supply.

Keeping the above in mind will ensure the Hub24 lives a long and trouble free life.