

LED Drivers / LED Control Gear

USCI-PRO Series



USCI-PRO

Highlights & Features

- Constant current design
- Universal AC input voltage from 108-305Vac
- High efficiency up to 94%
- Wide operating temperature range -40°C ~ +55°C
- Built-in Active PFC and conforms to harmonic current IEC/EN 61000-3-2, Class C
- Adjustable constant current level through program tool
- Common mode 6kV and differential mode 6kV surge immunity
- Suitable for Dry / Damp location
- UL LISTED, Class P & Type HL

Safety Standards



General Description

Delta LED drivers come in different series to suit different application needs. The USCI-PRO series features program output current level. All the models come in metal casing and major international safety certifications. USCI-PRO series offers the capability to achieve different level of LED brightness via built-in 0-10V dimming function to meet various application and energy optimization needs. The products are designed and rigorously tested to work with various indoor and outdoor LED lighting conditions. Featuring high surge immunity (CM: 6kV, DM: 6kV) and complying to IP52 make Delta USCI-PRO series an essential part of an energy efficient LED lighting power solution for both indoor and outdoor applications.

Model Information

Model Number	Input Voltage Range	Output Voltage	Program Output Current Range	Constant Power Current Range
USCI-075140GA	120-277Vac Typical (108-305Vac) Range	36-107Vdc	500 – 1400mA	700 – 1400mA
USCI-100140GA		47-143Vdc	600 – 1400mA	700 – 1400mA
USCI-150140GC		72-214Vdc	600 – 1400mA	700 – 1400mA
USCI-200140GA		75-190Vdc	600 – 1400mA	1050 – 1400mA
USCI-200175GA		56-133Vdc	700 – 1750mA	1500 – 1750mA
USCI-200175GLA		56-133Vdc	700 – 1750mA	1500 – 1750mA

Model Numbering

USCI –	□□□	□□□	G	A/C ,LA
LED Driver	Output Power 075: 75W 100: 100W 150: 150W 200: 200W	Maximum Output Current 140: 1400mA 175: 1750mA	Dimming Type G – Programmable	Variable A or C– 0-10V DIM & +12V/50mA LA: DALI + 12V/100mA (Note: USCI-200175GLA without 12V/100mA)



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Specifications

Model Number		USCI-075140GA	USCI-100140GA	USCI-150140GC	USCI-200140GA	USCI-200175GA	USCI-200175GLA
Nominal Input Voltage		120-277Vac (108-305Vac)					
Nominal Input Frequency		50-60Hz (47-64Hz)					
Power Factor		Full Load: PF>0.98@120Vac, PF>0.95@230Vac, PF>0.92@277Vac >70% Load: PF>0.92@220Vac					
Total Harmonic Distortion		THD<20% with load \geq 50% at 120/230Vac input and load \geq 75% at 277Vac input					
Maximum Input Current	120Vac	0.78A	1.04A	1.53A	2.1A	2.1A	2.1A
Efficiency ¹ at 100% Load (Typical)	120Vac	91.0%@0.7A	91.0%@0.7A	91.5%@0.7A	92.0%@1.05A	92% @ 1.5A	92% @1.5A
	230Vac	92.5%@0.7A	92.5%@0.7A	93.0%@0.7A	94.0%@1.05A	93.5% @1.5A	93.5% @1.5A
	277Vac	92.5%@0.7A	92.5%@0.7A	93.0%@0.7A	94.0%@1.05A	93.5% @1.5A	93.5% @1.5A
Inrush Current (Cold Start) @277Vac, I_Peak & T_width		80A/250uS	80A/250uS	130A/250uS	200A/250uS	200A/250uS	200A/250uS
Max. No.of drivers MCB at 230Vac	B16	8	8	5	4	4	4
	C16	14	12	8	6	6	6
Leakage Current		<0.7mA peak @ 277Vac					
Standby Power		<0.5W @ Dim to off & 230Vac					
Input Over-voltage		Can survive input over-voltage stress of 320VAC for 48 hours and 350VAC for 2 hours					

1. Efficiency tested after 30 minutes warm up.
 All information and specifications are subject to change without prior notice.
 All parameters are specified at 25°C ambient unless otherwise indicated.
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Model Number	USCI-075140GA	USCI-100140GA	USCI-150140GC	USCI-200140GA	USCI-200175GA	USCI-200175GLA
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Output Ratings / Characteristics

Output Power	75W	100W	150W	200W	200W	200W
Output Voltage	36-107Vdc	47-143Vdc	72-214Vdc	75-190Vdc	56-133Vdc	56-133Vdc
Max. No Load Output Voltage	120Vrms	150Vrms	250Vrms	230Vrms	160Vrms	160Vrms
Adjustable Output Current (AOC)	500-1400mA	600-1400mA	600-1400mA	600-1400mA	700 – 1750mA	700 – 1750mA
	With steps of 1 mA, configurable via software					
Minimum Output Current	100mA (Min dim level)					70mA (Min dim level)
Current Accuracy	± 5% (@ Typical output current range)					
Line / Load Regulation	± 1% (@ 120-277Vac input) / ± 3% (@ Min-Max output voltage)					
Output Current LF Ripple	5% (ripple = peak-average/average)					
Start-up Time	500ms max. @ 120-277Vac (full load) , (1000ms max for USCI-200175GLA)					
Hold-up Time	16ms typ. @ 120-277Vac (full load)					

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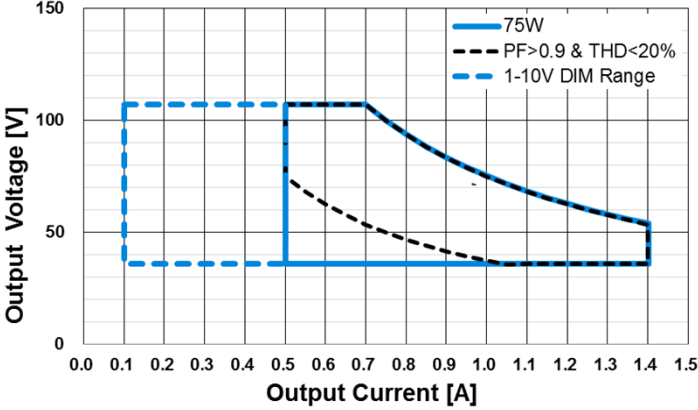


LED Drivers / LED Control Gear

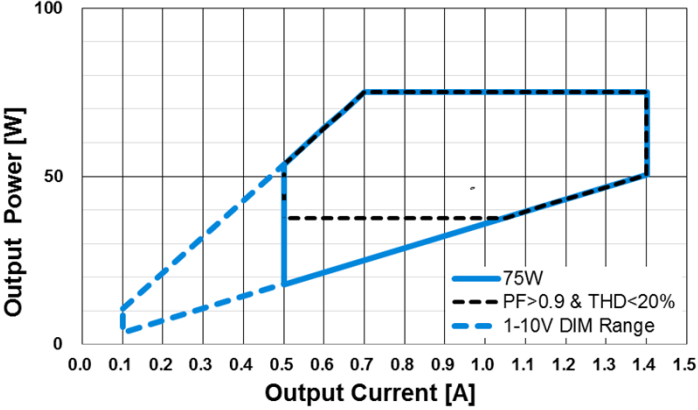
USCI-PRO Series

Operational Window

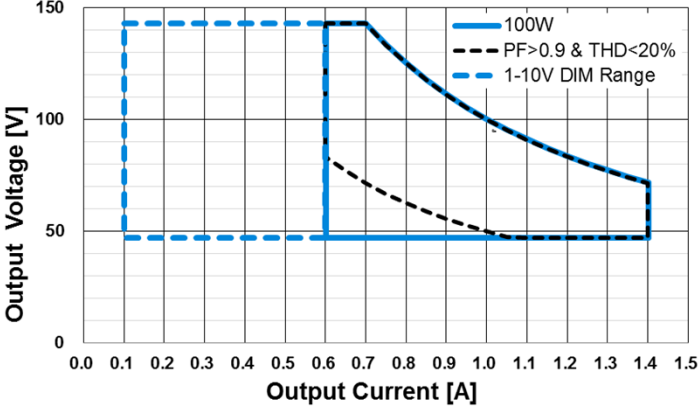
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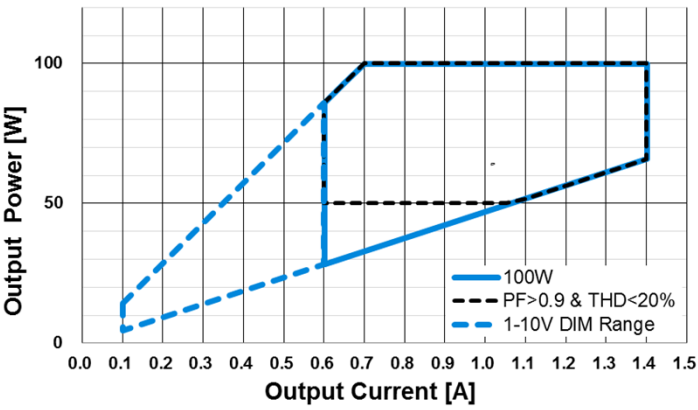
Output Power Range - 75W



