LED Driver
USC4 PRO

USC4 PRO

Highlights & Features

- Wide range constant current design
- High AC input voltage range from 277-480Vac
- High efficiency up to 95.8%
- 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

Safety Standards

c UL us
E336604

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 249-528Vac Range	75-152Vdc	1400-2800mA	2100-2800mA
USC4-600400GA		150-300Vdc	1000-3000mA	2000-3000mA

Model Numbering

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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

All parameters are specified at 25°C ambient for all products unless otherwise indicated.
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Specifications

Model Number	USC4-320280GA	USC4-600400GA

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	2.4A
Efficiency 1)	277Vac	91.5% @ 2.8A	95.0% @ 2.0A
	347Vac	93.5% @ 2.8A	95.2% @ 2.0A
	480Vac	93.5% @ 2.8A	95.8% @ 2.0A
Inrush Current (Apk / 50% - µS @ Cold Start)	277Vac	60A/250uS	15A/5mS
	347Vac	60A/250uS	20A/5mS
	480Vac	80A/250uS	25A/5mS
		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	> 0.9 @ 50% Load , 277-480Vac >=0.95 @ Full Load , 277-480Vac
Total Harmonic Distortion		<20%@ Load >50% , 277-480Vac	<20%@ Load >50% , 277-480Vac
Leakage Current		< 0.75mArms @ 480Vac	
Standby Power (Dim to off)		<1.5W @ 277-480Vac	<0.5W @ 277Vac
			<0.6W @ 347Vac
			<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 - 3000mA
Adjustable Output Current (AOC)	1400 - 2800mA	1000 - 3000mA
	With steps of 1mA, configurable via software	
Minimum Output Current	280mA (Min dim level)	140mA (Min dim level)
Current Accuracy	± 5% (@ Typical output current range)	
Line Regulation	± 1% (@ 277-480Vac input)	
Load Regulation	± 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] [inch]	240.0 x 100.0 x 38.0 9.45 x 3.94 x 1.50	308.4x116.7x50.8 12.14”x4.60”x2.00”
Unit Weight [kg] [lb]	1.85 4.07	3.05 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(+): Purple, Dim(-): Gray, +12V: Black/White, Cable Length 300mm	
Noise (30cm distance)	Sound Pressure Level (SPL) < 24dBA class A	

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Model Number	USC4-320280GA	USC4-600400GA

Environment

Ambient Temperature	Operating	-40°C to +55°C	-40°C to +55°C
	Storage	-40°C to +85°C	
Maximum Case Temperature		+90°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”

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

EMI/EMC Compliance

FCC Title 47 Part 15 Class A	Conducted emission Test &Radiated emission Test This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: [1] this device may not cause harmful interference, and [2] this device must accept any interference received, including interference that may cause undesired Operation.
IEC 61000-3-2	Harmonic Current Emission
IEC 61000-3-3	Voltage Fluctuation & Flicker
IEC 61000-4-2	Electrostatic Discharge(ESD): 8 kV air discharge, 4 kV contact discharge
IEC 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
IEC 61000-4-4	Electrical Fast Transient/Burst-EFT
IEC 61000-4-5 ANSI C82.77-5 CAT C low	Surge Immunity Test: AC Power Line: Differential Mode 6 kV, Common Mode 6 kV 1.2/50μs Combination Wave
IEC 61000-4-6	Conducted Radio Frequency Disturbances test-CS

IEC 61000-4-11	Voltage Dips

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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 Io_set or 100mA minimum, ≥ 8.5V is 100% of Io_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. Io_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

