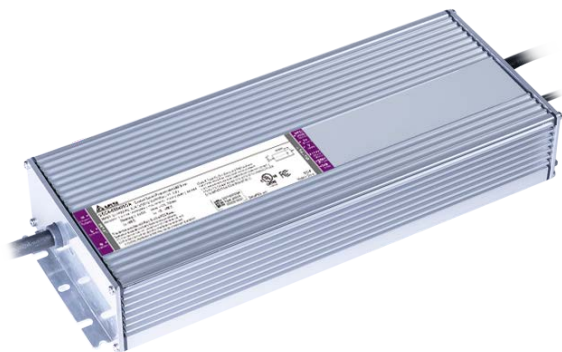


LED Driver

USC4 PRO



Safety Standards



USC4 PRO

Highlights & Features

- Wide range constant current design
- Universal AC input voltage from 277-480Vac
- High efficiency up to 94%
- Wide operating temperature range -40°C to +55°C
- With IP66/IP67 protection from most outdoor applications
- Build-in Active PFC and confirm to harmonic current IEC/EN 61000-3-2, Class C
- Adjustable constant current level through programmable tool
- Common mode 6kV/ differential mode 6kV surge immunity
- Suitable for Wet location
- 0-10V dimming available

Dimensions (L x W x H):

USC4-320280GA	240 x 100 x 38 mm (9.45 x 3.94 x 1.50 inch)
USC4-600400GA	308.4x116.7x50.8 mm (12.14"x4.60"x2.00" inch)

General Description

Delta LED drivers come in different series to suit different application needs. The USC4 PRO series features program output current level. All the models come in full corrosion resistance aluminum casing and major international safety certifications. USC4 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 outdoor LED lighting conditions. Featuring high surge immunity (CM: 6kV, DM: 6kV) and complying to IP66/IP67 make Delta USC4 PRO series an essential part of an energy efficient LED lighting power solution for both indoor and outdoor applications.

Model Information

USC4 PRO LED Driver

Model Number	Input Voltage Range	Rated Output Voltage	Program Output Current Range	Constant Power Current Range
USC4-320280GA	277-480Vac Typical	75-152Vdc	1400-2800mA	2100-2800mA
USC4-600400GA	249-528Vac Range	150-300Vdc	1000-4000mA	2000-4000mA

Model Numbering

US	C	4	- □□□	□□□	G	A
Safety Approval UL,	Constant current	Outdoor	Output Power 320:320W 600:600W	Max Output Current 280 – 2800mA 400 – 4000mA	Programmable output current	Variable A or C: 0-10V DIM & +12V/100mA

LED Driver

USC4 PRO

Specifications

Model Number	USC4-320280GA	USC4-600400GA
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Input Ratings / Characteristics

Normal Input Voltage	277-480Vac	
Input Voltage Range	249-528Vac	
Normal Input Frequency	50-60Hz	
Input Frequency Range	47-63Hz	
Max. Input Current	277Vac	1.5A
Efficiency 1)	277Vac	91.5% @ 2.8A
	347Vac	93.5% @ 2.8A
	480Vac	93.5% @ 2.8A
Inrush Current (Apk / 50% - μ S @ Cold Start)	277Vac	60A/250uS
	347Vac	60A/250uS
	480Vac	80A/250uS
Inrush current is measured at peak of the corresponding line voltage. Source impedance per NEMA 410.		
Power Factor	> 0.9 @ 50% Load , 277-480Vac >=0.95 @ Full Load , 277-480Vac	
Total Harmonic Distortion	<20%@ Load >50% , 277-480Vac	
Leakage Current	< 0.75mArms @ 480Vac	
Standby Power (Dim to off)		<0.5W @ 277Vac
		<0.6W @ 277Vac
	1W	<0.7W @ 480Vac
Input Over-Voltage	N/A	

1) 100% Load (typical) and tested after 30 minutes warm up.

