

■ **Features**

- Power Rating: 96W
- Input Voltage: 120-277Vac
- Constant current design
- Output current settable(350mA-4200mA)
- +/-2% Output Current Accuracy (Programmable Model)
- Near Field Communication Programmability
- High-Efficiency @ 90% and above
- 0-10V/PWM/Timer/DALI/DMX (Optional) Dimming
- Dim to Off with 0.5W Standby Power
- Optional External Thermal Protection NTC
- UL Class P, Type HL, Class 2
- OVP, SCP, & OTP
- Tc = 90°C
- IP67
- 5+ year warranty
- Surge Immunity 10kV



*Product images are for illustrative purposes only and may vary from actual design.

■ **Application**

- Bay lights, Street lights, Tunnel lights, Flood lights, Horticultural lighting

■ **Model List**

Model Number	Input Voltage Range	Output Power	Output Voltage	Output Current Min	Output Current Max	Efficiency	Certification
LWA096-C050-XYZ	120-277Vac	96W	115-274Vdc	350mA	500mA	TBD	UL/cUL
LWA096-C070-XYZ	120-277Vac	96W	82-192Vdc	500mA	700mA	TBD	UL/cUL
LWA096-C105-XYZ	120-277Vac	96W	55-137Vdc	700mA	1050mA	88.5%@120Vac 91%@277Vac	UL/cUL
LWA096-C140-XYZ	120-277Vac	96W	41-91Vdc	1050mA	1400mA	88%@120Vac 90.5%@277Vac	UL/cUL
LWA096-C190-XYZ	120-277Vac	96W	27-46Vdc	TBD	1900mA	88%@120Vac 90.5%@277Vac	UL/cUL
LWA096-C210-XYZ	120-277Vac	96W	27-69Vdc	1400mA	2100mA	87.5%@120Vac 90%@277Vac	UL/cUL
LWA096-C280-XYZ	120-277Vac	96W	21-46Vdc	2100mA	2800mA	87.5%@120Vac 90%@277Vac	UL/cUL
LWA096-C420-XYZ	120-277Vac	96W	14-33Vdc	2900mA	4200mA	TBD	UL/cUL

Ordering Options	XY=	Dimming Method	Programmable	12Vaux	Dim-off
	NN	-	-	-	-
	DN	0-10V	-	-	-
	EN	0-10V	-	√	√
	TR	Timer	√	-	-

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March 19, 2020

96W, 120-277Vac Input, Constant Current Programmable LED Driver

Ordering Options	XY=	Dimming Method	Programmable	12Vaux	Dim-off
	DR	0-10V/PWM/Timer	√	-	-
	ER	0-10V/PWM/Timer	√	√	√
	AN	DALI	-	-	√
	MX	DMX	√	-	√
Cable Options	Z=	K=UL cable with ground wire (green), S=VDE cable/Class I, D=VDE cable/Class II			
External Thermal Protection NTC Option	-THR	LWA096-C050-XYZ-THR			

DMX Notes: Works with DMX-512 Presently. DMX Dimming range 10-100% (1% DMX command will be treated as 10% Dimming). Recommended number of LED drivers per DMX channel is ~32, and ~40 meter (132 ft) drop length. You may need a DMX signal amplifier for quantities above 32 drivers per channel, with a maximum allowed of 150 drivers per single channel.

