

# LED Driver

## USCO

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### Highlights & Features

- Constant current design
- Universal AC input voltage from 110-277Vac
- High efficiency up to 95%
- Wide operating temperature range -40°C to +60°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 and differential mode 6kV surge immunity
- Suitable for Dry / Damp / Wet location
- 1-10V dimming & DALI available



### Safety Standards



CB Certified for worldwide use

**Model Number:** USCO-□□□□□□□A

### Dimensions (L x W x H):

USCO-040070DB	161 x 50 x 34 mm (6.34 x 1.97 x 1.34 inch )
USCO-075070DA	174 x 60 x 34 mm (6.85 x 2.36 x 1.34 inch)
USCO-100070FA, USCO-100105FA, USCO-100070DA, USCO-100105DA	251 x 60 x 34 mm (9.88 x 2.36 x 1.34 inch)
USCO-150070FA, USCO-150105FA, USCO-150070DA, USCO-150105DA, USCO-150070LA, USCO-150105LA	248 x 68 x 37 mm (9.76 x 2.68 x 1.46 inch)
USCO-210140DA	240 x 100 x 38 mm (9.45 x 3.94 x 1.50 inch)

### General Description

Delta LED drivers come in different series to suit different application needs. The USCO Pro series features program output current level. All the models come in full corrosion resistance aluminum casing and major international safety certifications. USCO 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 USCO Pro series an essential part of an energy efficient LED lighting power solution for both indoor and outdoor applications.

### Model Information

#### USCO LED Driver

Model Number	Input Voltage Range	Rated Output Voltage	Rated Output Current	Rated Output Power	Control	
USCO-040070DB	110-277Vac Typical 99-305Vac Range	28-54Vdc	700mA	40W	1-10V	
USCO-075070DA		54-107Vdc	700mA	75W	1-10V	
USCO-100070FA		86-143Vdc	700mA	100W	N/A	
USCO-100105FA		57-96Vdc	1050mA	100W	N/A	
USCO-100070DA		86-143Vdc	700mA	100W	1-10V	
USCO-100105DA		57-96Vdc	1050mA	100W	1-10V	
USCO-150070FA		107-214Vdc	700mA	150W	N/A	
USCO-150105FA		72-143Vdc	1050mA	150W	N/A	
USCO-150070DA		107-214Vdc	700mA	150W	1-10V	
USCO-150105DA		72-143Vdc	1050mA	150W	1-10V	
USCO-150070LA		107-214Vdc	700mA	150W	DALI	
USCO-150105LA		72-143Vdc	1050mA	150W	DALI	
USCO-210140DA		120-277Vac Typical 108-305Vac Range	75-150Vdc	1400mA	210W	1-10V

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### Model Numbering

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Safety Approval – UL, ENEC, CE	Constant current	Outdoor		Rated Output Power 040: 40W 075: 75W 100: 100W 150: 150W 210: 210W	Rated Output Current 070 – 70mA 105 – 1050mA 140 – 1400mA	F: Fix D: 1-10V L: DALI	Variable A or B– Delta Standard

### Specifications

Model Number	USCO-040070DB	USCO-075070DA	USCO-100070FA /DA	USCO-100105FA /DA	USCO-150070FA /DA/LA	USCO-150105FA /DA/LA	USCO-210140DA
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### Input Ratings / Characteristics

Normal Input Voltage	110-277Vac							120-277Vac
Input Voltage Range	99-305Vac							108-305Vac
Normal Input Frequency	50-60Hz							
Input Frequency Range	47-63Hz							
Max. Input Current	110Vac	0.44A	0.85A	1.2A	1.2A	1.6A	1.6A	2.05A@120Vac
Efficiency <sup>1)</sup>	230Vac	89%	92%	90%	90%	91%	91%	93%
Inrush Current (Apk / 50% - μS @ Cold Start)	277Vac	40A/150μS	70A/150μS	130A/150μS	130A/150μS	130A/150μS	130A/150μS	200A/150μS
Max. no. of LED Drivers circuit breaker at 230Vac	B16	21	12	6	6	6	6	4
	C16	36	20	11	11	11	11	7
Power Factor	70%-Full Load: > 0.9 @ 120- 277Vac for USCO-040070DB, 60%-Full Load: > 0.9 @ 120- 277Vac for USCO-075070DA, USCO-100070FA/DA, USCO-100105FA/DA 50%-Full Load: > 0.9 @ 120- 277Vac for USCO-040070DB, USCO-150070FA/DA/LA, USCO-150105FA/DA/LA, USCO-210140DA							
Total Harmonic Distortion	70%-Full Load: THD < 20% @ 120- 277Vac for USCO-075070DA, USCO-040070DB 60%-Full Load: THD < 20% @ 120- 277Vac for USCO-100070FA/DA, USCO-100105FA/DA 50%-Full Load: THD < 20% @ 120- 277Vac for, USCO-150070FA/DA/LA, USCO-150105FA/DA/LA, USCO-210140DA							
Leakage Current	< 0.5mA rms & < 0.7mA peak @ 277Vac							
Standby Power	0.5W @ Dim to off, 230Vac for DALI series							