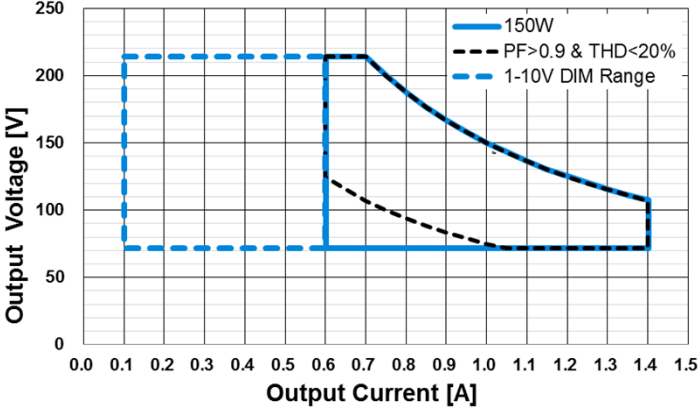
Output Voltage Range - 100W



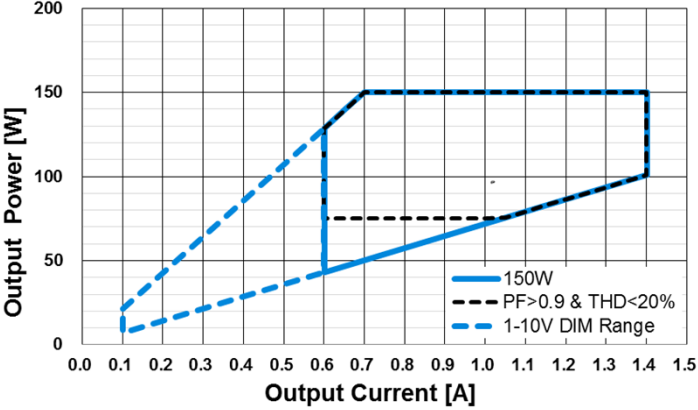
Output Power Range - 100W



Output Voltage Range - 150W



Output Power Range - 150W

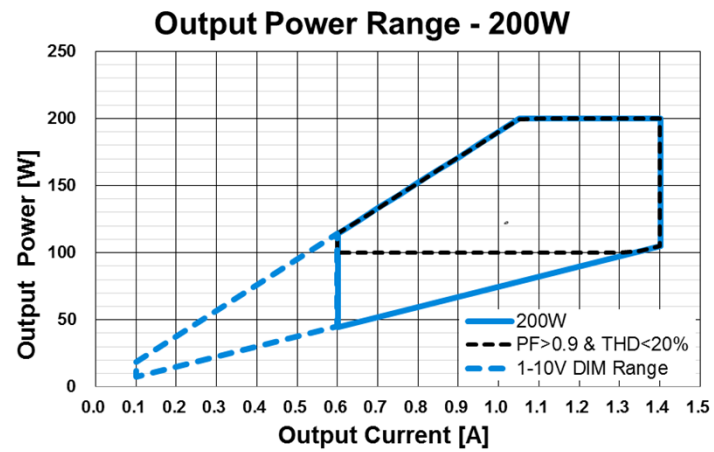
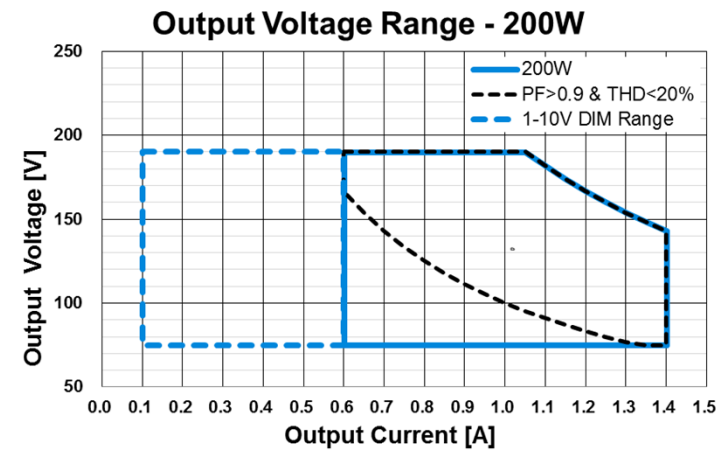


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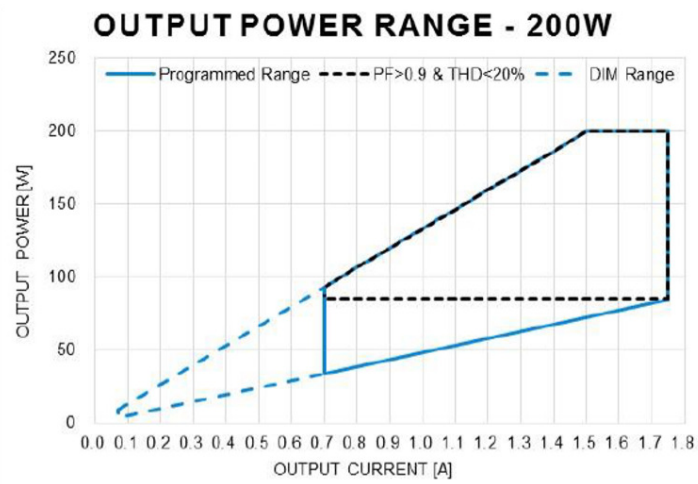
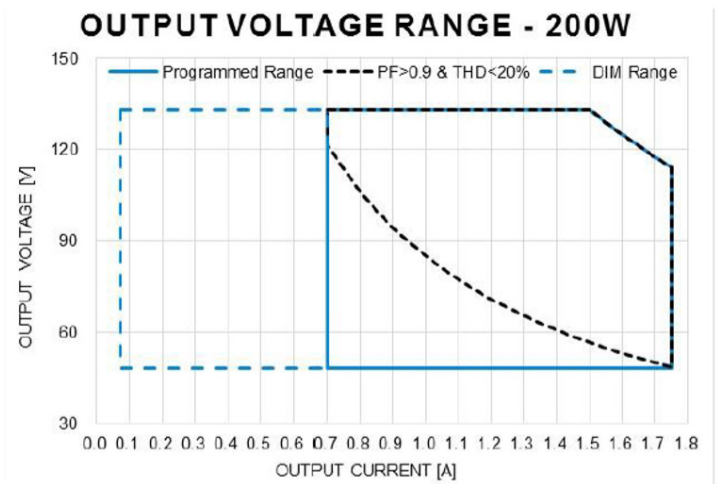
USCI-PRO Series

Operational Window

USCI-200140GA



USCI-200175GA / USCI-200175GLA



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USCI-PRO Series

Specifications

Model Number	USCI-075140GA	USCI-100140GA	USCI-150140GC	USCI-200140GA	USCI-200175GA	USCI-200175GLA
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Mechanical

Casing		Steel case, color : Black	
Dimensions (L x W x D) inch mm		6.6"x2.36"x1.5" 167.5x60.0x37.5	9.5"x2.36"x1.5" 240.5x60.0x38.0
Unit Weight (gram)		730	1100
Noise (30cm distance)		Sound Pressure Level (SPL) < 24dbA	
Wire	Input	L: Black, N: White; UL1316 18AWG solid copper wires Length 300mm	
	Output	Positive: Red, Negative: Blue; NTC/PRG: Black; wires Length 300mm Positive: Red, Negative: Blue; for USCI-200175GLA; wires Length 300mm	
	Dimming	Dim(+): Purple, Dim(-): Gray, +12V: Black/White; wires Length 300mm DA(+): Purple, DA(-): Gray for USCI-200175GLA; wires Length 300mm	

Environment

Ambient Temperature	Operating	-40°C to +65°C (+55deg for full load and +65deg for de-rating)			
	Storage	-40°C to +85°C			
Maximum Case Temperature		+85°C	+80°C	+85°C	+90°C
Power De-rating		> 55°C de-rating power & < 120Vac de-rating power “OUTPUT LOAD VS INPUT VOLTAGE” & “OUTPUT LOAD VS AMBIENT TEMPERATURE”			
Humidity	Operating	10 to 90% RH (Non-Condensing)			
	Storage	5 to 95% RH (Non-Condensing)			
Shock Test (Non-Operating)		IEC 60068-2-27, Half Sine Wave: 50G for a duration of 11ms, 3 shocks for each 3 directions			
Vibration (Non-Operating)		IEC 60068-2-6, Random: 5Hz to 500Hz (2.09G); 20 min per axis for all X, Y, Z direction			

Protections

Over Voltage	108-120Vdc	144-160Vdc	215-250Vdc	191-230Vdc	56-133Vdc
	Auto-Recovery when the fault is removed				
Over Load	Reduce output current. Auto-Recovery when the fault is removed				
Over Temperature	Reduce output current. Auto-Recovery when the fault is removed				
Output Short Circuit	Auto-Recovery when the fault is removed				
Suitable for Luminaires Class	Class II. Insulation Class according to IEC60598				

Reliability Data

Lifetime	50,000 hours at case temp. tc= +75°C & full load. Refer to "LIFETIME VS CASE TEMPERATURE" & "LIFETIME VS AMBIENT TEMPERATURE"
MTTF	500 khours at +45°C ambient temperature, Telcordia SR-332.

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Certificates and standards

Safety	CB scheme to IEC 61347-1, IEC 61347-2-13 (Built-in) EN 61347-1, EN 61347-2-13 UL/cUL (cRUus) to UL 8750 Compliance to IEC/EN/UL 60950-1 SELV for 75W UL LISTED, Class P & Type HL				
CE	In conformance with EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC				
Galvanic Isolation		Mains (Input)	Earth (Case)	Output/PROG	DIM +/- & +12V (Or DALI)
	Mains (Input)	N/A	3750V	3750V	3750V
	Earth (Case)	3750V	N/A	3750V	3750V
	Output/PROG	3750V	3750V	N/A	1875V
	DIM +/- & +12V (Or DALI)	3750V	3750V	1875V	N/A

EMC Compliance

EMC / Emissions	Compliance to EN 55015:2013 Class B; 47 CFR FCC Part 15, Subpart B, Class B	
Immunity to	Compliance to EN 61547:2009	
Electrostatic Discharge	IEC 61000-4-2:2008 ED.2.0	ESD, Criteria A ¹ or B ² Air Discharge: 8kV Contact Discharge: 4kV
Radiated Field	IEC 61000-4-3:2010 ED.3.2	RS, Criteria A ¹ 80MHz-1GHz, 3V/m with 1kHz Sine Wave / 80% AM Modulation
Electrical Fast Transient / Burst	IEC 61000-4-4:2012 ED.3.0	EFT, Criteria A ¹ or B ² 1kV
Surge	IEC 61000-4-5:2014 ED.3.0	Criteria A ¹ or B ² Common Mode ³ : 6kV; Differential Mode ⁴ : 6kV, 1.2/50μs, 8/20μs Combination Wave with 20ohms (L-N), 12ohms (L-PE & N-PE) source impedance
Conducted	IEC 61000-4-6:2013 ED.4.0	CS, Criteria A ¹ 150kHz-80MHz, 3Vrms
Power Frequency Magnetic Fields	IEC 61000-4-8:2009 ED.2.0	PFMF, Criteria A ¹ 3A/Meter
Voltage Dips	IEC 61000-4-11:2004 ED.2.0	Criteria A ¹ or B ² ; 100% dip; 0.5 cycle; Self Recoverable 30% dip; 10 cycle; Self Recoverable
Harmonic Current Emission	IEC 61000-3-2:2014	Class C (230Vac @ ≥ 50% load)
Voltage Fluctuation & Flicker	IEC 61000-3-3:2013	

1. Criteria A: Normal performance within the specification limits
2. Criteria B: Temporary degradation or loss of function which is self-recoverable
3. Asymmetrical: Common mode (Line to earth)
4. Symmetrical: Differential mode (Line to line)

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0-10V Dimming Specification (except to USCI-200175GLA)

Absolute Maximum Voltage	+/- 20V
Source Current	200uA +/- 50uA
Dimming Input Range	1) 0-10V, 1.2V (+/-0.1V) is 10% of lo_set or 100mA minimum, ≥8.5V is 100% of lo_set. 2) Lower than 1.1V (+/-0.1V) → Dim to off is programmable. 0.1V Hysteresis. 3) Short is 0% (dim to off) 4) Open is 100% 5) See 0-10V Dimming Curve
Dimming Current Tolerance	+/- 10% of maximum setting output current. Ex. lo_set=1000mA, tolerance is +/-100mA.