■ Technical Data

Input Voltage	120-277Vac or 127V-420Vdc
Input Frequency	47~63Hz
Power Factor	>0.9@60-100%load, refer to PF vs. Load curve
THD	<15%@60-100%load, refer to THD vs. Load curve
Input Current	0.95Amax@120Vac & Full-Load, 0.48Amax@220Vac & Full-Load
Inrush Current	65A peak, 1.2ms duration, <0.25A2s@230Vac, Cold Start 70A peak, 1.3ms duration, <0.5A2s@277Vac, Cold Start
Leakage Current	1mA max @277Vac 60Hz, UL8750, 0.75mAmx @220Vac 50Hz, IEC61347-1
Input Under Voltage	Shut down and auto-restart
Input Over Voltage	*Optional: Shutdown @320Vac
Surge Protection	Line to line 6kV, line to ground 10kV, IEC 61000-4-5
Current Accuracy	±5%lo
Ripple Current	Ip-p:5%lo max
Setup Time	1.2s max
Overshoot	10% Io max & LED Load
Output Over Voltage	120% Vomax, typ.
Short Circuit	Auto recovery. The output recovers when short is removed.
Over Temperature	Lower the output current when $T_c \geq 105 \pm 10^\circ\text{C}$; Auto Recovery When $T_c \leq 70 \pm 10^\circ\text{C}$ 105 +/- 10°C (relates to internal component temperature / optional settings are possible, contact Autec sales)
Auxiliary Power (Vaux)	12V+/-5%, 300mA max
Operating Temperature	-40°C~+70°C ; 10%RH~100%RH (See Derating Curve for more details)
Storage Temperature	-40°C~+85°C; 5%RH~100%RH
MTBF	≥320,000 hours, 75°C case temperature (MIL-HDBK-217F)
Lifetime	≥100,000 hours, 75°C case temperature, refer to life vs. Tc curve
Case Temperature	90°C max, marked in the Tc point of label
Dimensions	6.34x2.66x1.32 by inch (body), 7.40x2.66x1.32 by inch (endcaps included) 161.0x67.5x33.5 by mm (body), 188.0x67.5x33.5 by mm (endcaps included)
Net Weight	800g
Packing	25pcs/21kg per Carton/17kg, 500x320x315mm

Notes: Unless specified, all the test results are measured in 25°C room temperature.

* Marked items are optional. Please contact Autec Sales to specify the required functions.

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March 19, 2020

■ Safety/EMC Compliance

Safety Standards	Description
UL8750	Light emitting diode(LED) equipment for use in lighting products
UL1012/1310	Power units other than class 2 / Class 2 power units
IEC 61347-1	Lamp control gear Part 1: general and safety requirements
IEC 61347-2-13	Lamp control gear Part 2-13: particular requirement for DC or AC supplied electronic control gear for LED modules
EMI Standards	Description
IEC 55015	Conducted emission test & radiated emission test
IEC 61000-3-2	Harmonic current emissions; Class C
IEC 61000-3-3	Voltage fluctuations & flicker
FCC Part 15	ANSI C63.4:2009 Class B
EMS Standards	Description
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 (EFT)
IEC 61000-4-5	Surge immunity test
IEC 61000-4-6	Conducted radio frequency disturbances test (CS)
IEC 61000-4-8	Power frequency magnetic field test
IEC 61000-4-11	Voltage dips
IEC 61547	Electromagnetic immunity requirements applies to lighting equipment

Disclaimer:

Autec Power Systems' (Autec) LED Drivers are Hi-Pot tested during the manufacturing process. Autec assumes no responsibility for secondary Hi-Pot testing at customer location or designated production line(s). Should customer require further Hi-Pot testing, at their own production line, following assembly of the LED Driver into the customer's assembled fixture, Autec requests advance notice. This request must be communicated to Autec in a timely manner and is recommended to be requested at time of issuing each purchase order.

■ Dimming

Parameter	Min.	Typ.	Max.
Vdim Sourcing Current	200uA	300uA	450uA
Vdim Allowed Input Voltage	-20 V		20 V
0-10V Dimming Range	10% (Vdim=1V)	Linear	100% (Vdim=9~10V)
PWM Dimming Range	10% (Duty=10%)	Linear	100% (Duty=90-100%)
Dim-off threshold	0.4V or 4%	0.5V or 5%	0.6V or 6%
Dim-on threshold	0.6V or 6%	0.7V or 7%	0.8V or 8%
PWM High	3V		10V
PWM Low	0V		0.6V
PWM Frequency	300Hz		2kHz
External PWM Controller Current Sinking Capability	300uA		
DA1,DA2 High Level	9.5	16	22.5
DA1,DA2 Low Level	-6.5	0	6.5
DA1,DA2 Current	0		2mA

