

# Stop Flickering on Dimmable LED Downlights



Eliminates nuisance ripple induced flicker between 750 - 1050Hz typically found in the QLD and NSW regions.

POWERED BY

PIXIE

## Step 1



SDD400SFI

- ▶ Install the SDD400SFI trailing edge 2-wire dimmer
- ▶ **Dimmer is Powered by PIXIE (smart home system)**
- ▶ Or just use as a stand alone push button dimmer:
  - Single press on / off
  - Press and hold to Dim up / down

## Step 2

- ▶ Swap your down lights to RippleShield enabled models
- ▶ Choose from two RippleShield enabled downlight families
- ▶ Remote drivers with flex and plug for a simple plug and play fix



UNIFIT S9053WP/SFI - 9W



OR



ECOGEN S9041TC SFI - 10W



POWERED BY  
PIXIE

SFI = SAL Flicker Immunity. No more flickering LED down lights.



## WHAT IS SFI TECHNOLOGY ?

**RIPPLE SHIELD is a new cost effective approach to eliminating the 'ripple injection' flickering problem experienced in NSW and QLD by users of dimmable LED down lights.**

SFI eliminates the tell-tale flickering of LED down lights at the same time of day and / or night in Australian homes associated with a tone injected into the electricity supply by electricity operators.

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## WHAT IS THIS 'TONE' FOR ?

Electricity operators in NSW and QLD inject this tone to primarily activate residential off-peak hot water systems. This tone is a signal to those homes that have an "off-peak relay" in the electrical board to start and stop the off-peak heating of the electrical hot water tank on site.

Even if homes don't use electric hot water heating, as this tone is injected into the electricity supply, any homes connected to that supply can potentially receive it and be impacted by it.

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## WHY DOES THIS MAKE LED LIGHTS FLICKER ?

This is quite complicated with many factors affecting why, when and the intensity of the flickering experienced.

However, this has been happening for decades and many people probably didn't notice it if they were not dimming lights or they were using more traditional light sources like tungsten and halogen globes/bulbs/lamps. This is because those legacy light sources essentially use a hot metal filament to create light, and when the tone is injected there is sufficient 'thermal inertia' in the filament to maintain its output (at least to the human eye).

LED lights operate in a very different way with the benefit of being much more energy efficient, and being more impacted by the ripple injection process.

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## WHY DO I HAVE TO SWAP MY DIMMERS AND DOWN LIGHTS ?

SFI is a system designed to be 100% compatible with each other, and when used together, eliminate this flickering. The SFI combined solution is a simple and cost effective way to completely eliminate this flickering, by swapping the dimmer and down lights on affected circuits.

**An added benefit when using the SFI system, home owners will also experience much deeper dimming down to 1% and smooth dimming up and down through the whole range of dimming.**

As the SFI dimmer is Powered by PIXIE, homeowners can also control their lights using the free SAL PIXIE App and add more PIXIE smart home devices to expand their smart home system in the future. However it does not NEED to be controlled by PIXIE and acts as a standard dimmer.

# WHY DO LED LIGHTS FLICKER AND HOW TO FIX THE ISSUE?

LED lights can sometime flicker, and understanding why they are flickering is the first step to resolving the issue. There are 3 questions to ask and answer to better understand why and how to fix the issue.

1. Do the LED lights flicker at the same time of day or night, always?
2. Do the LED lights only flicker when dimmed below a certain level?
3. Do the LED lights flicker all the time?

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## 1. Flickering at the same time of day or night.

If your LED lights always flicker at the same time of day or night, its likely you're experiencing the off-peak hot water ripple injection tone.

Electricity operators in NSW and QLD inject this tone to primarily activate residential off-peak hot water systems. This tone is a signal to those homes that have an "off-peak relay" in the electrical board to start and stop the off-peak heating of the electrical hot water tank on site.

Even if homes don't use electric hot water heating, as this tone is injected into the electricity supply, any homes connected to that supply can potentially receive it and be impacted by it.

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## HOW DO I FIX THIS RIPPLE INJECTION ISSUE?

**There is no fix-all for every type of LED light and there are a number of different approaches which will have varying success based on a wide number of variables.**

a) Most people report ripple related LED lighting issues on dimmed lighting circuits. Replacing the dimmer with a switch may eliminate the issue. If you still want to be able to dim your lights, there are some additional approaches detailed below.

b) Have your certified electrician install a "line-filter". There are a number of different types of "line-filters" - some which can be installed onto a single circuit and some which must be installed into the electrical board to filter and attempt to clean / filter the tone before it is passed onto your lights. Speak to your electrician about product options and installation costs.

c) Your electrician can attempt to replace dimmers and LED lights with those from a range of different manufacturers to gauge the effectiveness of these different electronic devices when combined at your home. This is rarely effective, however some people have reported this as being a useful rectification tactic and provides another option to attempt to solve the issue.

d) If the type of LED lights being dimmed - and affected by the off peak ripple - are down lights, replacing all of the LED down lights on the affected circuit/s as well as the dimmer/s with the SAL SFI range will eliminate the off peak hot water ripple issue.