Default settings of the driver (can be changed with programmer tools, except to USCI-200175GLA by DALI)

Adjustable Output Current (AOC)	700mA	700mA	700mA	1050mA	1500mA	1500mA
0-10V DIM	Enabled (DIM to OFF). Selectable for Min. Dim Level and Min. & Max. Dim Voltage though Tools					
Smart Time DIM	Disabled (Only one function will be enabled between 0-10V & Smart Time Dim)					
Module Temperature Protection (MTP)	Disabled. Settable though programmable tools					
Constant Lumen Output (CLO)	Disabled. Settable though programmable tools.					
End of Life indication (EOL)	Disabled. Settable though programmable tools					
DALI	DALI-2, IEC 62386-101 ,IEC62386-102					

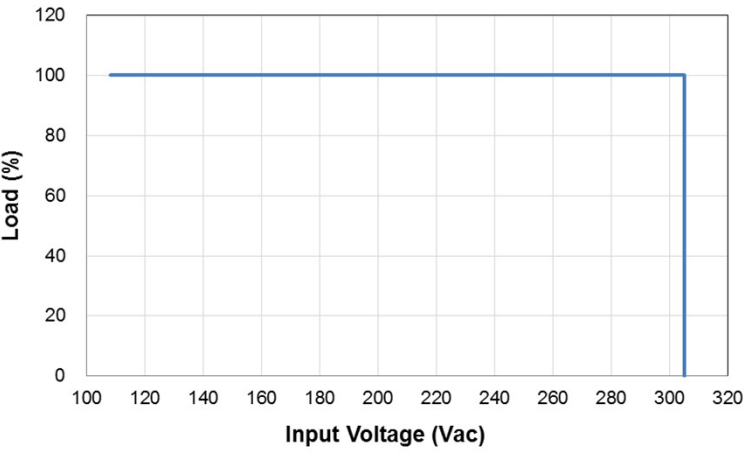
Auxiliary Output Voltage (except to USCI-200175GLA)

+12V Output Range	+12Vdc (10.8 – 13.2Vdc)
+12V Output Current	50mA
Maximum Output Power	0.6W

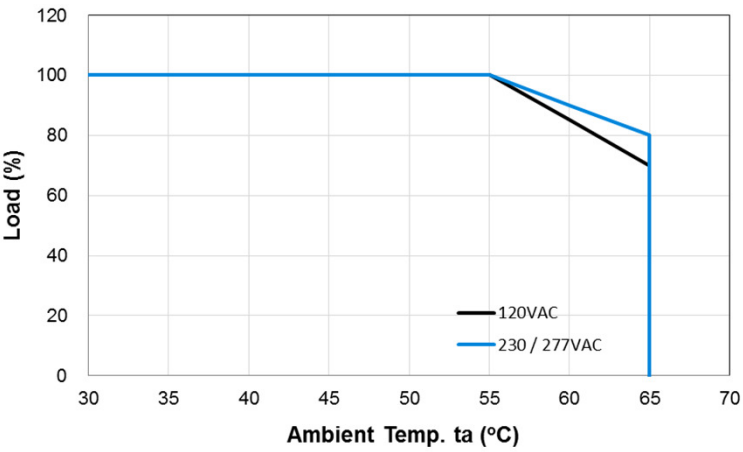
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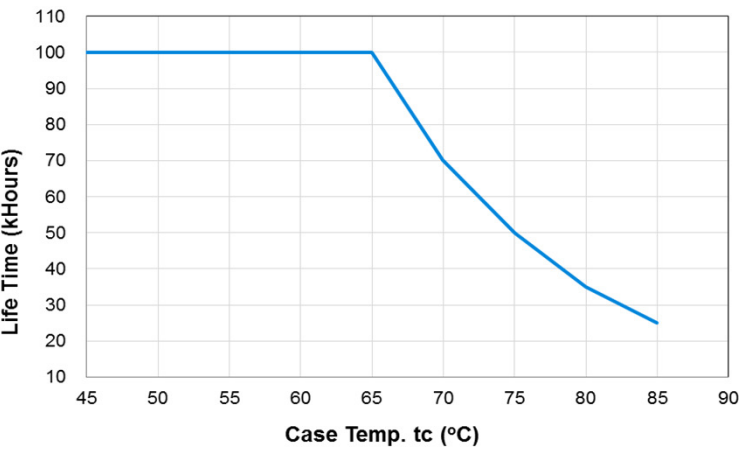
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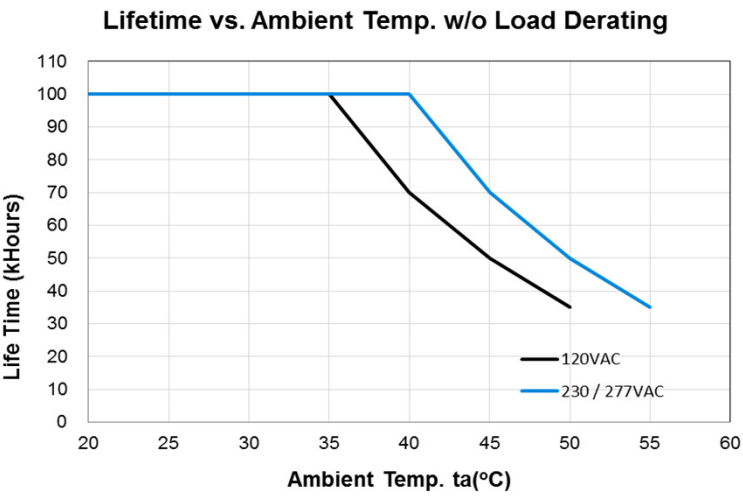
• OUTPUT LOAD VS AMBIENT TEMPERATURE