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

### Output Ratings / Characteristics

Output Voltage Range	28-54Vdc	54-107Vdc	86-143Vdc	57-96Vdc	107-214Vdc	72-143Vdc	75-150Vdc
Max. No Load Output Voltage	60Vrms	120Vrms	165Vrms	115Vrms	250Vrms	172Vrms	170Vrms
Output Power Range	40W	75W	100W	100W	150W	150W	210W
Rated Output Current	700mA	700mA	700mA	1050mA	700mA	1050mA	1400mA
Current Accuracy	± 5% (@ Typical output current range)						
Line Regulation	± 3% for USCO-040070DB) , ± 1% for USCO-075070DA/USCO-210140DA) , ± 2% for others @ 120-277Vac input ,						
Load Regulation	± 3% (@ Min-Max output voltage)						
Output Current LF Ripple	5% (ripple = peak-average/average) at full load (<100Hz)						
Start-up Time	500ms~1000ms @ 110-277Vac (full load & Fix/Dim series) 1100mS @230Vac (full load & DALI series)						

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### Mechanical

Casing	Aluminum, Color : Natural						
Dimensions (L x W x H) [mm] [inch]	161.0 * 50.0*34.0 6.34*1.97*1.34	174.0*60.0*34.0 6.85*2.36*1.34	251.0*60.0*34.0 9.88*2.36*1.34	251.0*60.0*34.0 9.88*2.36*1.34	248.0*68.0*37.0 9.76*2.68*1.46	248.0*68.0*37.0 9.76*2.68*1.46	240.0*100.0*38.0 9.45*3.94*1.50
Unit Weight [kg]/[lb]	0.54/ 1.19	0.67/ 1.48	1.10/ 2.43	1.10/ 2.43	1.16/ 2.56	1.16/ 2.56	1.67/ 3.68
Cooling System	Convection						
Input Cable :	Line: Brown, Neutral: Blue, PE: Yellow/Green,						Cable Length 500mm
	Cable Length 300mm			Cable Length 380mm			
Output Cable :	Positive: Brown, Negative: Blue,						Cable Length 500mm
	Cable Length 300mm						
Dimming Cable :	Dim(+): Violet, Dim(-): Gray,						Cable Length 500mm
	Cable Length 300mm						
DALI Cable :	N/A				DALI1: Violet, DALI2: Gray, Cable Length 300mm		N/A
Noise (30cm distance)	Sound Pressure Level (SPL) < 24dBA						

### Environment

Ambient Temperature	Operating	-40°C to +60°C	-40°C to +55°C
	Storage	-40°C to +85°C	
Maximum Case Temperature	+85°C		
Relative Humidity	Operating	10 to 85% RH (Non-Condensing)	
	Storage	5 to 95% RH (Non-Condensing)	
Environmental Locations	Dry / Damp / Wet		

### Protections

Over Voltage	60Vrms	120Vrms	165Vrms	115Vrms	250Vrms	172Vrms	170Vrms
	Auto-Recovery when the fault is removed						
Overload / Overcurrent	Auto-Recovery when the fault is removed						
Short Circuit	Auto-Recovery when the fault is removed						
Over Temperature	Auto-Recovery when the fault is removed						
Ingress Protection Classification	IP66/IP67						
Suitable for Luminaires Class	Class I. Insulation Class according to IEC 60598						

