Why do my PIXIE switches keep blowing / failing / popping?

Dimmers · https://pixiepartners.com.au/support-docs/why-do-my-pixie-switches-keep-blowing-failing-popping/

If you have installed PIXIE smart dimmers, switches or sensors and you have to continuously visit to replace them due to a device failure, this is relevant to you.

First stop replacing the devices until you discover the root cause!

As we have sold 100's of thousands of PIXIE devices over the last 6 years (2023), it is not normal for these device to continue to fail.

If they did we wouldn't sell them and people wouldn't buy them.

This means there is likely some condition on site which is making this occur.

These are the most common issues.

Overloaded Device

Each PIXIE dimmer and switch has a maximum load rating.

These ratings differ depending on the type of load being controlled.

That is a **resistive load** like a halogen/tungsten lamp, or a **capacitive load** like an LED light or constant voltage LED driver.

These load ratings cannot be exceeded for continued long term operation of these devices.

The installation manuals for these products detail their maximum load ratings.

No Allowance for Derating Multigang Plates

All PIXIE dimmers switches must have their maximum load capacity de-rated when installed in multi gang wall plates.

For example the PIXIE SWL600BTAM smart switch has a max load of 600W (resistive loads) and 400W LED loads as a single device installed on a wall plate.

There is a sliding de-rating scale, depending on the total number of devices installed in a wall plate for all PIXIE smart modules and these are listed in the installation manuals.

Here are the links to the 2 most common PIXIE switch and PIXIE dimmers installation manuals for checking yourself.

- PIXIE SDD300BTAM Dimmer
- PIXIE SWL600BTAM Switch

Any failures experienced when loads exceed these max load ratings and de-ratings are outside of warranty claims and are the responsibility of the installing electrician.

Iron Core Transformer on the Line

This instance is specifically for PIXIE dimmers which use what is called trailing edge phase dimming.

Trailing edge phase dimmers like the PIXIE SDD300BTAM **ARE NOT** compatible with IRON CORE drivers.

This fault most commonly occurs on lighting upgrades, where home owners previously had tungsten or halogen downlights, and a previous electrician has installed an iron core driver on the line to stop flickering or smooth out dimming due to load or incompatibility issues with the dimmers in use and the lights.

Note then even though you may not have installed this iron core driver, if the dimmer keeps failing and all other aspects detailed on the page are correct then you must inspect that line for an iron core driver to be sure.

Poor quality drivers combined with INRUSH

When devices such as LED downlights drivers, LED lamp drivers, constant voltage LED drivers are first switched on from a switch or dimmer they have an initial electrical inrush which far exceeds their normal operating current. These devices incorporate large capacitors in the input stage to keep the ripple voltage low.

However, upon start-up, these capacitors draw a large inrush current while charging up. This is normal, however, with poor quality drivers and /or when multiple drivers are on a switched/dimmed Active together, the inrush is cumulative and potentially more destructive.

This inrush can exceed the inrush protection on many electronic components such as dimmers, switches and sensor (relays), causing these products to fail ,even though the max operating load of these devices is often within the recommended limits

Read this article about Inrush current limiters:

> What is an Inrush Current Limiter why do you need it and when do you use it?

Embedded media: https://pixiepartners.com.au/support-docs/what-is-an-inrush-current-limiter-why-do-you-need-it-and-when-do-you-use-it/embed/#?secret=Umc6WGr1pf#?secret=knV7bKM13q