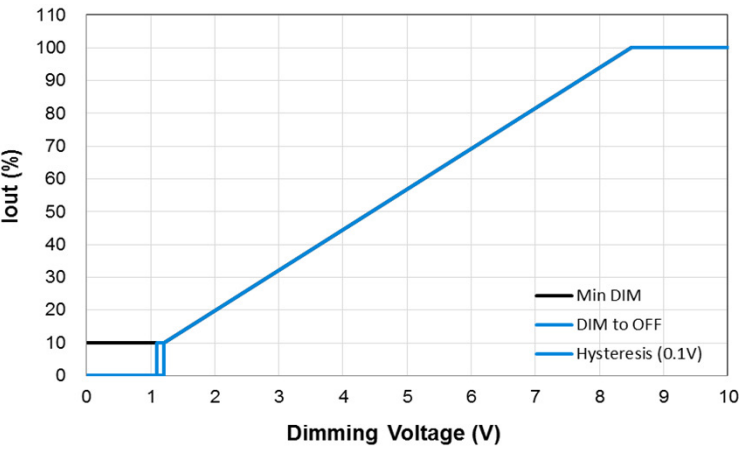
• LIFETIME VS CASE TEMPERATURE



• LIFETIME VS AMBIENT TEMPERATURE



• DIMMING CURVE

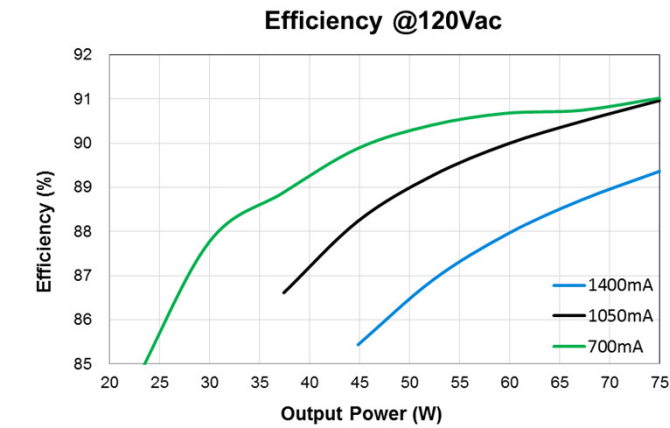


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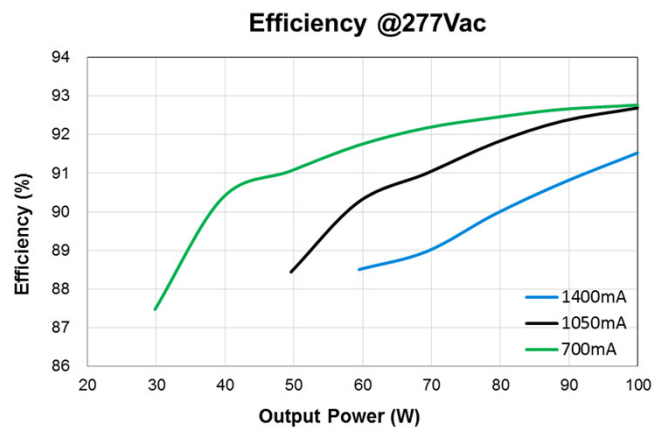
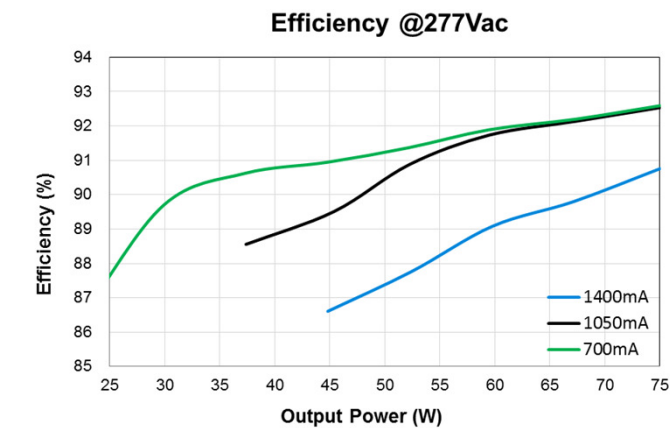
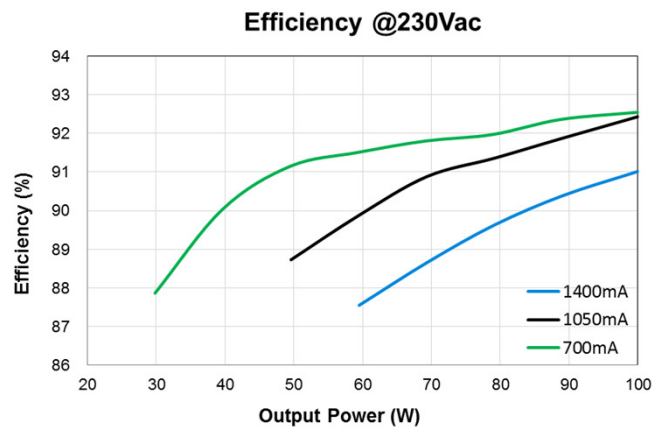
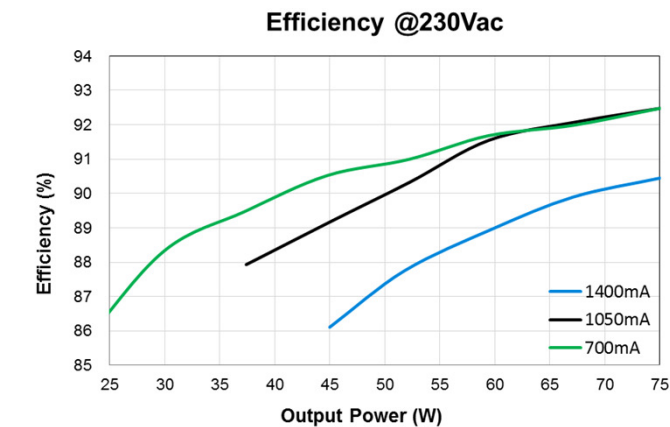
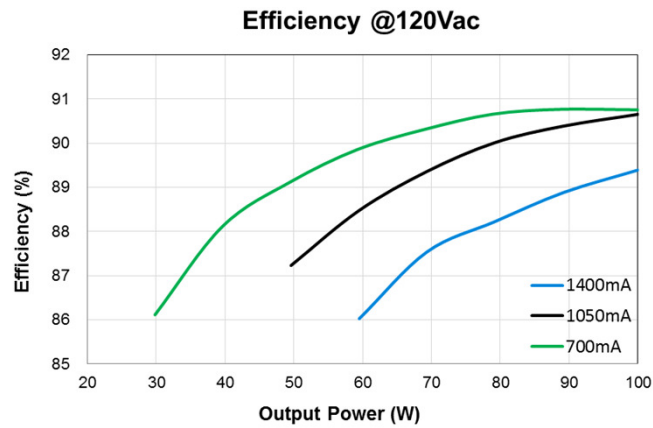
USCI-PRO Series

• EFFICIENCY versus OUTPUT POWER

USCI-075140GA – 75W



USCI-100140GA – 100W

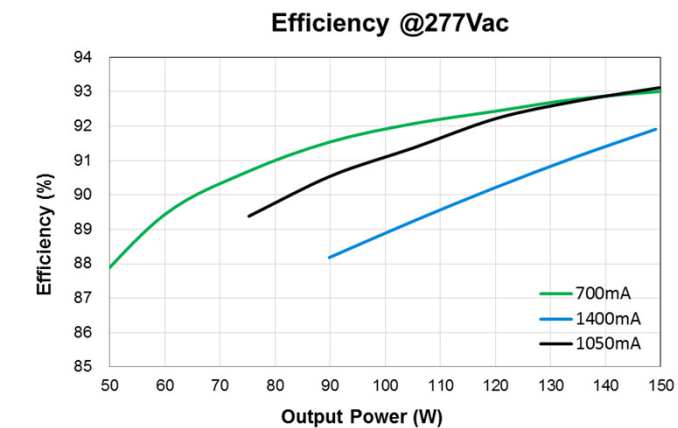
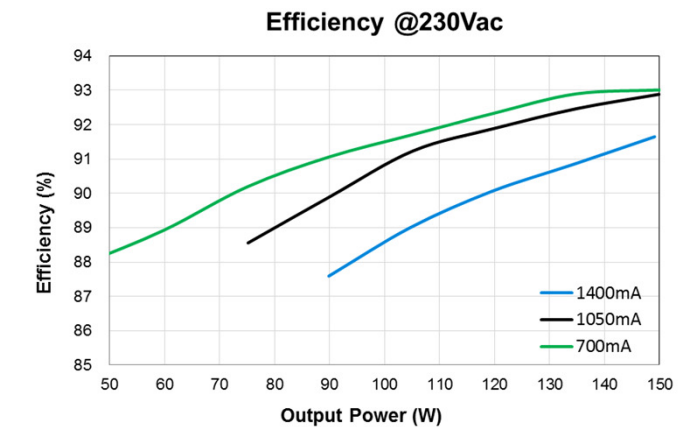
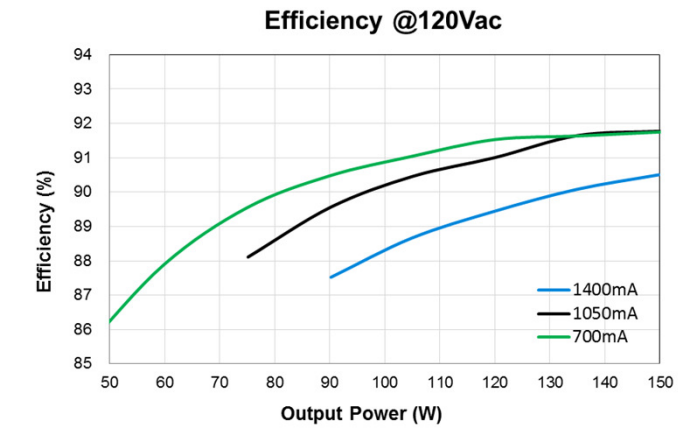


LED Drivers / LED Control Gear

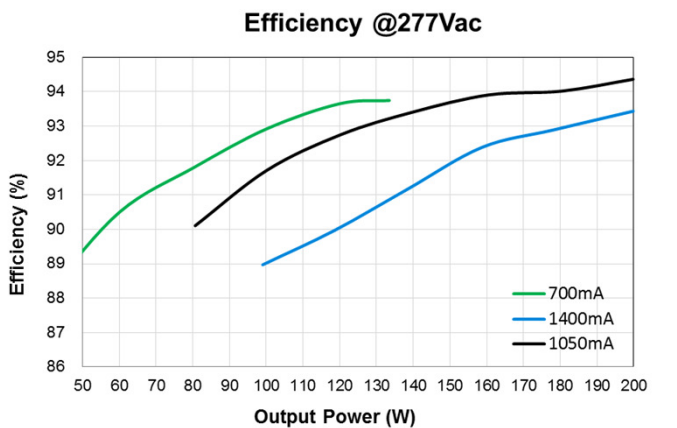
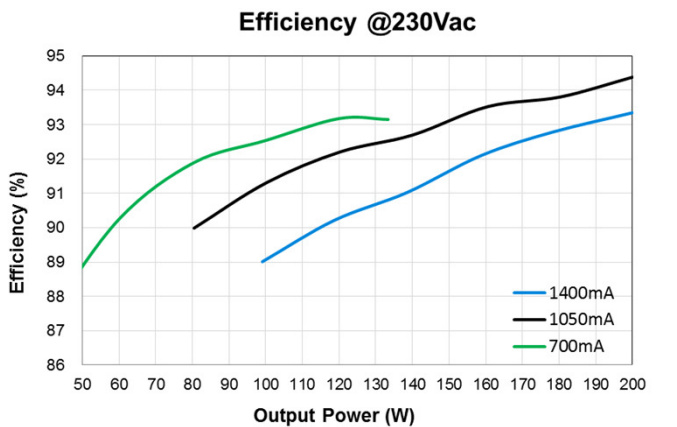
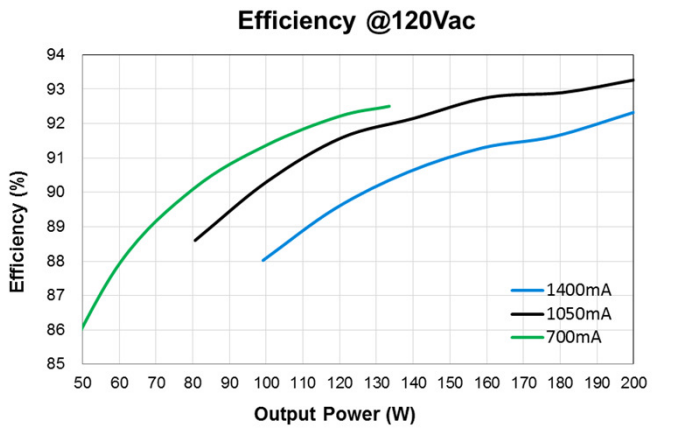
USCI-PRO Series