Output Ratings / Characteristics

Output Voltage Range	75-152Vdc	150-300Vdc
Max. No Load Output Voltage	170V	350V
Output Power Range	320W	600W
Output Constant power range	2100 - 2800mA	2000 - 4000mA
Adjustable Output Current (AOC)	1050 - 2800mA	1000 - 4000mA
	With steps of 1mA, configurable via software	
Minimum Output Current	280mA (Min dim level)	140mA (Min dim level)
Current Accuracy	$\pm 5\%$ (@ Typical output current range)	
Line Regulation	$\pm 1\%$ (@ 277-480Vac input)	
Load Regulation	$\pm 3\%$ (@ Min-Max output voltage)	
Output Current Ripple	<10% (ripple = peak-average/average) at full load	
Start-up Time	1000ms max. @ 277-480Vac (full load)	1000ms max. @ 277-480Vac (full load)
Hold-up Time	16ms typ. @ 277-480Vac (full load)	

Mechanical

Casing	Aluminum, Color : Natural	
Dimensions (L x W x H) [mm]	240.0 x 100.0 x 38.0	308.4x116.7x50.8
[inch]	9.45 x 3.94 x 1.50	12.14"x4.60"x2.00"
Unit Weight [kg]	1.85	3.05
[lb]	4.07	6.72
Cooling System	Convection	
Input Cable	Line: Brown, Neural: Blue, PE: Yellow/Green, Cable Length 300mm	Line: Black, Neural: White, PE: Yellow/Green, Cable Length 300mm
Output Cable	Positive: Brown, Negative: Blue, NTC/PRG: Black, Cable Length 300mm	
Dimming Cable	Dim(+): Violet, Dim(-): Gray, +12V: Black/White, Cable Length 300mm	
Noise (30cm distance)	Sound Pressure Level (SPL) < 24dBA class A	

LED Driver

USC4 PRO

Model Number	USC4-320280GA	USC4-600400GA
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Environment

Ambient Temperature	Operating	-40°C to +55°C	-40°C to +55°C
	Storage	-40°C to +85°C	
Maximum Case Temperature		+85°C	+80°C
Relative Humidity	Operating	10 to 90% RH (Non-Condensing)	
	Storage	5 to 95% RH (Non-Condensing)	
Environmental Locations		Wet, location	

Protections

Over Voltage	170Vrms	350Vrms
	Auto-Recovery when the fault is removed	
Overload / Overcurrent	Reduce output current. Auto-Recovery when the fault is removed	
Short Circuit	Auto-Recovery when the fault is removed	
Over Temperature	Reduce output current. Auto-Recovery when the fault is removed	
Ingress Protection Classification	IP66/IP67	
Suitable for Luminaires Class	Class I. Insulation Class according to IEC 60598	

Reliability Data

Lifetime	50,000 hours at case temp. tc & full load. Refer to "Lifetime VS Case Temperature"
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Safety Standards / Directives

Electrical Safety	UL 8750, UL class P			
CE	NA			
Material and Parts	RoHS Directive 2011/65/EU Compliant			
Galvanic Isolation	Mains (Input)	Output/PROG	DIM ± & +12V	Earth (Case)
Mains (Input)	N/A	2xU+1kV	2xU+1kV	2xU+1kV
Output/PROG	2xU+1kV	N/A	2xU+1kV	2xU+1kV
DIM ± & +12V	2xU+1kV	2xU+1kV	N/A	2xU+1kV
Earth (Case)	2xU+1kV	2xU+1kV	2xU+1kV	N/A

EMC Compliance

Electromagnetic Compliance	FCC Title 47 Part 15 Class A
Surge	Common Mode: 6kV/12ohm; Differential Mode: 6kV/2ohm, 1.2/50 μs Combination Wave ANSI C82.77-5 CAT C low

LED Driver

USC4 PRO

Model Number	USC4-320280GA	USC4-600400GA
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0-10V Dimming Specification

Absolute Maximum Voltage	± 20V
Source Current	200μA ± 50μA
Dimming Input Range	1) 0-10V, 1.2V (± 0.1V) is 10% of I_{o_set} or 100mA minimum, ≥ 8.5V is 100% of I_{o_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. I_{o_set} : 1000mA, tolerance is ± 100mA.