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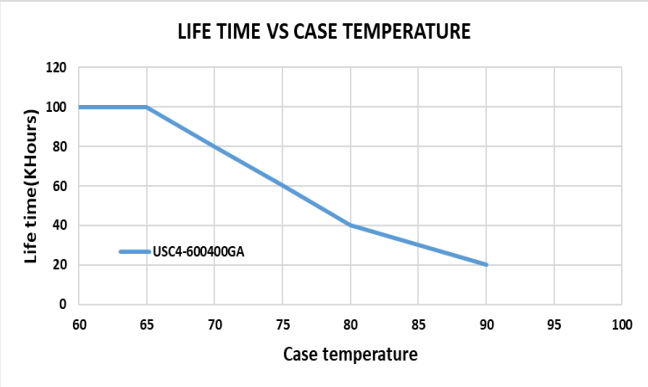
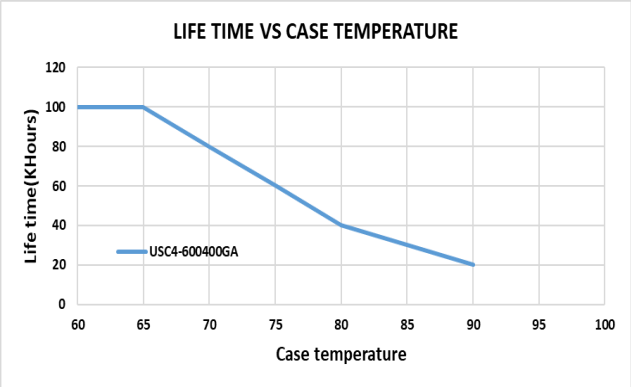
Lifetime VS Case Temperature

USC4-320280GA

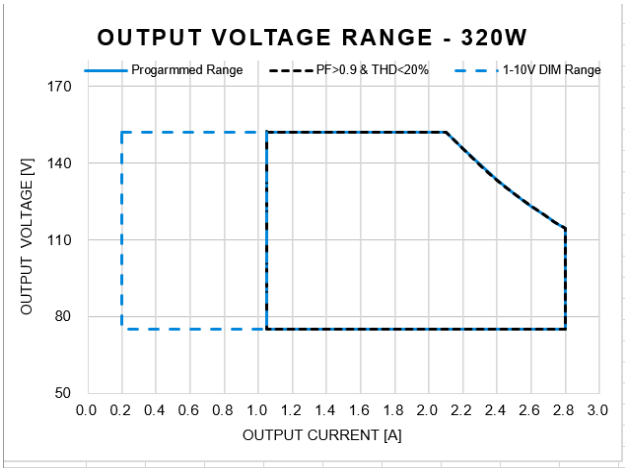


USC4-600400GA



Operation Window for programing

USC4-320280GA



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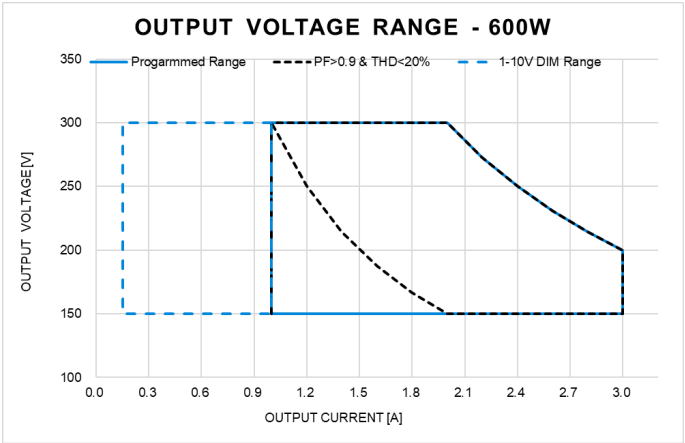
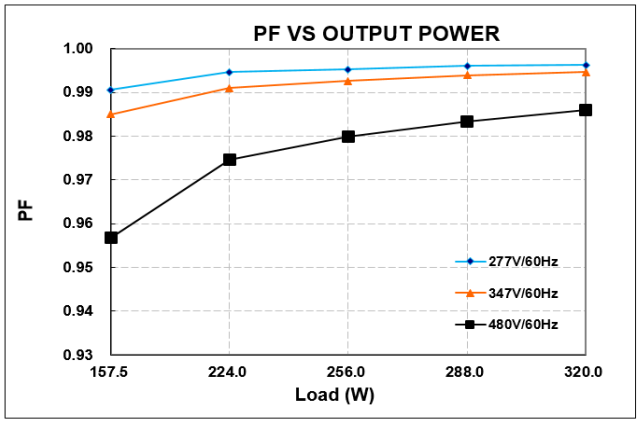


