

Unios G2 Phase-Cut Driver

LED drivers are critical components in LED luminaires, which is why Unios have released the G2 Phase-Cut Driver; designed to deliver power, control and trust for installation and operation.

Unios have re-engineered the G1 driver to be seamless in integration with class-leading features that deliver exceptional lighting performance and functionality even in the most confined spaces. Providing a solution for every application, while maximising flexibility and power, the new G2 Phase-Cut Driver will offer a flicker-free output, a potted enclosure, low THD, dimming performance and reliability for your

next project. In offering a flicker-free driver, the G2 provides various health benefits: reducing migraines, discomfort, and illness.

Welcome to the innovative, compatible and efficient way to regulate your LED lighting systems for all environments. When superior performance and reliability is critical to the lighting application, select the G2 Phase-Cut Driver.



Flicker-free

Exceeding industry standards; the new G2 Phase-Cut Driver provides a smooth, stable power supply to LED luminaires. Through rigorous testing, the Unios G2 excels in all measured parameters, eliminating flicker to the human eye, promoting better health, well-being and improving concentration for occupants.



Potted Enclosure

The internal components of the G2 Phase-Cut Driver are completely potted, which allows for improved heat dissipation and protection from vibration. This improves the reliability of the G2 by reducing physical and thermal stress on internal components.



Total Harmonic Distortion (THD) < 10%

Through a reduction of harmonic currents, the G2 Phase-Cut Driver achieves a THD measurement of <10%. This is through an active power filter that reduces peak current and current distortion, which results in a cleaner load to the overall power supply.



Features



5 Year Warranty

Through class-leading design and manufacturing, the G2 driver achieves improved reliability and performance. Unios assures the quality of this driver with an extended 5-year warranty. Have peace of mind when selecting the G2 driver that it will continue to perform for years to come.



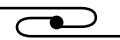
Power Factor (PF) >0.90

With a PF > 0.90 across the full input range and typically operating at 0.95, the G2 will reduce unnecessary loads on electrical systems. By improving the power factor, this reduces equipment size and cost across the overall system.



Ambient Temperature (Ta) - 50°C

The G2 driver is rated for operation in ambient environments up to 50°C, while still maintaining a 50,000h lifetime rating. This ensures reliability in high temperature environments such as confined spaces and enclosed ceilings.



2 Stage Driver Topology

As part of the 2 stage driver topology, an active filter reduces the input noise before reaching critical components. The Zellweger ripple effect (a form of noise) is significantly reduced in the G2 driver. This prevents flicker due to fluctuations in the input power supply.



1kV Surge Protection

The G2 driver comes equipped with a 1kV surge protection, which protects internal electronic components from sudden high voltage spikes.



50,000h Lifetime

With an upgraded lifetime from 30,000h to now 50,000h, the G2 Phase-Cut Driver will reduce maintenance cost by extending the service life of LED luminaires with improved reliability.



Health Benefits

As flicker is the primary type of light stimulus that has health implications, by designing the G2 Phase-Cut Driver to be flicker-free, several health benefits are provided for occupants.

These benefits range from the reduction of migraines, eye strain, malaise, nausea, panic attacks, anxiety and general discomfort.

The newly designed G2 Phase-Cut Driver eliminates flicker in the observable range. This assists people with epilepsy that are highly sensitive to light flicker, which can induce seizures. For people with Autism Spectrum Disorders that are extremely sensitive to light, this also eliminates flicker at 60Hz which they are able to visualise.

IEEE 1789

Compliant with the IEEE 1789 standard recommendations meeting the 'No Observable Effect' requirements, our G2 Driver will help prevent against known potential adverse health effects with its flicker-free feature.



Photosensitive epilepsy

Exceeding industry standards; the new G2 Driver provides a smooth, stable power supply to LED luminaires. Through rigorous testing, the Unios G2 Driver excels in all measured parameters, eliminating flicker to the human eye, promoting better health, well-being and improving concentration for occupants.