Default Settings of the Driver (can be changed with programmable tools)

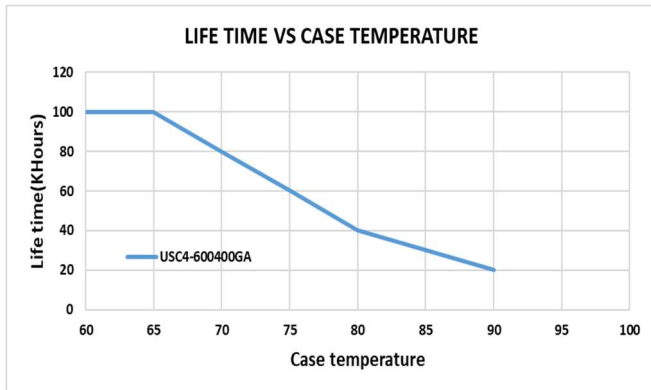
Adjustable Output Current (AOC)	2100mA	2000mA
0-10V DIM	Enabled (DIM to OFF). Selectable for Min. Dim Level and Min. & Max. Dim Voltage though tools	
Smart Timer DIM	Disabled (Only one function will be enabled between 0-10V & Smart Time Dim)	
Module Temperature Protection (MTP)	Disabled. Settable though programmable tools	
Constant Lumen Output (CLO)	Disabled. Settable though programmable tools.	
End of Life indication (EOL)	Disabled. Settable though programmable tools	
Auxiliary Output Voltage	+12V Output Range	+12Vdc (10.2 – 13.8Vdc)
	+12V Output Current	100mA 200mA
	Maximum Output Power	1.2W 2.4W