• **EFFICIENCY** versus **OUTPUT POWER**

USCI-150140GC – 150W



USCI-200140GA – 200W

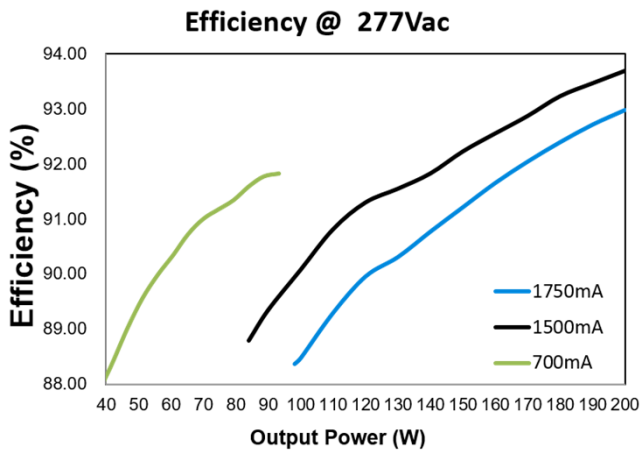
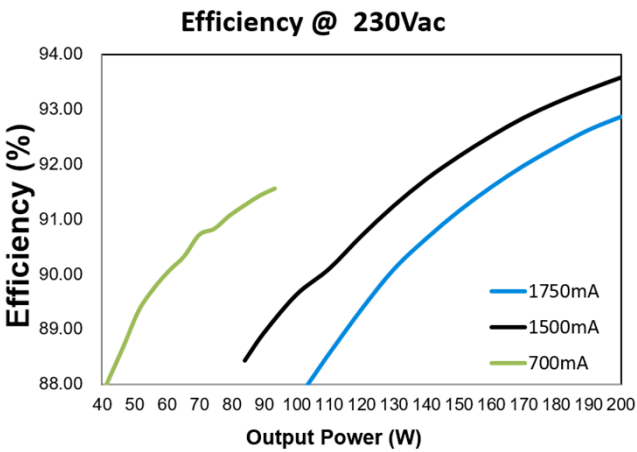
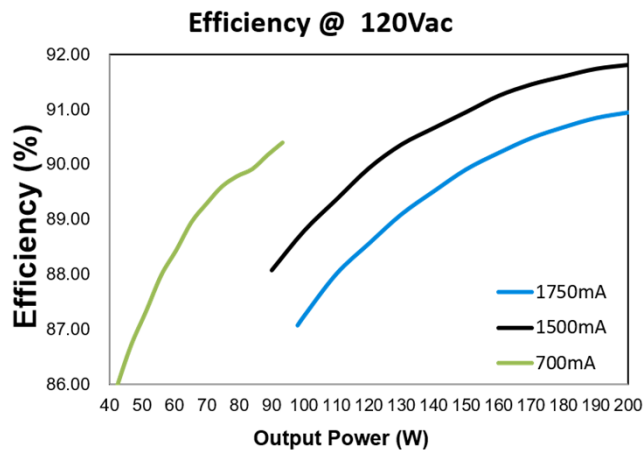


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• EFFICIENCY versus OUTPUT POWER

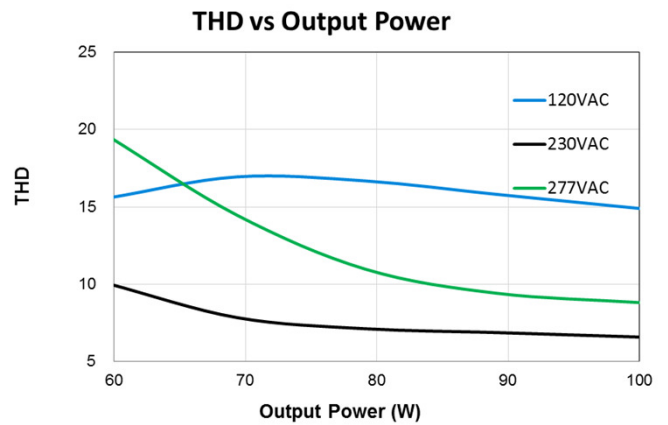
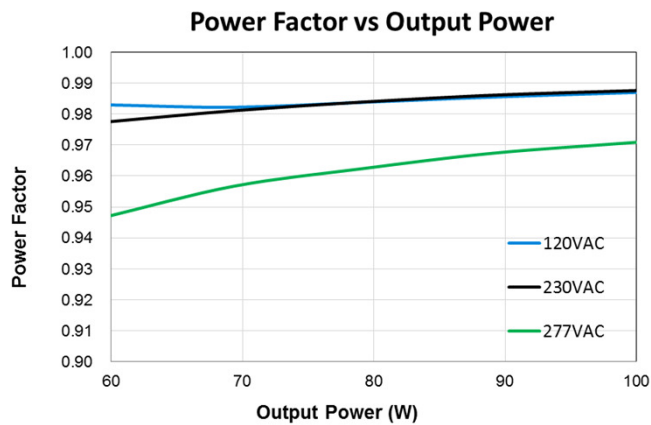
USCI-200175GA/GLA – 200W



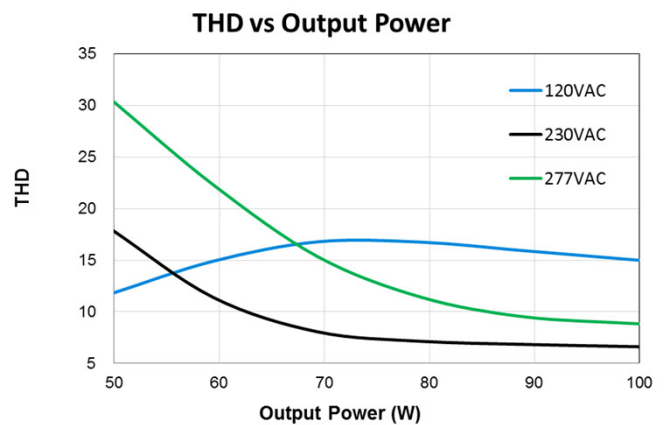
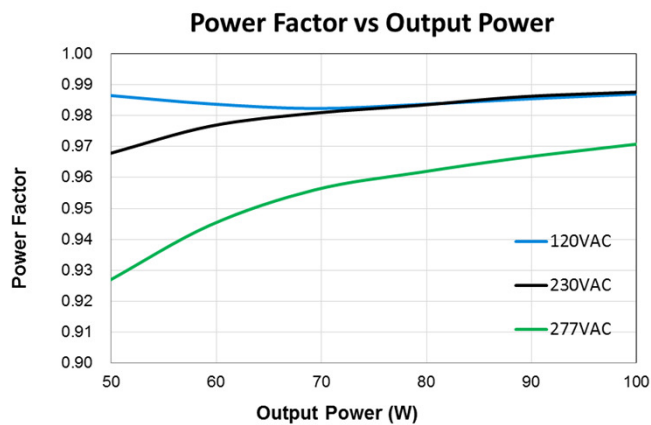
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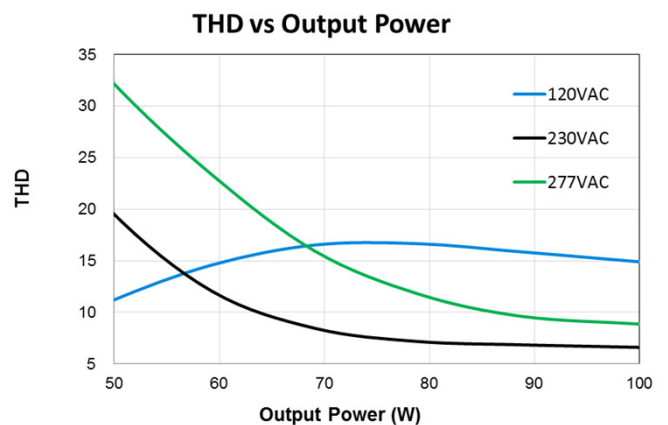
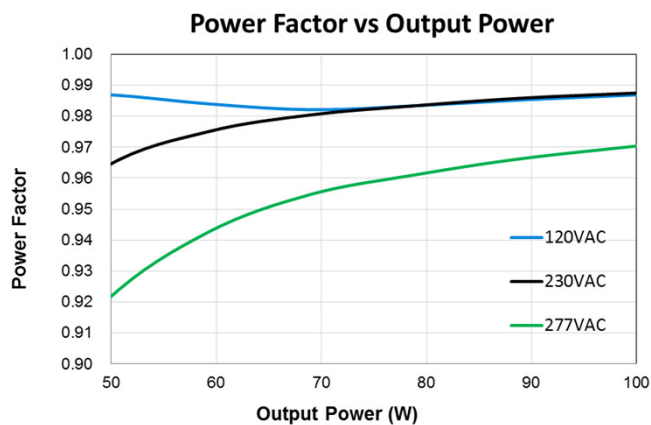
- POWER FACTOR versus OUTPUT POWER
- TOTAL HARMONIC DISTORTION versus OUTPUT POWER
- USCI-100140GA – 1400mA



- USCI-100140GA – 1050mA



- USCI-100140GA – 700mA

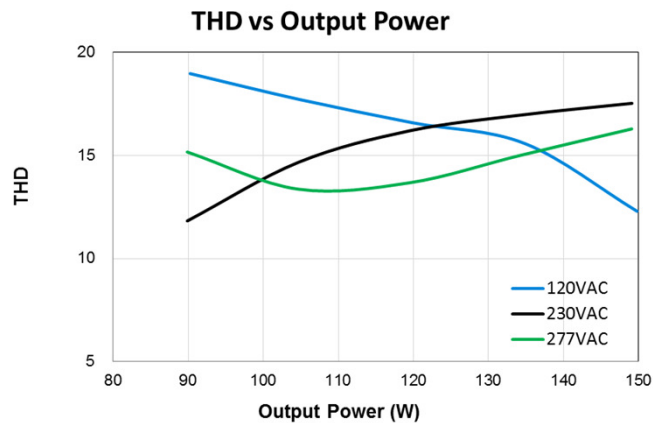
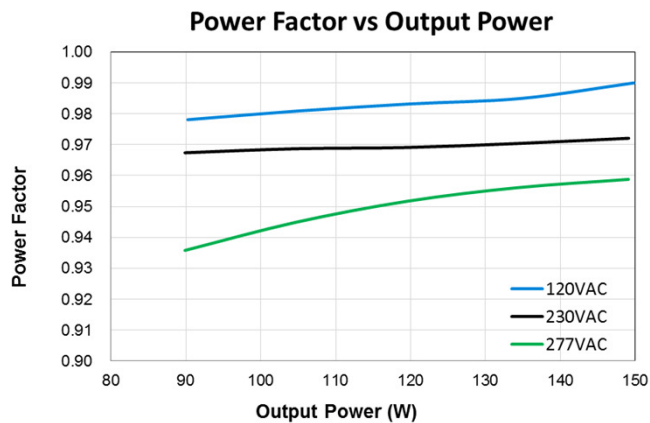