Autism

The average person is unlikely to seeing flickering at frequencies above 60Hz, however people with Autism Spectrum Disorders (ASD) are extremely sensitive to light and can sense and visualise flickering at 60Hz. Studies* were conducted with five autistic and five intellectually disabled children, which investigated the effects of fluorescent lighting with varying frequencies. From the study, it found that autistic children are more likely to be affected by the flickering of light with higher frequencies. Signs and symptoms include repetitive behaviours, poor eye contact or eye movement and increased anxiety.

*Studies by D. Fenton and R.Penney, "The effects of fluorescent and incandescent lighting on the repetitive behaviours of autistic and intellectually handicapped children"



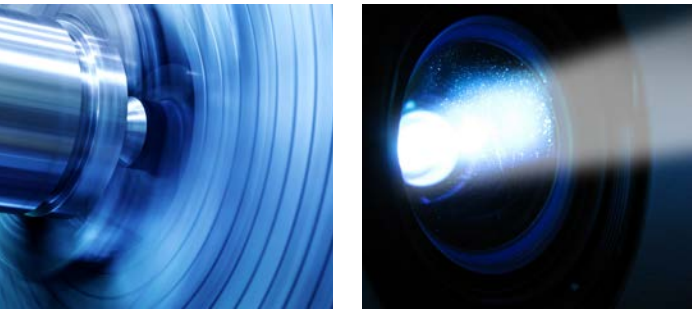
Other Health Implications

Varying from person to person, exposure to flicker may cause additional health implications. Studies found that 25 - 50% of migraine sufferers identified flicker as a trigger for migraines and that exposure to flicker within offices doubles the average incidence of headaches. Previous studies have also found that exposure to flicker can cause eye strain, malaise, nausea, reduced visual performance, panic attack, anxiety and general discomfort.



Practical Benefits

Temporal light artefacts not only affect the vision and health of people, but also interfere with the perception of motion and electronic imaging devices. Unios has designed its G2 Phase-Cut Driver not only to help with numerous health benefits, but for equipment used in our everyday lives.



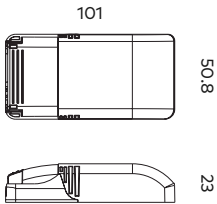
Safety Hazards

The stroboscopic effect creates an optical illusion which causes moving objects to appear stationary, to change in speed, or move forward or backward in motion. The effect is most prevalent in industrial settings where rotating machines are commonly used and can be highly hazardous to the operator of the high-speed rotary machinery. Given the visibility of the stroboscopic effect is dependent on both the frequency of the light and the speed of the rotating object; the Unios G2 Phase-Cut Driver will eliminate the risk with its new and improved driving topology.

Imaging Devices

Temporal light artefacts can interfere with electronic imaging devices, the most common being digital cameras. When the camera's shutter speed is not in sync with the flicker frequency, the camera will either be able to capture flicker or a phenomenon known as the "rolling band" or "rolling bars" effect. In photos, the rolling bars will create dark or discoloured stripes across the image - becoming highly problematic for companies that use equipment such as barcode scanners and image-based equipment (for example webcams). When flicker is present in video conference calls, it becomes rather distracting and has been noted to cause headaches to attendees.





All measurements are based in millimetres

General Specifications

Overvoltage Protection	320V AC for 1H
HIPOT Test	3750V
Min Ambient Temp Ta	-20°C
Max Ambient Temp Ta	50°C
Max Case Temp Tc	85°C
Storage Temp	-40°C to 80°C
Stroboscopic Duty Ratio	<5%

THD Full Load	<10%
THD Min Load	<10%
Current Ripple	<20%
Surge Protection	1000V
Dimming Range	1 to 100%
Design Lifetime	50,000 Hrs
Load Regulation Rate	3% Across full load range

