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

Dimmers · https://pixiepartners.com.au/support-docs/what-is-an-inrush-current-limiter-why-do-you-need-it-and-when-do-you-use-it/

The SAL SICL1235BTP is an **inrush current limiter** designed to reduce the destructive nature of the in rush current from poor* quality constant voltage LED drivers and drivers with high inrush on electronic components such as the PIXIE smart switches and dimmers.

This device can be used to reduce the temporary peak current caused by capacitive loads.

The **SICL1235BTP Inrush Current Limiter** can also be used with most manufacturer's electronic dimmers, switches and sensor.

- Max Load: 300VA
- Current Rating: 80A/2ms, 200A 10µs



When to Use this Inrush Current Limiter?

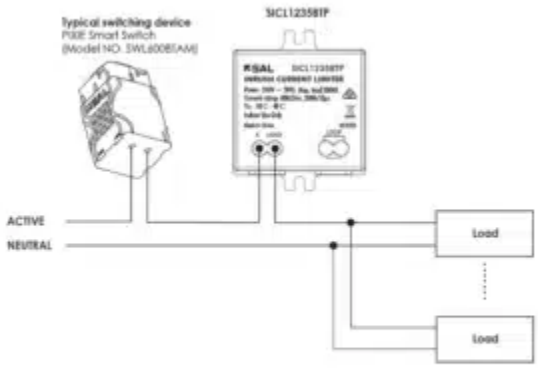
- ⇒ If you keep destroying PIXIE dimmers and switches on a load that does not appear to exceed the max. load ratings of these products
- ⇒ Controlling more than a single constant voltage LED driver for LED strip, garden lights from a single switch
- ⇒ When using a heated towel rail which has a remote driver and is not 240v direct controlled
- ⇒ When using multiple “LED GLOBES/LAMPS” to be dimmed together on a single circuit

How to use this Inrush Current Limiter?

This small device is installed on the load output of the dimmers, switches or sensors before the load under control.

This is a passive device which requires no programming. Simply install and energise the line to achieve current limiting of the inrush.

This must be installed by a licensed electrician.



Why Do We Make This Device?

We make this device for a number of specific reasons.

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.

Increase versatility of PIXIE Smart home products

Due to the 300VA max load of the SAL inrush current limiter, this device can be kept small and inexpensive as a way to quickly and easily protect and PIXIE electronic dimmers, switches and sensors where poor quality and /or multiple on-circuit capacitive devices need to be controlled by a PIXIE device, instead of having to install multiple PIXIE devices or risk the operational longevity of the products.

- Max Load: 300VA
- Current Rating: 80A/2ms, 200A 10µs

Proliferation of poor quality drivers in the Australia market.

Our own independent testing during 2023 and talking with industry in Australia and manufacturers in China, the quantum of poor quality constant voltage LED drivers has increased significantly and likely to continue and worsen due to a desire to reduce costs of these components.

For example, one 60W constant voltage LED driver we tested, had a listed rating of 60Wmax, load , 50Amp inrush and 0.5 power factor.

However upon independent lab testing, this same device actually had an 80A inrush and power factor of 0.35

It is clear that datasheets and labels cannot be trusted and additional measures were needed to protect PIXIE devices from unscrupulous suppliers not taking responsibility for sub standard products.

For all PIXIE switches do not use any constant voltage LED drivers which exceed the following and are within the rated max load of these devices, including any derating needed for multi gang plates:

–> PF (Power factor) must be >0.7

–> In-rush current must be < 24 A

If you need to use more than one per switchwire then use this Inrush Current Limiter