More information about the SAL SFI range can be found here:  
<https://www.sal.net.au/products/u/sfi-ecogem>



If you are experiencing this off-peak hot water ripple injection issue, its important to understand that the lights are not faulty. Importantly be sure to diagnose the root cause correctly to avoid any future negative circumstances and below are some other potential rectification methods for LED lights flickering that should also be explored by your electrician.

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## 2. LED lights only flicker when dimmed below a certain level?

If when dimming your lights below a certain level they begin to flicker there are a number of ways you and your electrician can resolve this issue.

a) Don't dim the lights below that level. Some smart dimmers allow you to set a "minimum dim level" so you will never experience the flickering. As not all dimmers have this function, replacing the dimmer with a dimmer capable of this minimum dim level would be required.

b) Your electrician can install a 'load-bypass' or 'capacitor' onto the dimmed lighting circuit. These devices can sometimes be successful in eliminating flicker at lower dimmed levels and may also provide smoother dimming performance. There are a number of options from various manufacturers available in Australia. The SAL part number for these devices is: CAPACITOR.

Note these "load-bypass" devices have no impact on the hot water ripple injection tone issue.

c) Incompatibility between your selected dimmer and your selected lights. Your electrician can swap either the dimmer or the lights - or both - to determine if there is an incompatibility between the two electronic device types.

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## 3. LED lights flicker all the time?

If your LED lights are flickering all the time there are 4 primary causes, all of which will require a certified electrician to investigate and rectify.

- a) Wiring fault.
- b) Faulty dimmer or faulty lights or both.
- c) Incompatibility between the dimmer and the LED Lights.
- d) Overloaded dimmer.

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**Electricity is dangerous and can kill. Always use a licensed electrician for any electrical work. This information is intended to provide a basic level of education only and is not intended as a "how-to-guide" or to encourage any unlicensed electrical work.**

## PIXIE SUPPORT RESOURCES



### PIXIE 1800 TOLL Free Support

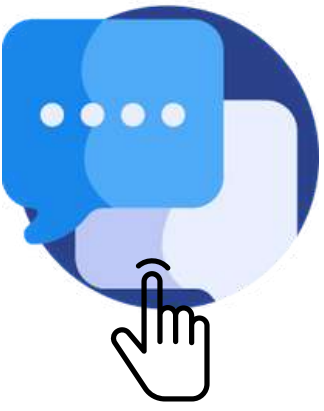
The PIXIE TOLL FREE support number is manned by experienced personnel Monday to Friday from 10am to 5pm. CALL: 1800 256 843



### PIXIE Online Help Centre and Knowledge Base

Hundreds of questions answered from real customer in the field using PIXIE everyday. This is the best place to start your search for help.

<https://bit.ly/pixiehelp>



### Facebook Technical Support Group

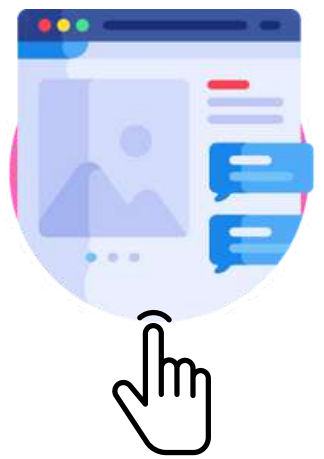
This online community for electricians using PIXIE daily is an ideal practical resource for other electricians to get the answers they need quickly.

<https://www.facebook.com/groups/pixietech>

## AD-HOC ON SITE SUPPORT

For PIXIE Partners and PIXIE Certified Installers, SAL can from time to time, provide on site support for the first project installation. When possible, this is organised and verified with the local SAL Sales Representative in the relevant state.

Where the SAL Sales Representative has the appropriate skills and knowledge they can choose to provide limited support of no more than 2 hours to get the project started. The electrical contractor is ultimately responsible for final and successful delivery of the project and hand over to the customer. A free PIXIE training course is available online.



### PIXIE Certified Installers Training Course

If you are an electrician this free Online Training Course is for you. Once completed its the best video resource for everything PIXIE. Register for free now: <https://bit.ly/pixie-certified>

## ON SITE COMMISSIONING SERVICES

If required SAL can organise on site commissioning services of a PIXIE system. SAL will assist with co-ordination of an outsourced Certified PIXIE Installer. A representative from SAL will not be present.

## METRO RATES - Regional rates on a per case basis.

CALL OUT FEE: \$385 ex GST - includes first half hour on site and travel

3 HOUR CALL OUT RATE: \$550 ex GST - setup and wiring assistance, includes travel

DAY RATE FOR UP TO 25 DEVICES: \$990 ex GST - setup and wiring assistance, includes travel

**Call out fee to be paid 24 hours before appointment directly to attending PIXIE Certified installer.**