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### Reliability Data

Lifetime	50,000 hours at case temp. tc & full load. Refer to "Lifetime VS Case Temperature"						
Lifetime @ tc	+80°C	+75°C	+85°C	+85°C	+85°C	+85°C	+75°C

### Safety Standards / Directives

Electrical Safety	IEC 61347-1, IEC 61347-2-13 (independent) EN 61347-1, EN 61347-2-13 UL 8750, type "HL" & type "TL" CSA C22.2 SELV for 40W,75W CE ENEC				
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CE	In conformance with EMC Directive and Low Voltage Directive				
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Material and Parts	RoHS Directive 2011/65/EU Compliant				
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Galvanic Isolation		Mains (Input)	Earth (Case)	Output	DIM ±
USCO-040070DB	Mains (Input)	N/A	3750V	3750V	N/A
	Earth (Case)	3750V	N/A	1500V	N/A
	Output	3750V	1500V	N/A	1875V
	DIM ±	N/A	N/A	1875V	N/A

Galvanic Isolation		Mains (Input)	Earth (Case)	Output	DIM ±
USCO-075070DA	Mains (Input)	N/A	1500V	3750V	N/A
	Earth (Case)	1500V	N/A	1500V	N/A
	Output	3750V	1500V	N/A	2250V
	DIM ±	N/A	N/A	2250V	N/A

Galvanic Isolation		Mains (Input)	Earth (Case)	Output	DIM ±
USCO-100070FA	Mains (Input)	N/A	3750V	3750V	N/A
USCO-100105FA	Earth (Case)	3750V	N/A	3750V	N/A
USCO-100070DA	Output	3750V	3750V	N/A	1875V
USCO-100105DA	DIM ±	N/A	N/A	1875V	N/A

Galvanic Isolation		Mains (Input)	Earth (Case)	Output	DIM ±
USCO-150070FA	Mains (Input)	N/A	3750V	3750V	N/A
USCO-150105FA	Earth (Case)	3750V	N/A	3000V	N/A
USCO-150070DA	Output	3750V	3000V	N/A	3000V
USCO-150105DA	DIM ±	N/A	N/A	3000V	N/A

Galvanic Isolation		Mains (Input)	Earth (Case)	Output	DALI
USCO-150070LA	Mains (Input)	N/A	3750V	3750V	3000V
USCO-150105LA	Earth (Case)	3750V	N/A	3000V	1500V
	Output	3750V	3000V	N/A	1500V
	DALI	3000V	1500V	1500V	N/A

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### EMC Compliance

Emissions (CE & RE)	Compliance to EN 55015 Class B; 47 CFR FCC Part 15, Subpart B, Class B	
Immunity	Compliance to EN 61547	
Electrostatic Discharge	IEC 61000-4-2	Air Discharge: 8kV Contact Discharge: 4kV Criteria A <sup>1)</sup> or Criteria B <sup>2)</sup>
Radiated Field	IEC 61000-4-3	80MHz-1GHz, 3V/m with 1kHz Sine Wave / 80% Modulation Criteria A <sup>1)</sup>
Electrical Fast Transient / Burst	IEC 61000-4-4	1KV, Criteria A <sup>1)</sup> or Criteria B <sup>2)</sup>
Surge	IEC 61000-4-5	<u>100W&amp;150W</u> Differential Mode <sup>4)</sup> : 4kV , Common Mode <sup>3)</sup> : 6kV; Criteria A <sup>1)</sup> or Criteria B <sup>2)</sup>  <u>40W&amp;75W&amp;210W</u> Differential Mode <sup>4)</sup> : 6kV , Common Mode <sup>3)</sup> : 6kV; Criteria A <sup>1)</sup> or Criteria B <sup>2)</sup>
Conducted	IEC 61000-4-6	150kHz-80MHz, 3Vrms Criteria A <sup>1)</sup>
Power Frequency Magnetic Fields	IEC 61000-4-8	3A/Meter , Criteria A <sup>1)</sup>
Voltage Dips	IEC 61000-4-11	100% dip; 0.5 cycle , Criteria A <sup>1)</sup> or Criteria B <sup>2)</sup> 30% dip; 10 cycle, Criteria A <sup>1)</sup> or Criteria B <sup>2)</sup>
Harmonic Current Emission	IEC 61000-3-2	Class C (230Vac @ ≥ 60% load)
Voltage Fluctuation & Flicker	IEC 61000-3-3	