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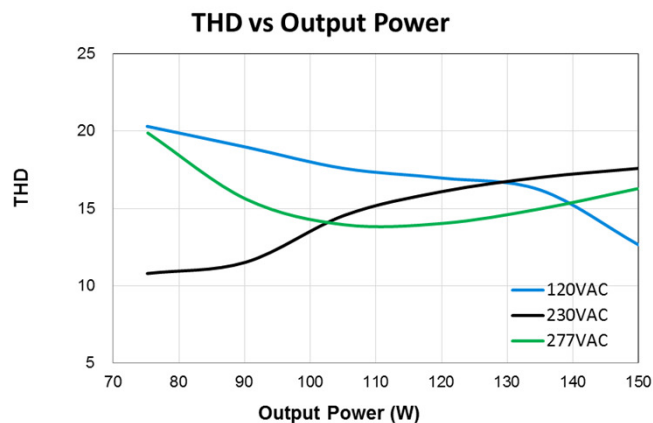
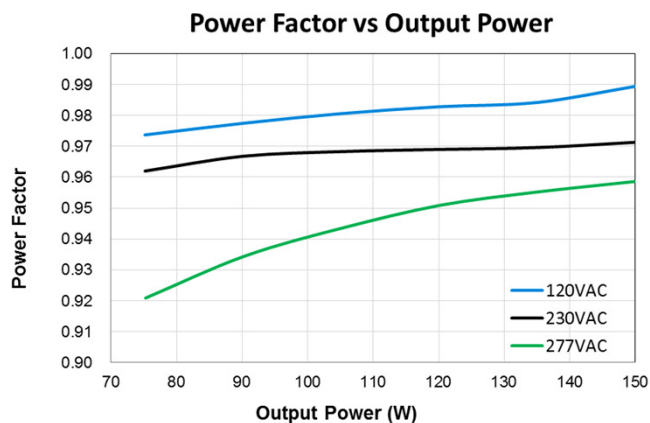
USCI-PRO Series

- POWER FACTOR versus OUTPUT POWER
- TOTAL HARMONIC DISTORTION versus OUTPUT POWER

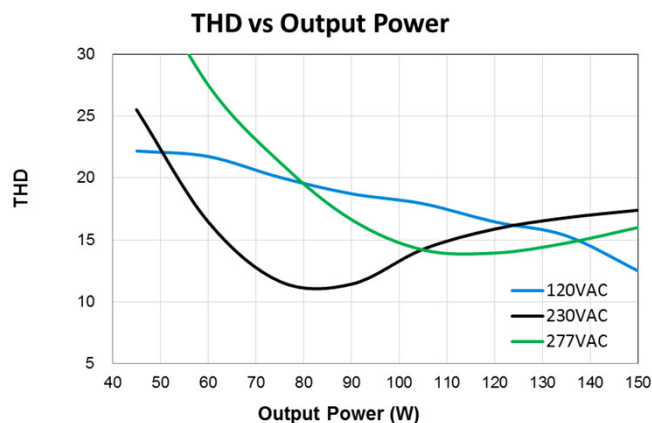
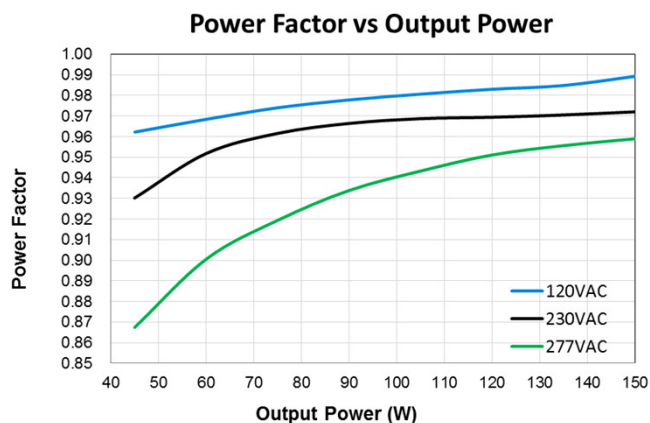
USCI-150140GC – 1400mA



USCI-150140GC – 1050mA



USCI-150140GC – 700mA

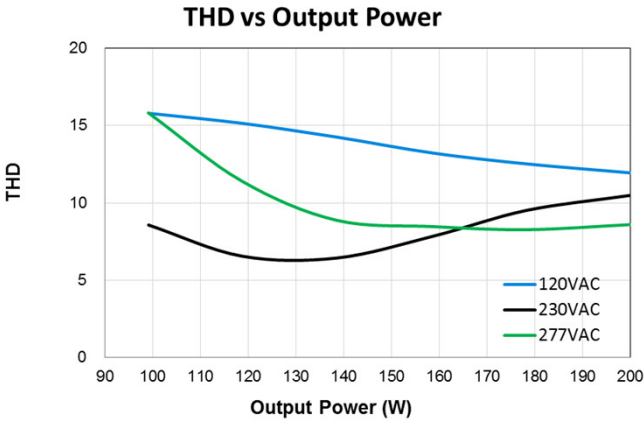
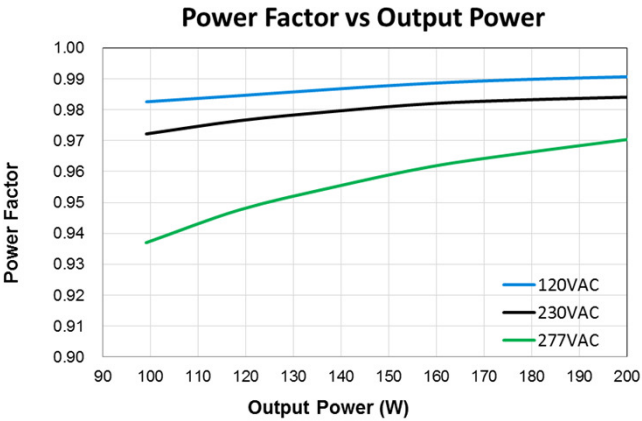


LED Drivers / LED Control Gear

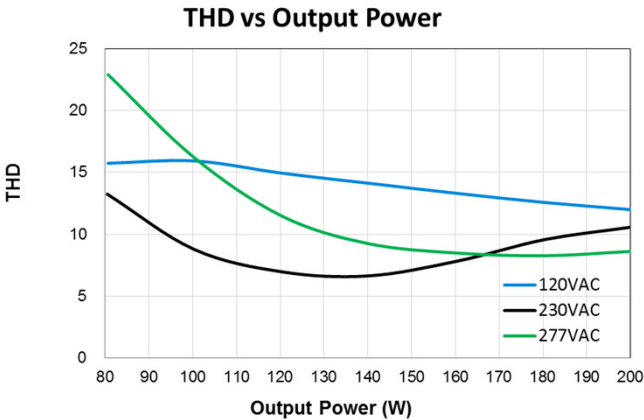
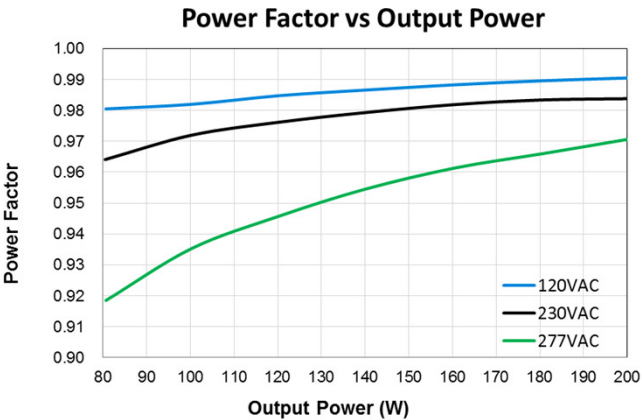
USCI-PRO Series

- POWER FACTOR versus OUTPUT POWER
- TOTAL HARMONIC DISTORTION versus OUTPUT POWER

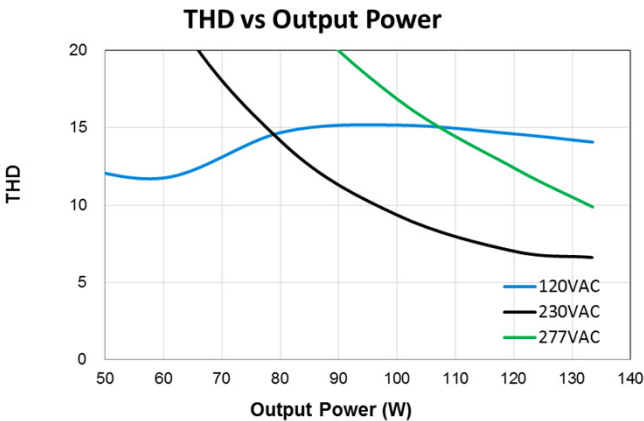
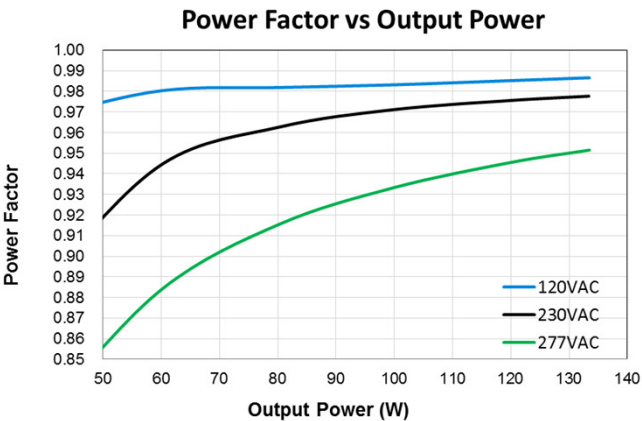
USCI-200140GA – 1400mA



USCI-200140GA – 1050mA



USCI-200140GA – 700mA



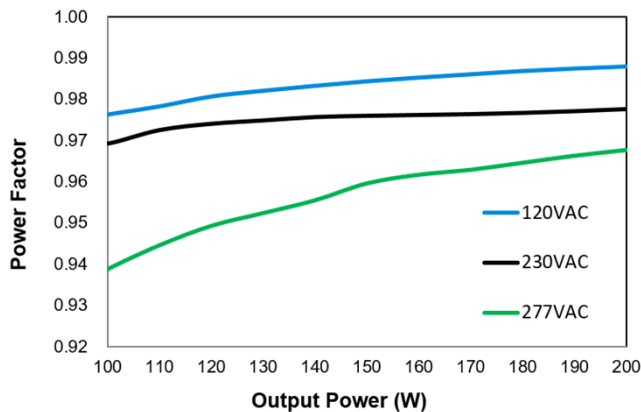
LED Drivers / LED Control Gear

USCI-PRO Series

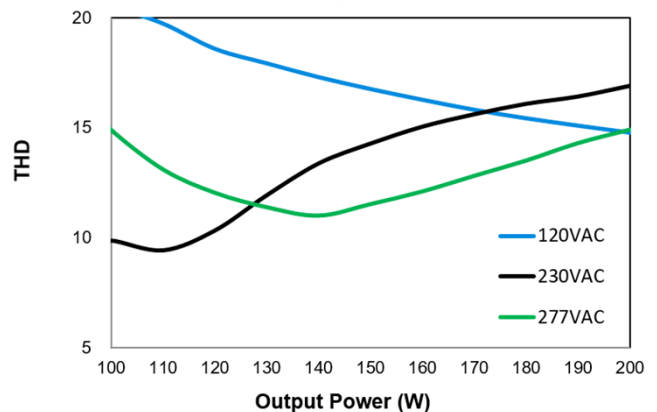
- POWER FACTOR versus OUTPUT POWER
- TOTAL HARMONIC DISTORTION versus OUTPUT POWER