LED Driver

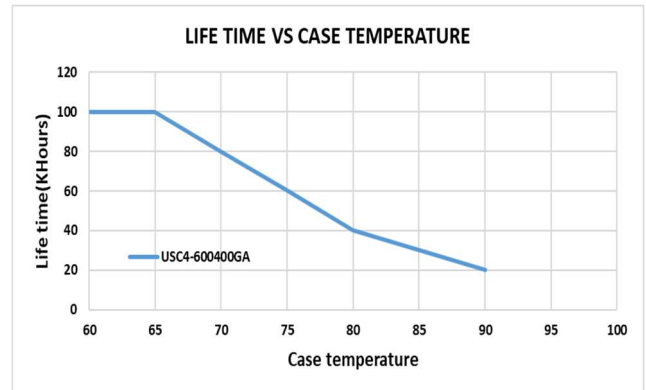
USC4 PRO

Lifetime VS Case Temperature

USC4-320280GA

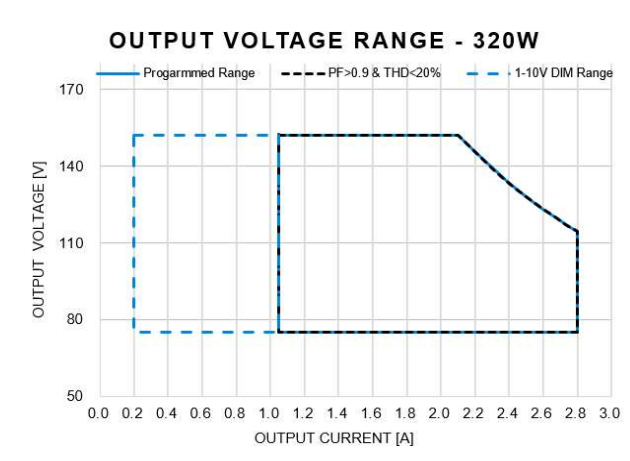


USC4-600400GA

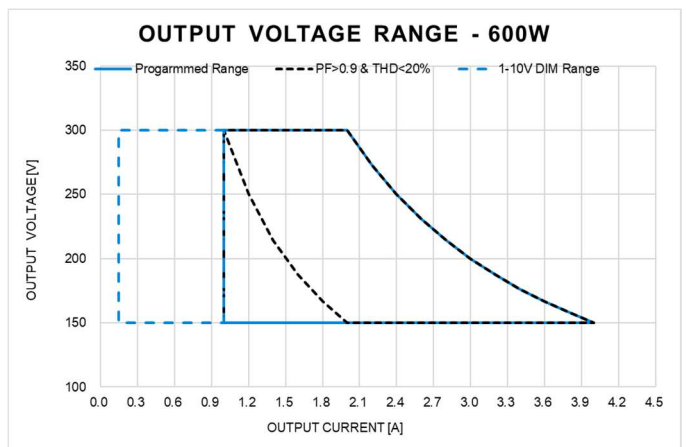


Operation Window for programing

USC4-320280GA

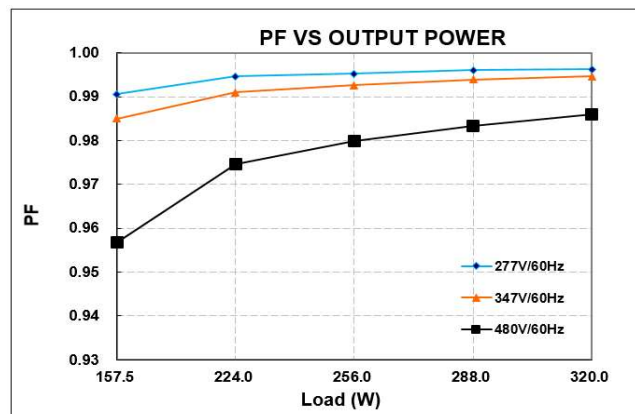


USC4-600400GA

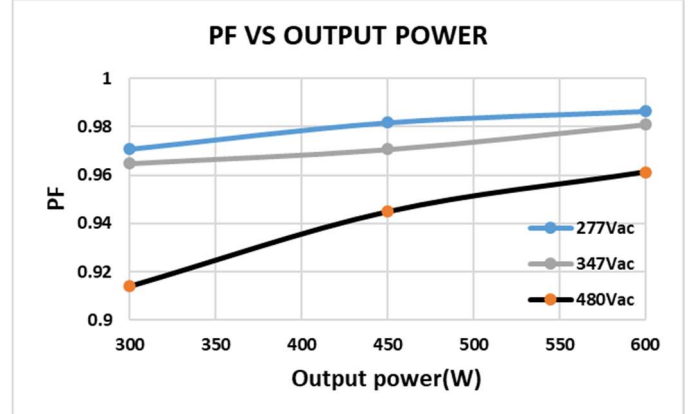