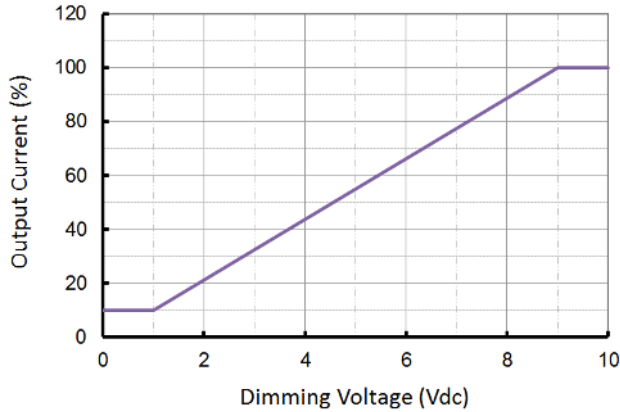
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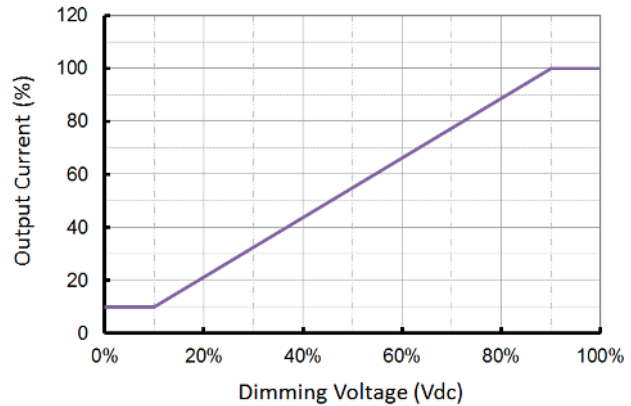
■ Dimming Curve