USCI-200175GA /GLA – 1750mA

Power Factor vs Output Power

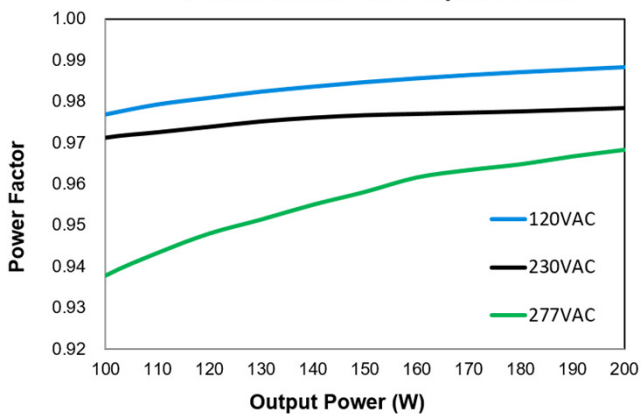


THD vs Output Power

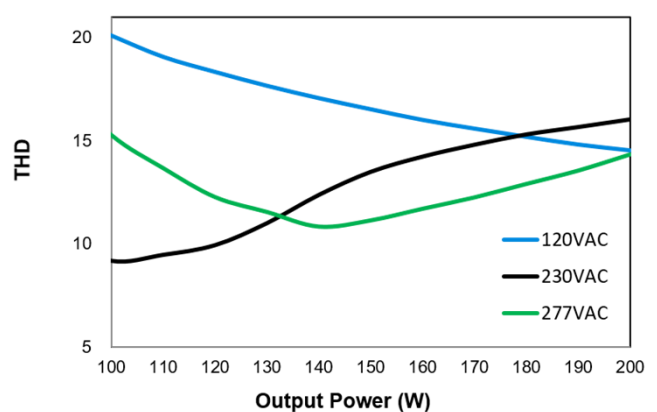


USCI-200175GA /GLA – 1500mA

Power Factor vs Output Power

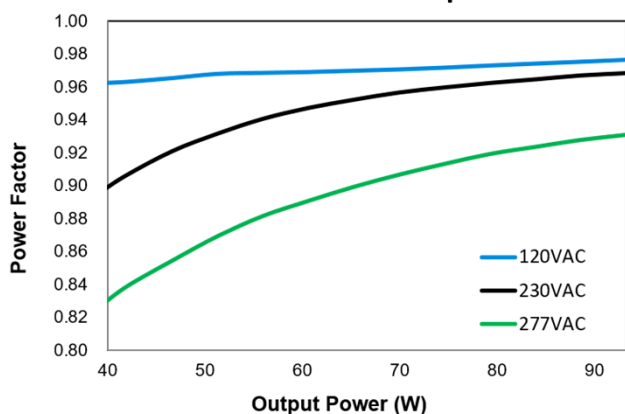


THD vs Output Power

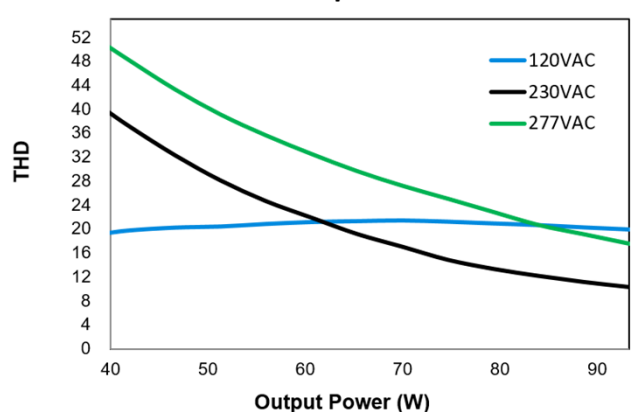


USCI-200175GA /GLA – 700mA

Power Factor vs Output Power



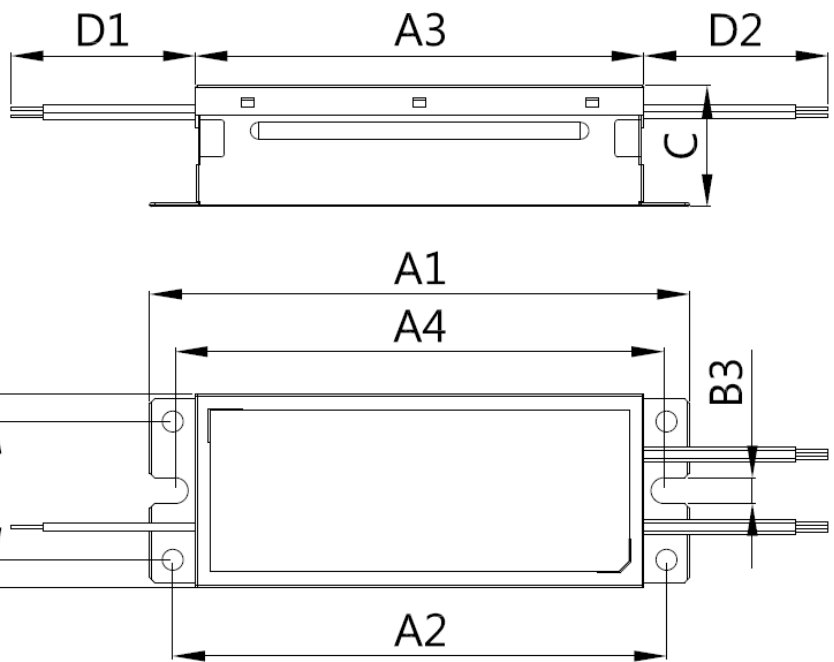
THD vs Output Power



LED Drivers / LED Control Gear

USCI-PRO Series

- Dimensions
- 75W / 100W / 150W / 200W



Length (A1):
 9.5", 240.5mm (200W/150W)
 6.6", 167.5mm (100W/75W)

Width (B1): 2.36", 60mm

Height (C):
 1.5", 38.0mm (200W/150W)
 1.5", 37.5mm (100W/75W)

Fixing hole distance (A2):
 8.9", 226.0mm (200W/150W)
 6.0", 153.2mm (100W/75W)

Fixing hole distance (B2):
 1.7", 43.0mm (200W/150W)
 1.7", 42.9mm (100W/75W)

Fixing hole distance (B3):
 0.3", 8mm

Fixing hole distance (A4):
 8.9", 226mm (200W/150W)
 6.0", 151.6mm (100W/75W)

Body length (A3):
 8.4", 212mm (200W/150W)
 5.5", 139.2mm (100W/75W)

Input wire (D1): 11.8", 300mm
 Output wire (D2): 11.8", 300mm
 Dimming wire (D2): 11.8", 300mm

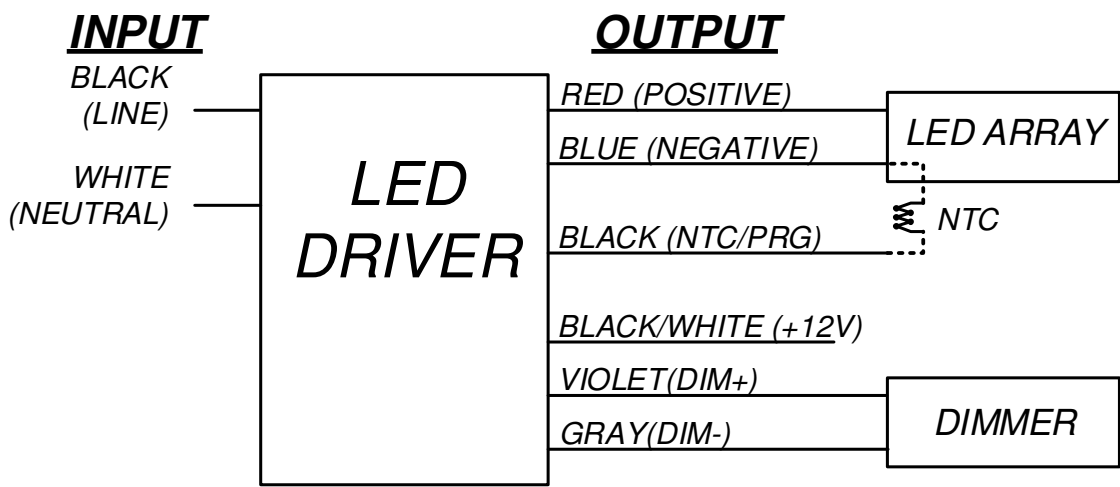
LED Drivers / LED Control Gear

USCI-PRO Series

Wiring Connection

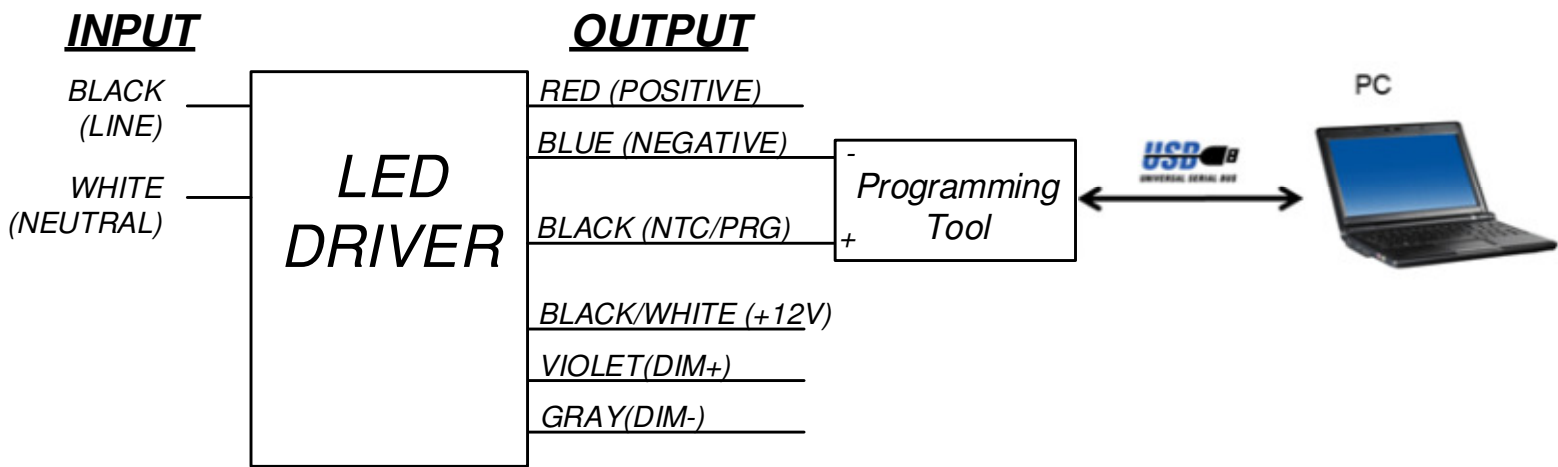
- Module Temperature Protection (MTP)

The LEDs are thermally protected by the driver's NTC (Negative Temperature Coefficient resistor) interface, which ensures the output current will be reduced when a critical temperature is reached. Connect an NTC on the LED module to the LED driver associated wires as shown in the wiring diagram below.