	200mA UN401-B-13200	250mA UN401-B-13250	300mA UN401-B-13300	350mA UN401-B-14350
Rated Input Voltage	200-240V ~ 50/60Hz	200-240V ~ 50/60Hz	200-240V ~ 50/60Hz	200-240V ~ 50/60Hz
Forward Voltage Range	25-40V	25-40V	25-40V	25-40V
Max Output Voltage (No Load)	49V	49V	49V	49V
Fixed Output Current	200mA	250mA	300mA	350mA
Max Input Current	54mA	63mA	70mA	88mA
Full Load Efficiency	76%	78%	80%	80%
Max Input Power	10.5W	13W	15W	17.5W
Max Output Power	8W	10W	12W	14W
Power Factor	>0.90	>0.90	>0.90	>0.90

	700mA UN401-B-12700
Rated Input Voltage	200-240V ~ 50/60Hz
Forward Voltage Range	9-16V
Max Output Voltage (No Load)	25V
Fixed Output Current	700mA
Max Input Current	140mA
Full Load Efficiency	81%
Max Input Power	14W
Max Output Power	11.2W
Power Factor	>0.90

Note

Hot plug-in or secondary switching of LEDs is not permitted and may cause a very high current to the LEDs

5 Year Warranty

Unios backs the design, build and manufacturing of each driver with an extended warranty. You can be rest assured when choosing a Unios product that it will continue to perform for years to come. Unios provides a 5 year warranty on all G2 drivers.

Rated Lifetime

The G2 driver is designed to achieve an expected lifetime of 50,000 hours. This lifetime is at the maximum ambient temperature rating (Ta) while the driver is operating at full load within the rated operating parameters.

Overload Protection

If the connected load causes the G2 driver to operate outside its defined operating voltage and current ranges, built in detection of the over-voltage or over-current condition disables the output immediately. The driver will automatically attempt to restart operation periodically until the condition is cleared.

Open/Short Circuit Protection

The G2 driver has the ability to detect a short circuit or open circuit on the output. When either of these two conditions is detected, the driver disables the output immediately and periodically attempts to restart operation until the condition is cleared. By not driving the output in open circuit conditions, potential damage during accidental hot-plug events is reduced.

Input Protection

Built in surge suppression protects the driver and connected load from short-term voltage transients on the input up to the rated surge protection voltage. Circuitry within the driver detects input supply voltages that exceed the rated input voltage range and disables the driver to prevent damage to itself or the connected load. The driver is able to withstand long-term over-voltage conditions up to the specified limit for the specified time without damage.

Testing & Certification

All G2 drivers are SAA approved and certified. EMC Compliant to AS CISPR 15:2017

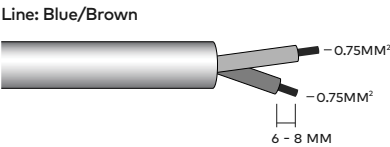
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Flickerfree Compliant to IEEE 1789-2015 No Observable Effect Level



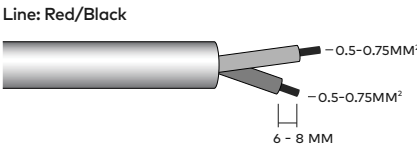
Connections: Input

0.75mm² solid core or stranded with ferrules
1.5mm² max cable size
Strip insulation 6-8mm



Connections: Output

0.5-0.75mm² solid core or stranded with ferrules
1.5mm² max cable size
Strip insulation 6-8mm





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General Specifications			
Overvoltage Protection	320V AC for 1H		
HIPOT Test	3750V		
Min Ambient Temp Ta	-20°C		
Max Ambient Temp Ta	50°C		
Max Case Temp Tc	80°C		
Storage Temp	-40°C to 80°C		
Stroboscopic Duty Ratio	<5%		
THD Full Load	<10%		
THD Min Load	<10%		
Current Ripple	<20%		
Surge Protection	1000V		
Dimming Range	1 to 100%		
Design Lifetime	50,000 Hrs		
Load Regulation Rate	3% Across full load range		