Power Factor VS Output Power

USC4-320280GA



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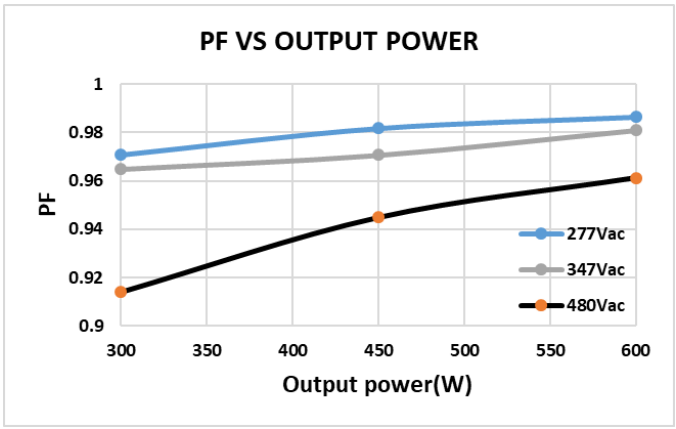

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Total Harmonic Distortion VS Output Power

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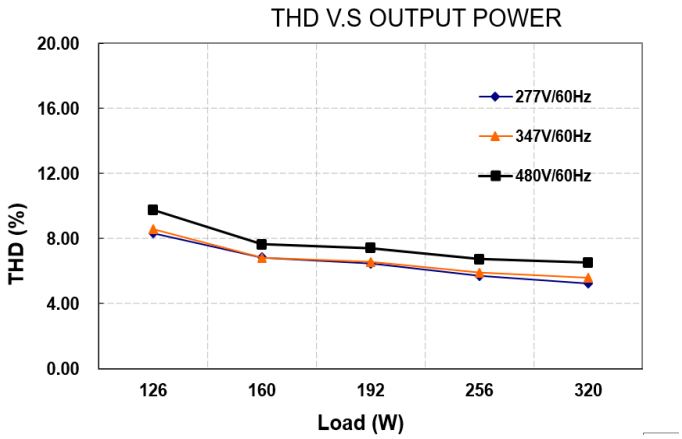

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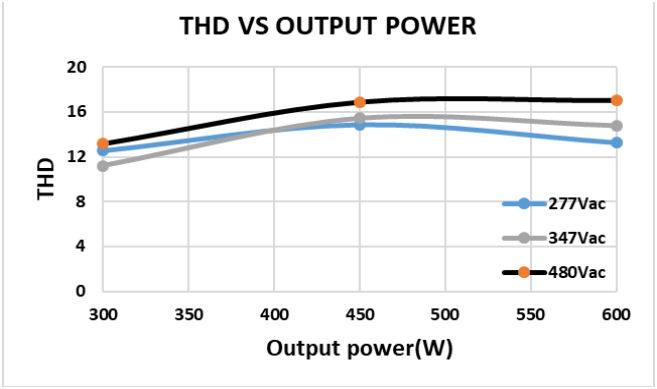