- Programming Setup by NTC/PRG

Programming doesn't require powering up input voltage or connecting the LED Module to the driver



Software and latest version check can be obtained at :
<http://www.deltaww.com/Products/CategoryListT1.aspx?CID=0103&hl=zh-TW>

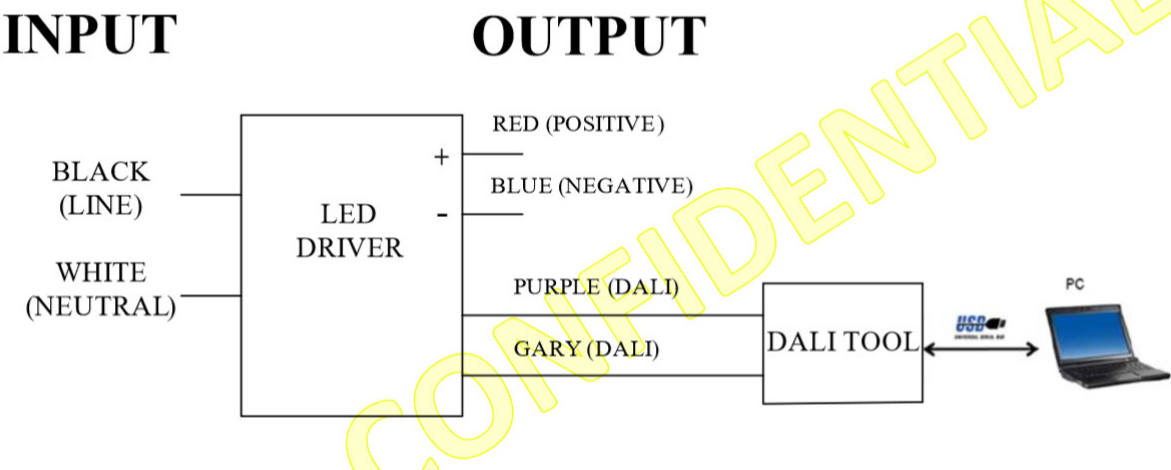
LED Drivers / LED Control Gear

USCI-PRO Series

Wiring Connection

- Programming Setup and control by DALI interface
- Programming require powering up input voltage or connecting the LED Module to the driver

Programming Setup



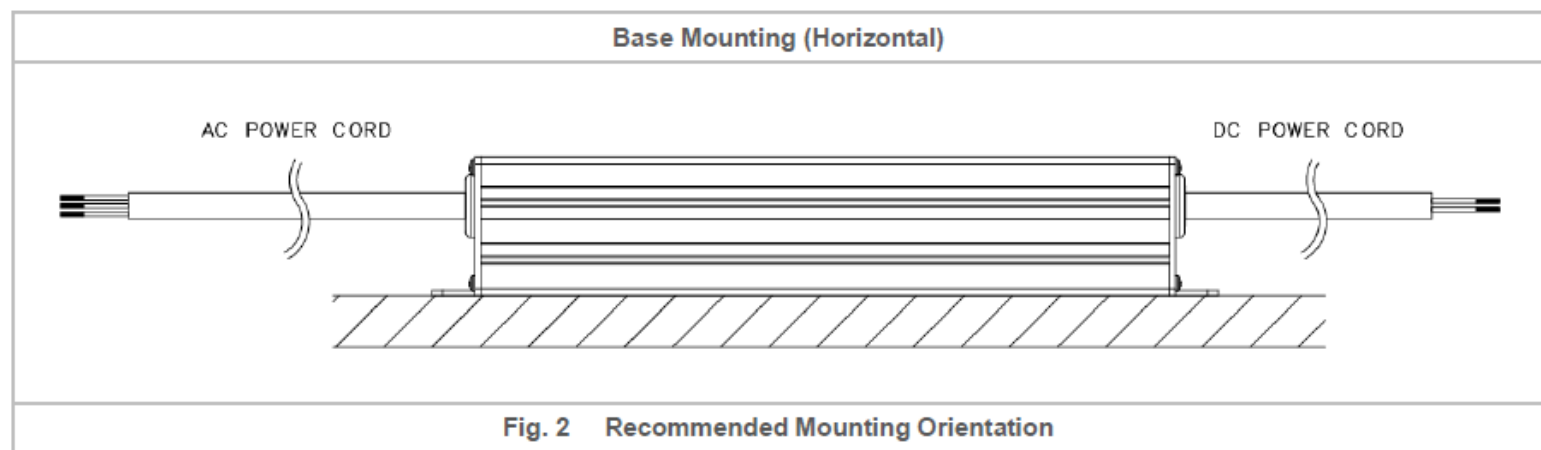
Software and latest version check can be obtained at :
<http://www.deltaww.com/Products/CategoryListT1.aspx?CID=0103&hl=zh-TW>

LED Drivers / LED Control Gear

USCI-PRO Series

Assembly & Installation

The device is not recommended to be placed on low thermal conductive surfaces. For example, plastics.



Safety Instructions

- ALWAYS switch mains of input power OFF before connecting and disconnecting the input voltage to the device. If mains are not turned OFF, there is risk of explosion / severe damage.
- To guarantee sufficient convection cooling, keep a distance of 50mm above and lateral distance to other units.
- DO NOT insert any objects into the device.
- When the PE terminal is not connected, the device must be installed on a metal plate with PE connection.
- The current rating for the output cable must be rated higher than or equal to the output current of the power supply. Please refer to the product specifications.
- For device with dimming function, always ensure the dimming control is working properly. "Dimming 0-10V" shall be insulated from AC mains by reinforced insulation.

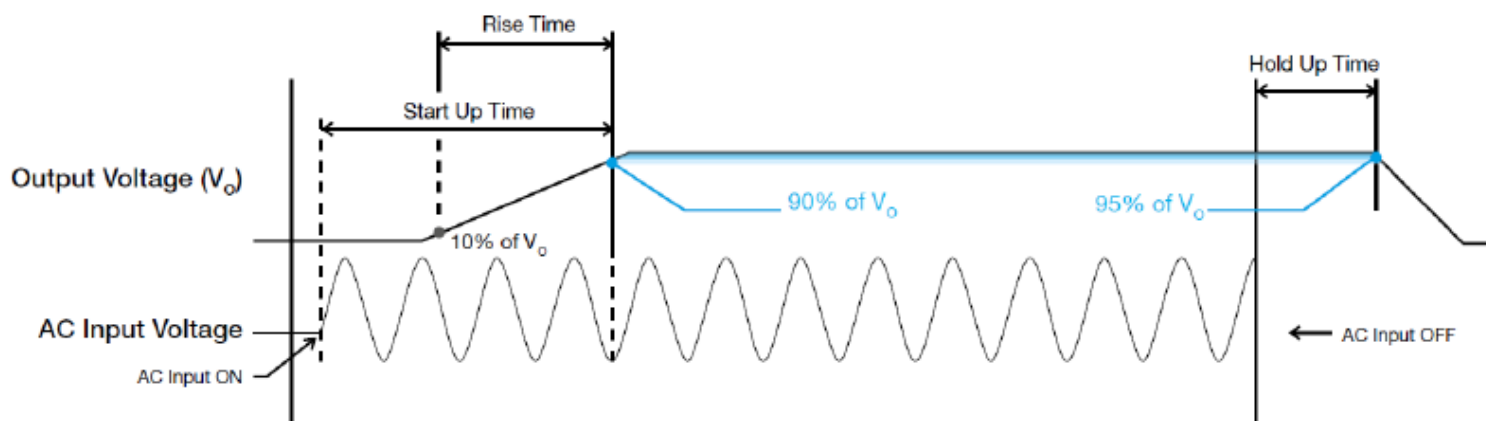
LED Drivers / LED Control Gear

USCI-PRO Series

Functions

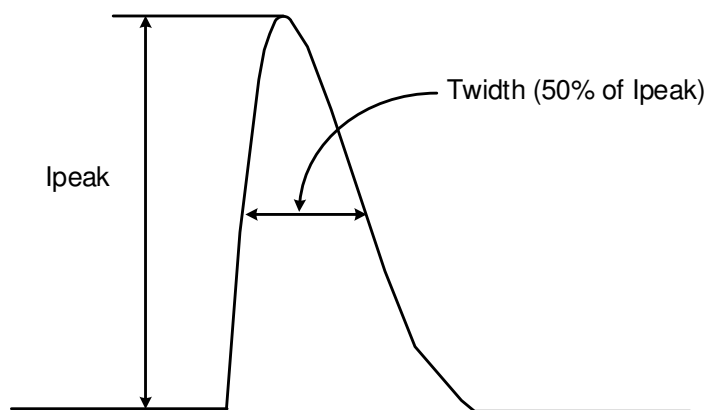
- **Start-up Time**
The time required for the output voltage to reach 90% of its set value, after the input voltage is applied.
- **Rise Time**
The time required for the output voltage to change from 10% to 90% of its set value.
- **Hold-up Time**
Hold up time is the time when the AC input collapses and output voltage retains regulation for a certain period of time. The time required for the output to reach 95% of its set value, after the input voltage is removed.

■ Graph illustrating the Start-up Time, Rise Time, and Hold-up Time



Inrush Current

Inrush current is the peak, instantaneous, input current measured and, occurs when the input voltage is first applied. For AC input voltages, the maximum peak value of inrush current will occur during the first half cycle of the applied AC voltage. This peak value decreases exponentially during subsequent cycles of AC voltage.



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