	400mA UN402-B-14400	500mA UN402-B-18500
Rated Input Voltage	200-240V ~ 50/60Hz	200-240V ~ 50/60Hz
Forward Voltage Range	25-40V	25-40V
Max Output Voltage (No Load)	49V	49V
Fixed Output Current	400mA	500mA
Max Input Current	100mA	105mA
Full Load Efficiency	83%	83%
Max Input Power	19.3W	24.1W
Max Output Power	16W	20W
Power Factor	>0.90	>0.90

Note
Hot plug-in or secondary switching of LEDs is not permitted and may cause a very high current to the LEDs

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Overload Protection

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Open/Short Circuit Protection

The G2 driver has the ability to detect a short circuit or open circuit on the output. When either of these two conditions is detected, the driver disables the output immediately and periodically attempts to restart operation until the condition is cleared. By not driving the output in open circuit conditions, potential damage during accidental hot-plug events is reduced.

Input Protection

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Testing & Certification

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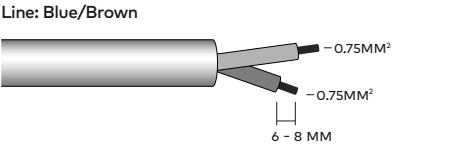
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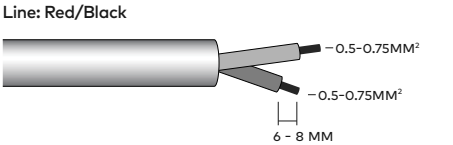
Connections: Input

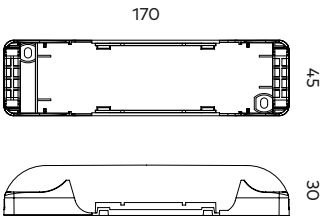
0.75mm² solid core or stranded with ferrules
1.5mm² max cable size
Strip insulation 6-8mm



Connections: Output

0.5-0.75mm² solid core or stranded with ferrules
1.5mm² max cable size
Strip insulation 6-8mm





General Specifications

Overvoltage Protection	320V AC for 1H
HIPOT Test	3750V
Min Ambient Temp Ta	-20°C
Max Ambient Temp Ta	50°C
Max Case Temp Tc	85°C
Storage Temp	-40°C to 80°C
Stroboscopic Duty Ratio	<5%

THD Full Load	<10%
THD Min Load	<10%
Current Ripple	<20%
Surge Protection	2000V
Dimming Range	1 to 100%
Design Lifetime	50,000 Hrs
Load Regulation Rate	3% Across full load range

	600mA UN403-B-29600	700mA UN403-B-29700	750mA UN403-B-380750	1000mA UN403-B-401000
Rated Input Voltage	200-240V ~ 50/60Hz	200-240V ~ 50/60Hz	200-240V ~ 50/60Hz	200-240V ~ 50/60Hz
Forward Voltage Range	25-40V	25-40V	32-44V	25-40V
Max Output Voltage (No Load)	48V	48V	58V	49V
Fixed Output Current	600mA	700mA	750mA	1000mA
Max Input Current	140mA	160mA	180mA	210mA
Full Load Efficiency	86%	86%	85%	86%
Max Input Power	27.9W	32.6W	39.5W	46.5W
Max Output Power	24W	28W	33W	40W
Power Factor	>0.90	>0.90	>0.90	>0.90

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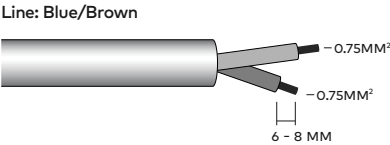
Standards Compliant to AS/NZS IEC 61347.2.13:2013 and AS/NZS 61347.1:2016

Flickerfree Compliant to IEEE 1789-2015 No Observable Effect Level



Connections: Input

0.75mm² solid core or stranded with ferrules
1.5mm² max cable size
Strip insulation 6-8mm



Connections: Output

0.5-0.75mm² solid core or stranded with ferrules
1.5mm² max cable size
Strip insulation 6-8mm