Efficiency VS Output Power

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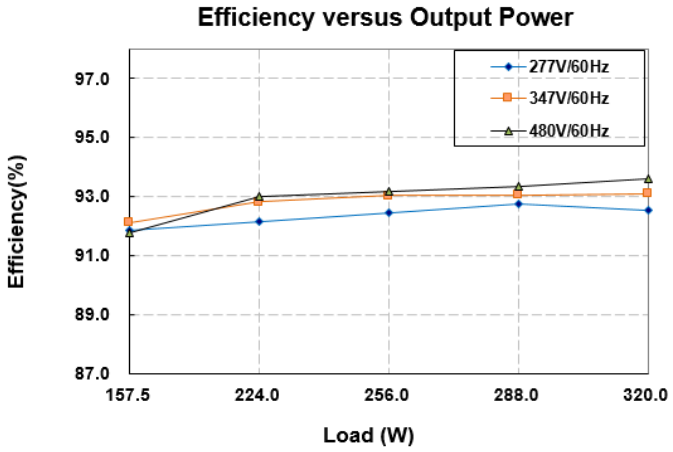

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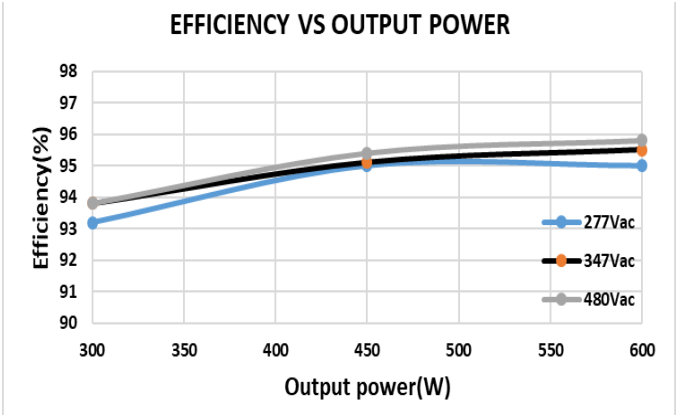
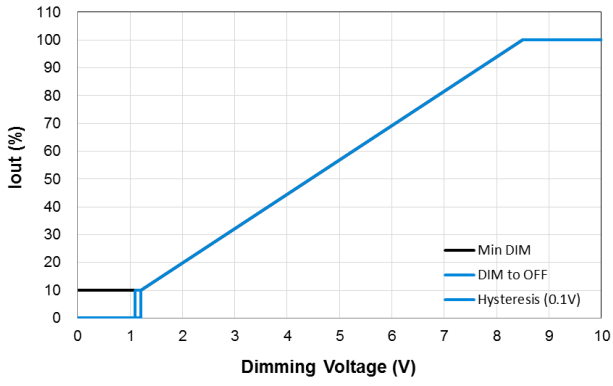


DIMMING CURVE



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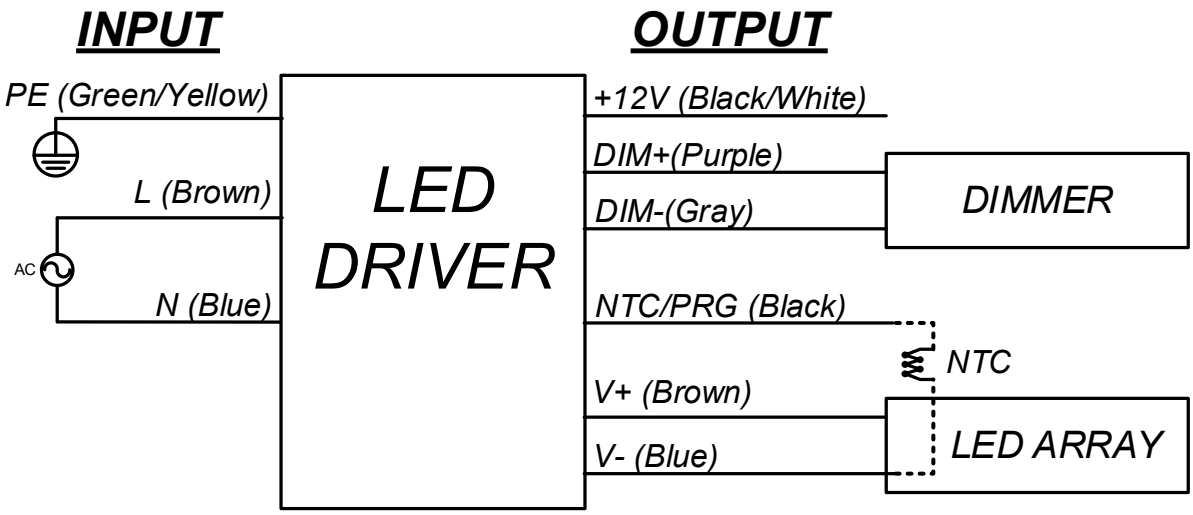
Wiring Connection