- 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)

### 1-10V Dimming Specification

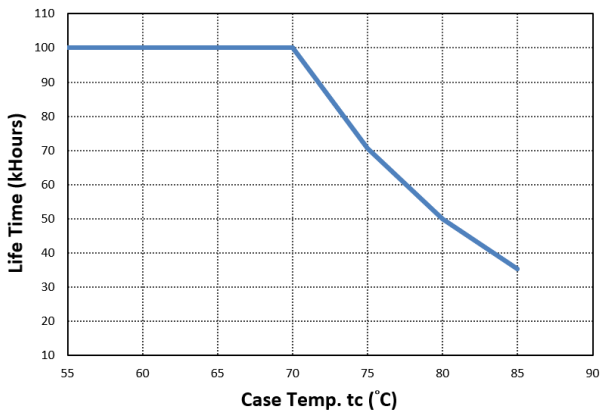
Absolute Maximum Voltage	± 20V		
Source Current	275µA ± 50µA		
Dimming Input Range	1) 0-1V: 10% duty, 1-10V: 10-100% duty. (except to USCO-040070DB) 2) 0-1V: 1-10% duty, 1-10V: 10-100% duty for USCO-040070DB 3) Open is 100%		
Auxiliary Output Voltage	+12V Output Range	-	+12Vdc (+/-10%)
	+12V Output Current	-	50mA
	Maximum Output Power	-	0.6W