a. Without dim-off

0-10V Dimming Curve

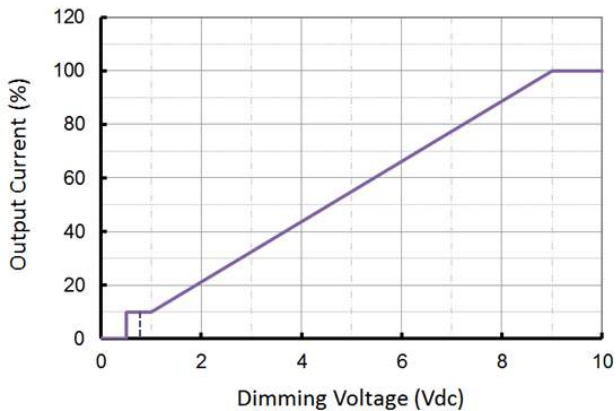


PWM Dimming Curve

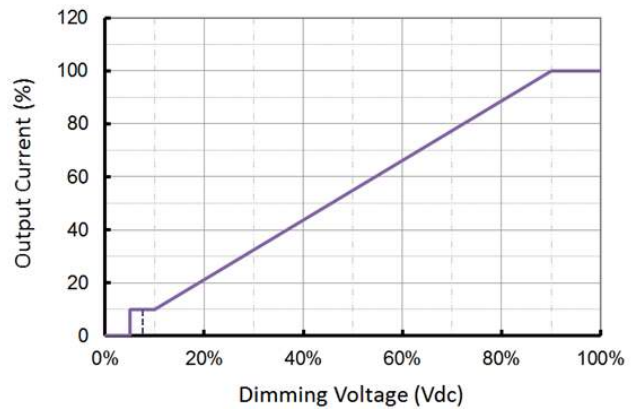


b. With dim-off

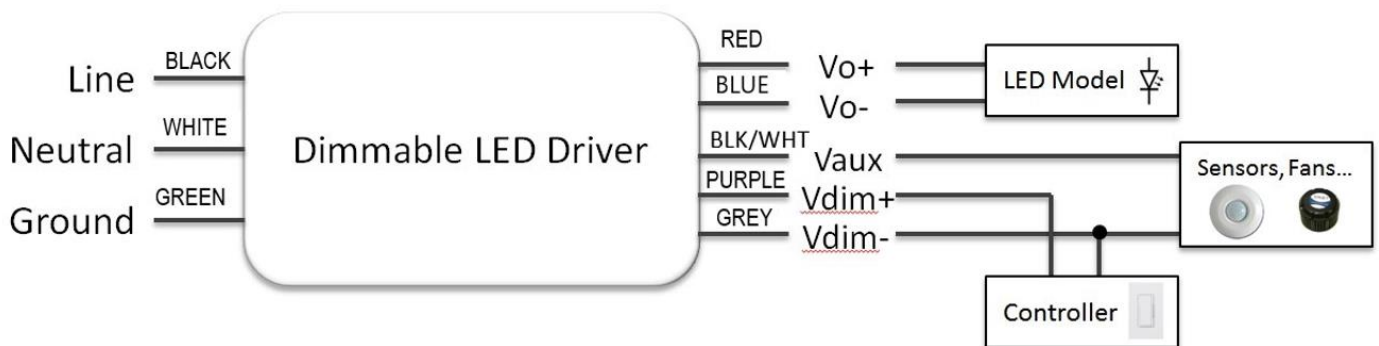
0-10V Dimming Curve



PWM Dimming Curve



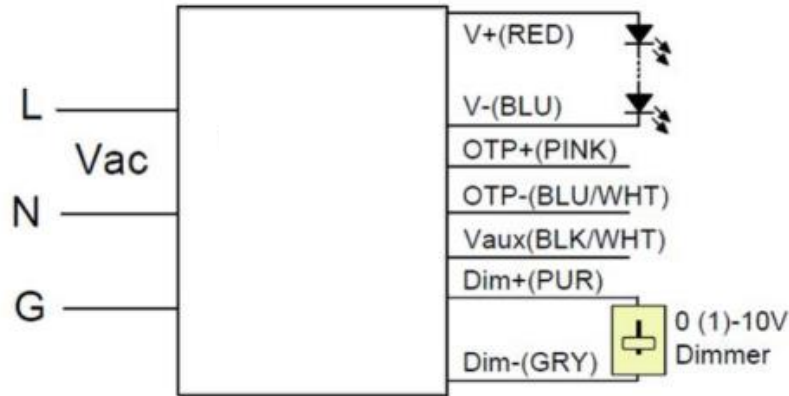
■ Wiring Diagram



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■ Wiring Diagram/Optional External Thermal Protection



■ External Thermal Protection Table(optional)

Parameter		Min.	Typ.	Max.	Notes
External Thermal Protection NTC	R1	-	7.81 kOhm	-	When R_NTC falls below R1, External Thermal Protection is triggered, reducing output current until R2 is reached.
	R2	-	4.16 kOhm	-	When R_NTC is less than R2, output current is reduced to the programmed "Protection Current Floor."
	Protection Current Floor	10%loset	60%loset	100%loset	10%loset > I _{omin} (default setting is 60%)
I _{omin}		60%loset	100%loset	10%loset ≤ I _{omin} (default setting is 60%)	

■ **Near Field Communication Programmability**

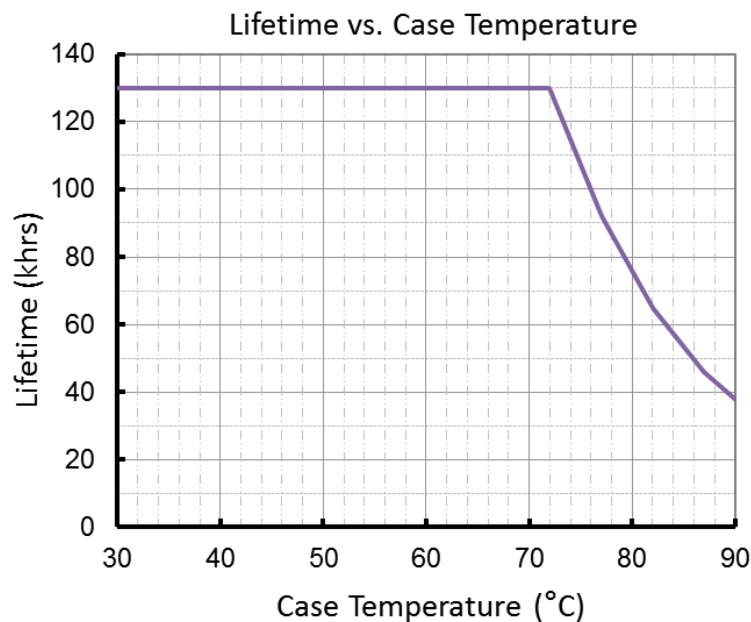


Programming Module
REF. Part# UPRG-NFC

NOTES:

1. The Near Field Communication programming module is used to program the output current, voltage, dimming, and timer settings.
2. The programming function is a non-contact process, which is safer and more efficient compared to traditional programming methods.
3. During programming the LED Driver does not require any external power source.
4. REF. Ordering part number UPRG-NFC (includes programming module, USB cable, and *software).
5. Contact Autec Sales for User Guide and programming software for complete programming instructions.