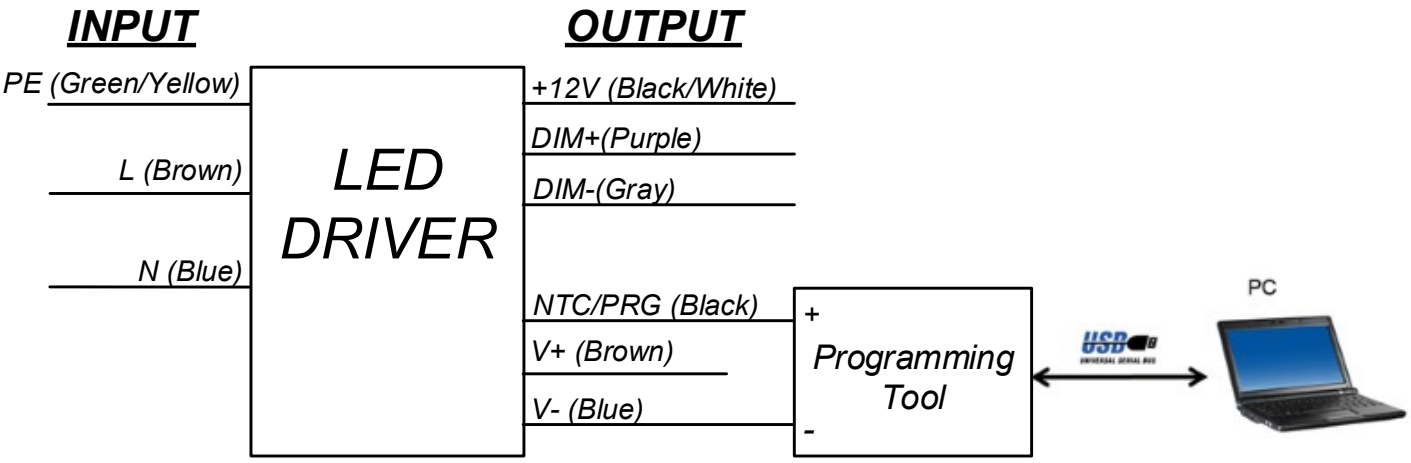
- **Module Temperature Protection (MTP)**

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.