# LED Driver

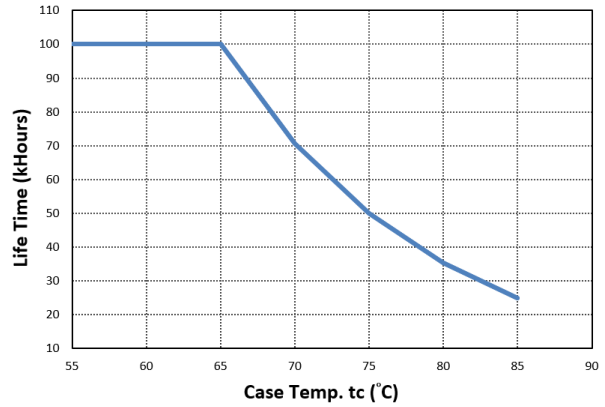
## USCO

### Lifetime VS Case Temperature)

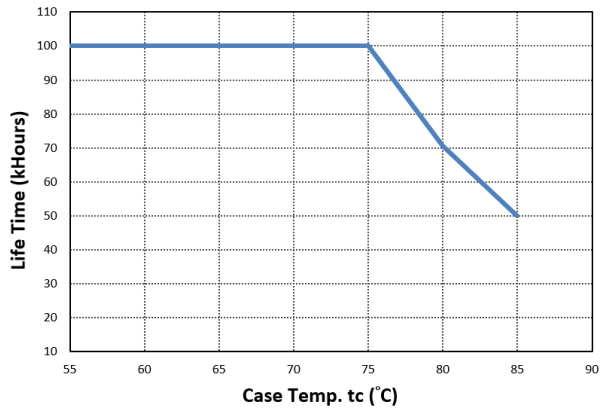
USCO-040070DB



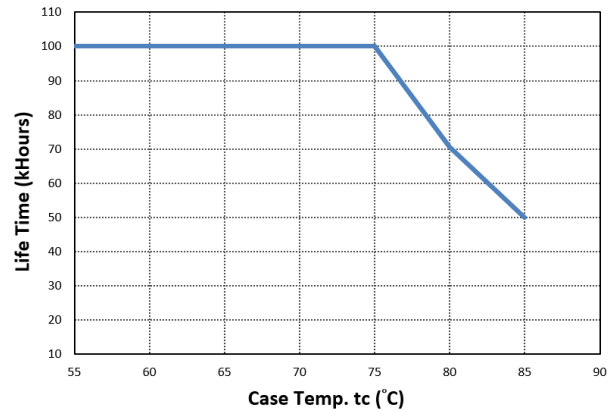
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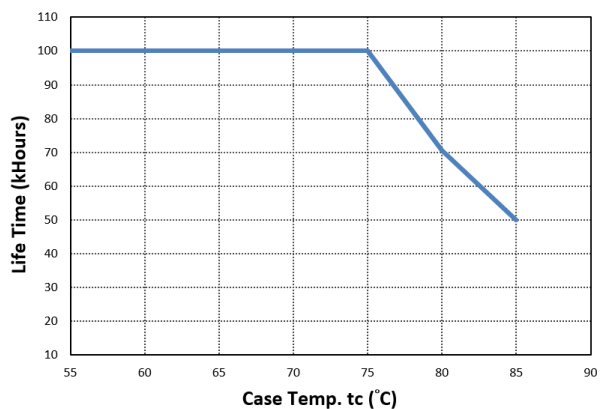
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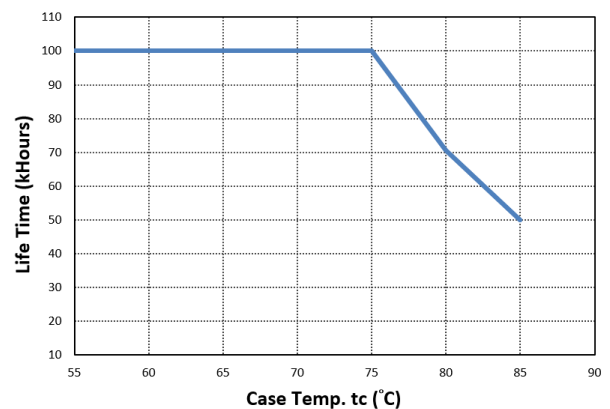
USCO-100105FA/DA



USCO-150070FA/DA/LA



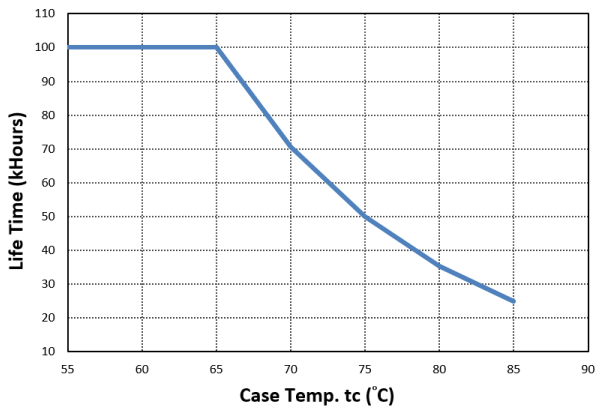
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# LED Driver

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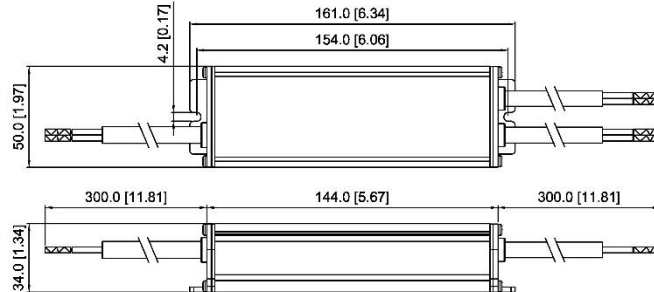
USCO-210140DA



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## Dimensions

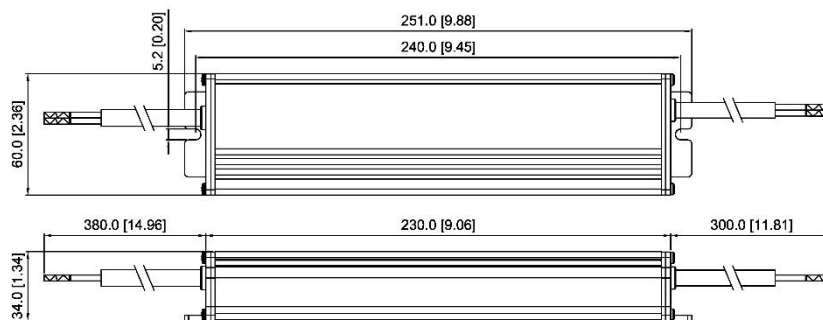
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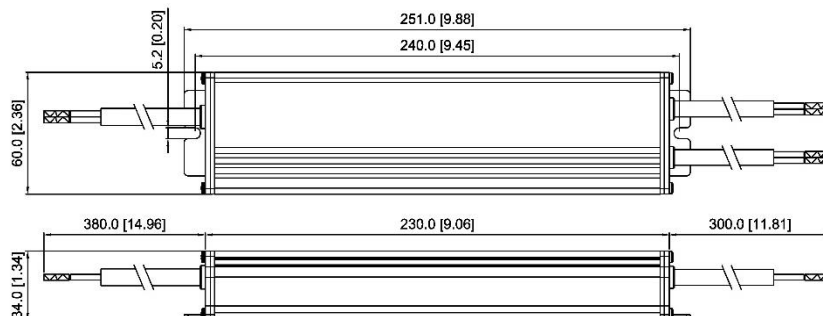
### USCO-075070DA