Power Factor VS Output Power

USC4-320280GA



USC4-600400GA

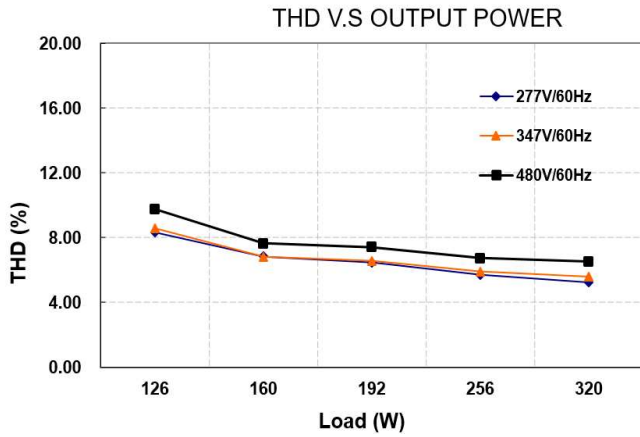


LED Driver

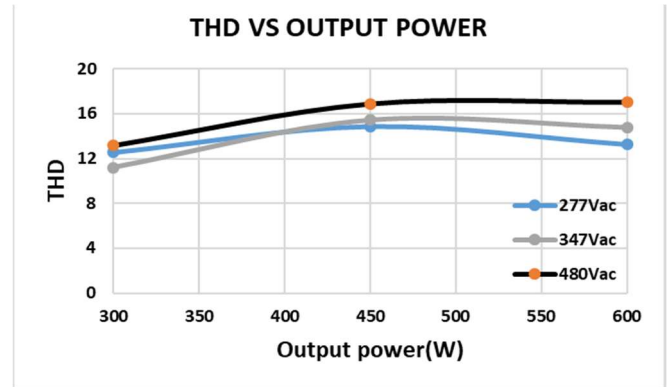
USC4 PRO

Total Harmonic Distortion VS Output Power

USC4-320280GA

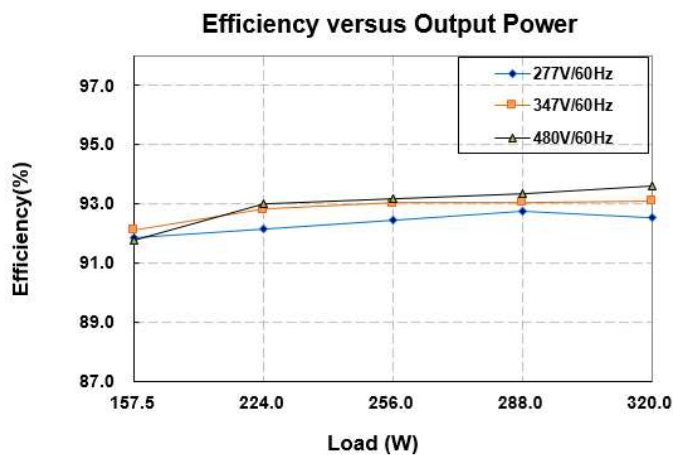


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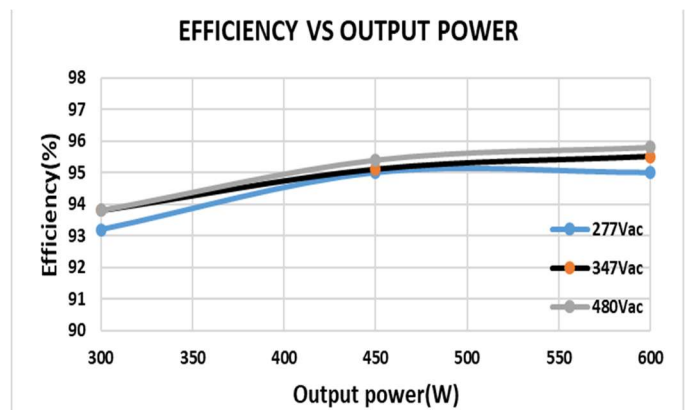