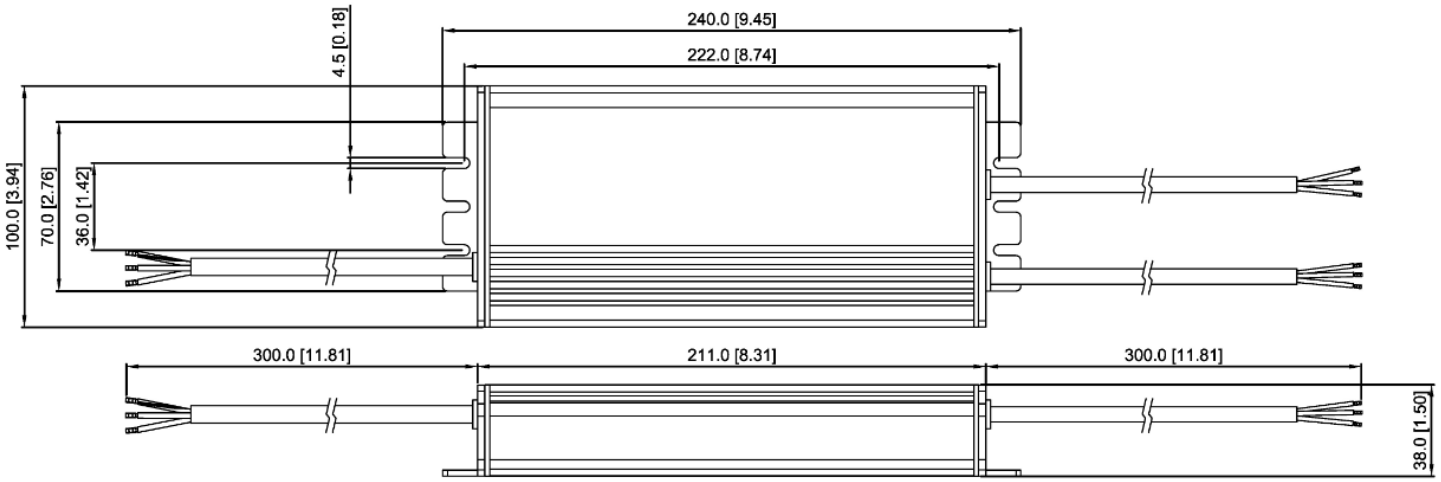
- **Programming Setup**

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



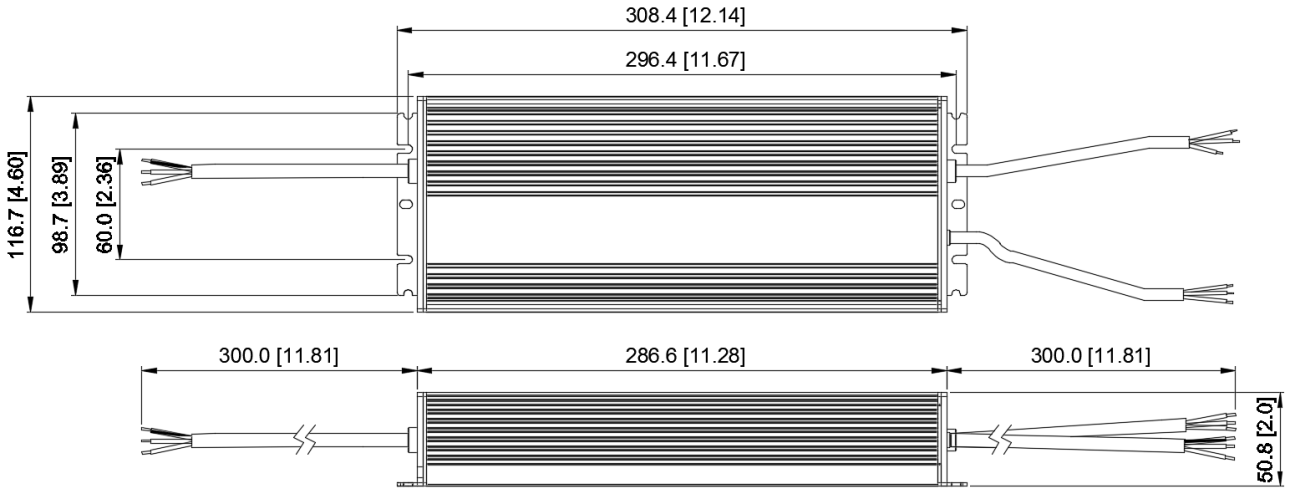
Dimensions

USC4-320280GA



Unit: mm [inch]

USC4-600400GA



Unit: mm [inch]

Others

Warranty Policy

Please reach out our Warranty Policy should you require any further clarification.