### USCO-100070FA, USCO-100105FA, USCO-100070DA, USCO-100105DA



### USCO-100070DA, USCO-100105DA



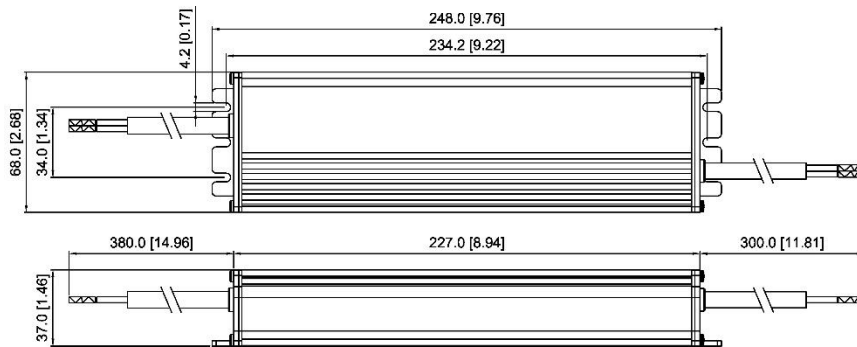
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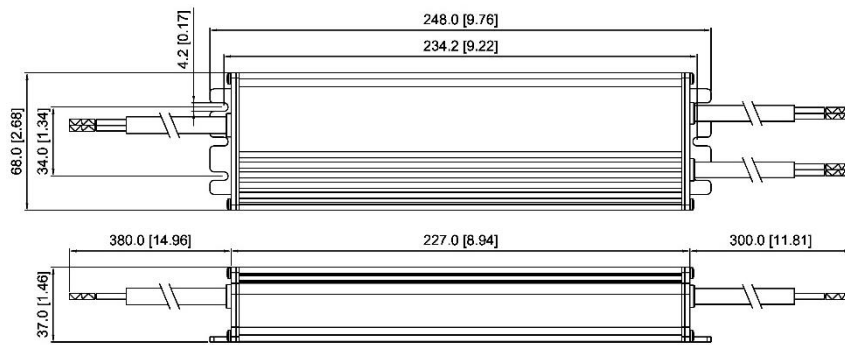
# LED Driver

## USCO

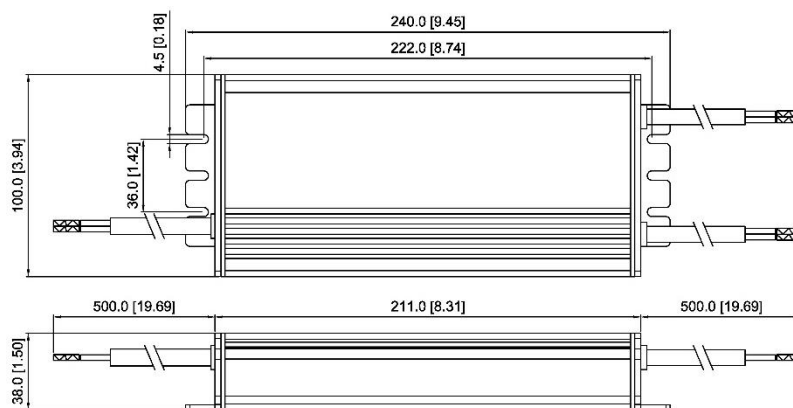
### USCO-150070FA, USCO-150105FA



### USCO-150070DA, USCO-150070LA, USCO-150105DA, USCO-150105LA



### USCO-210140DA



Unit: mm [inch]

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