Efficiency VS Output Power

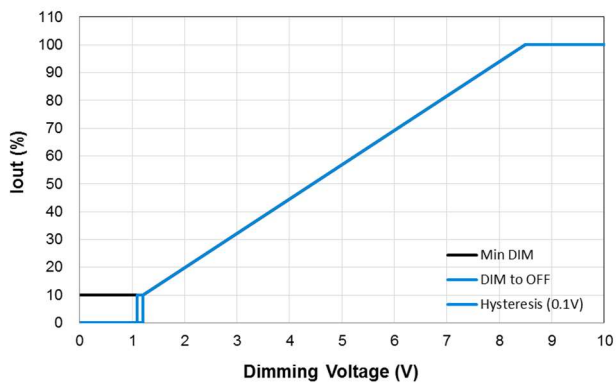
USC4-320280GA



USC4-600400GA



DIMMING CURVE



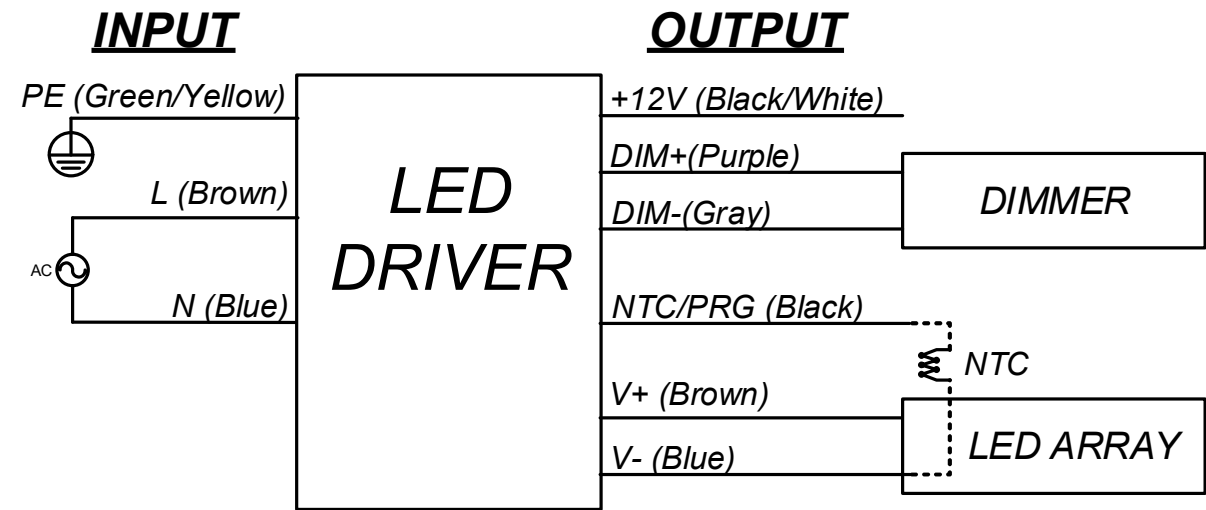
LED Driver

USC4 PRO

Wiring Connection

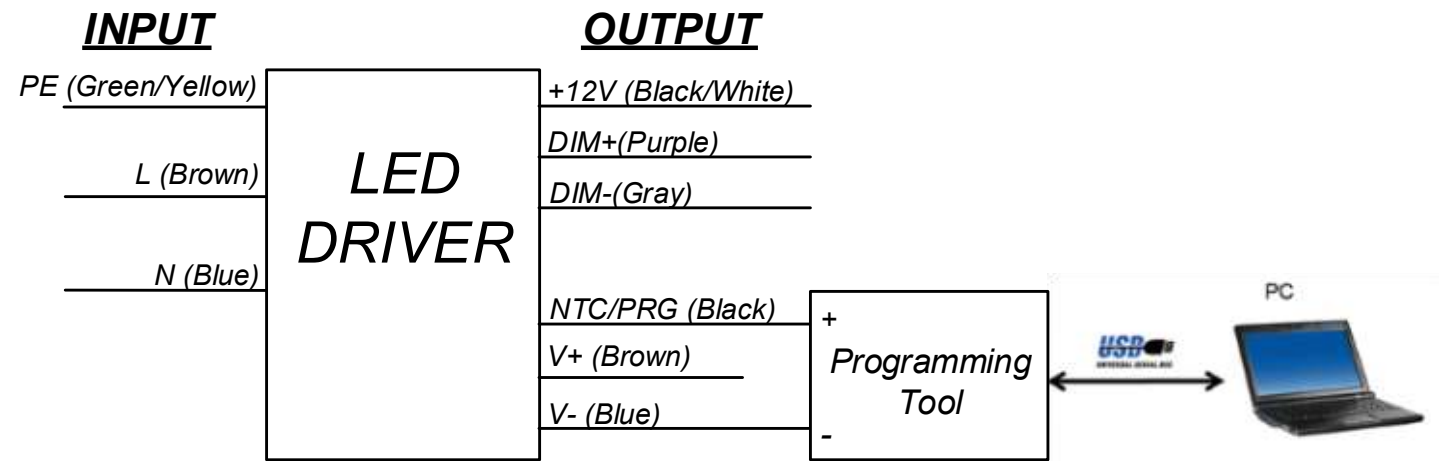
- Module Temperature Protection (MTP)

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

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

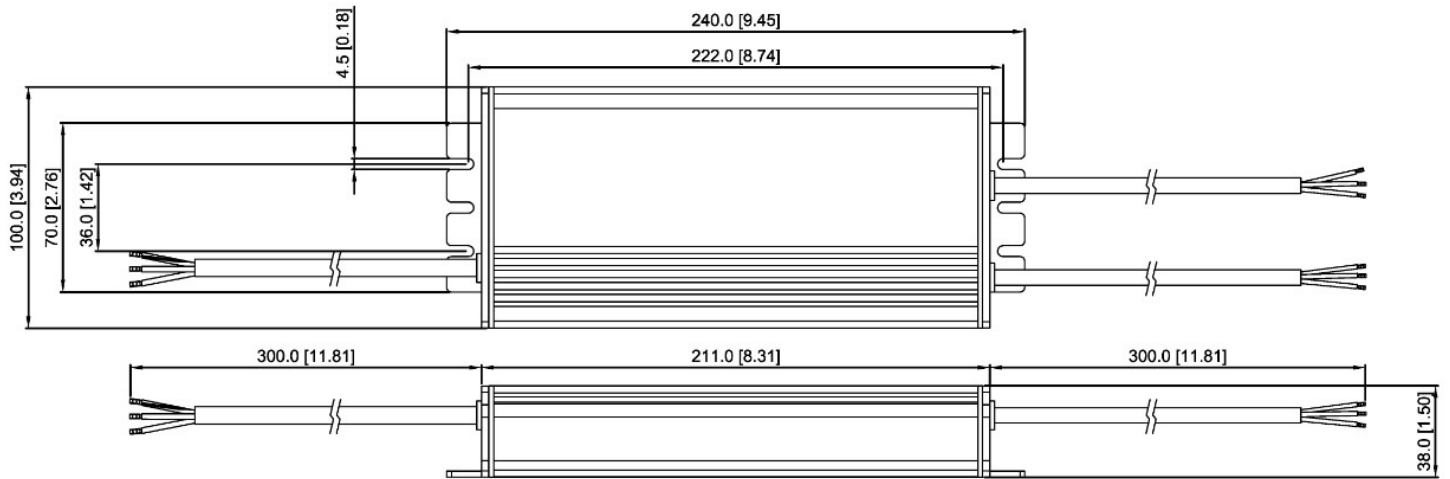


LED Driver

USC4 PRO

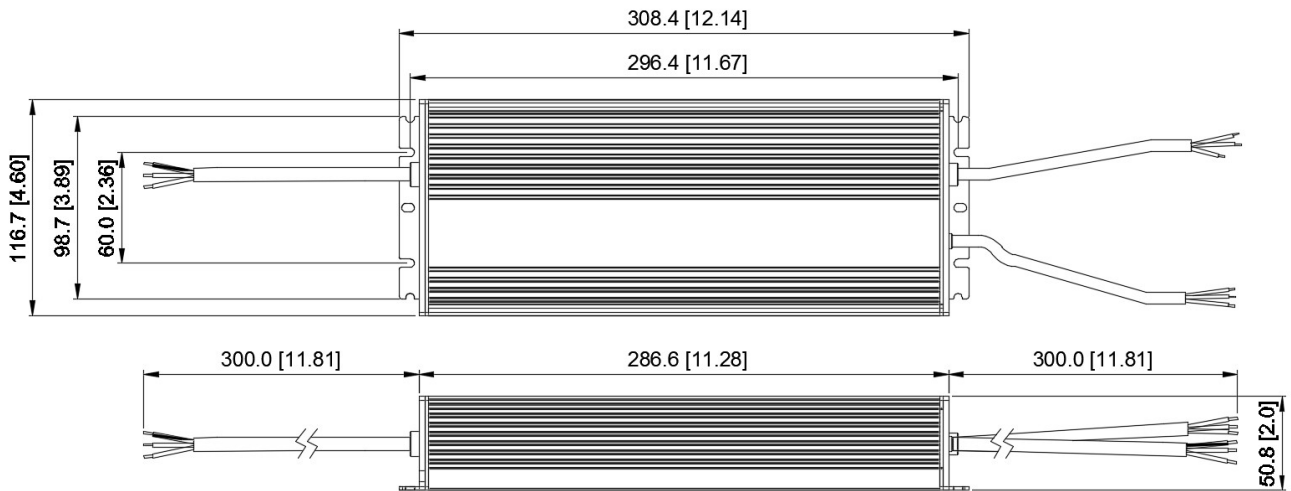
Dimensions

USC4-320280GA



Unit: mm [inch]

USC4-600400GA



Unit: mm [inch]