■ **Lifetime vs. Case Temperature**

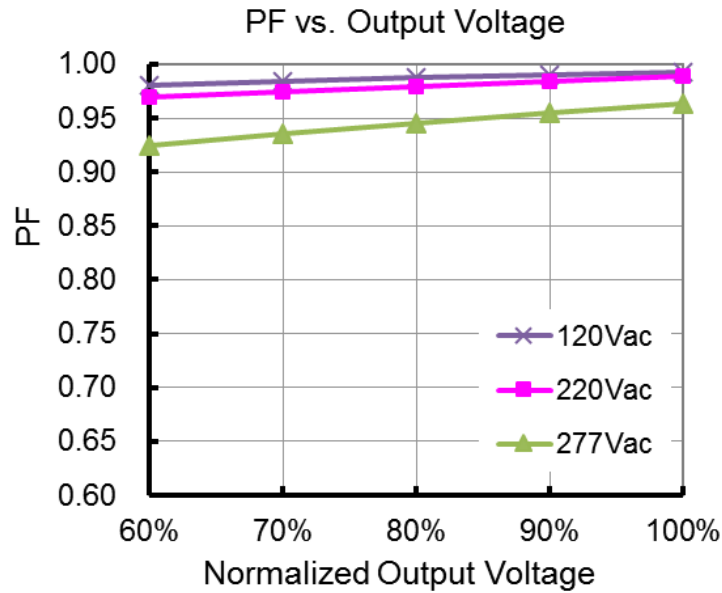


(End of Life: Maximum Failure Rate=10%)

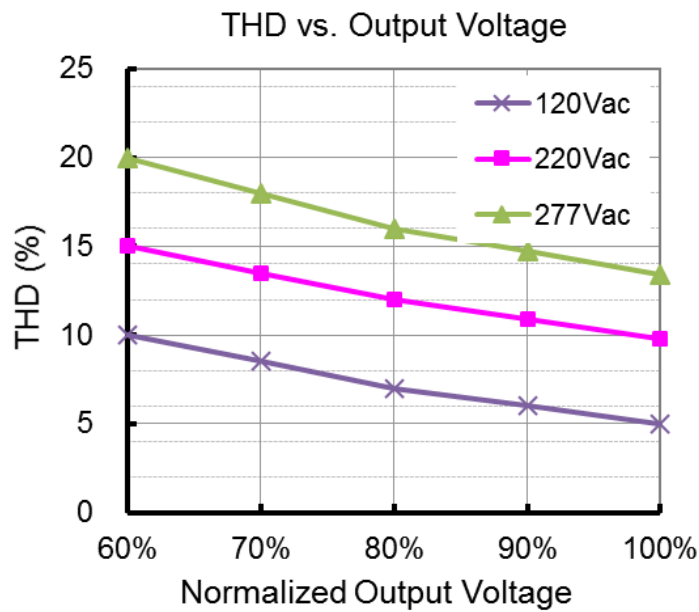
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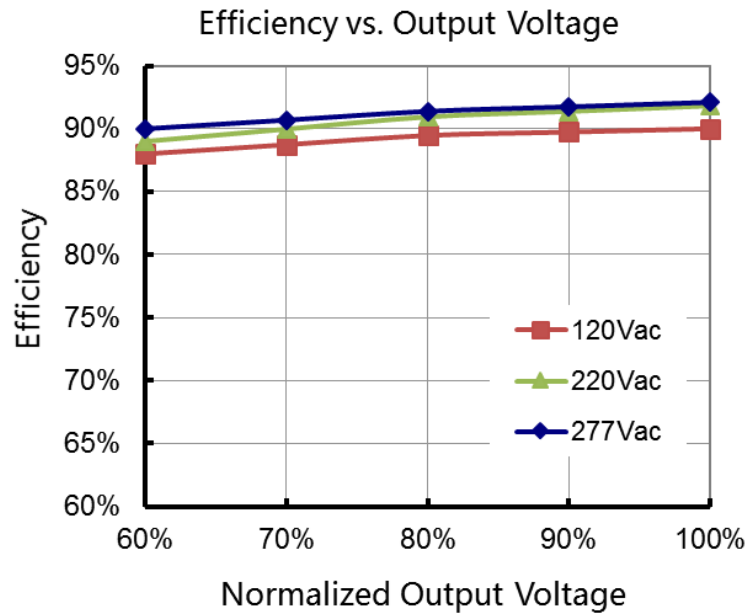
■ Power Factor vs. Load



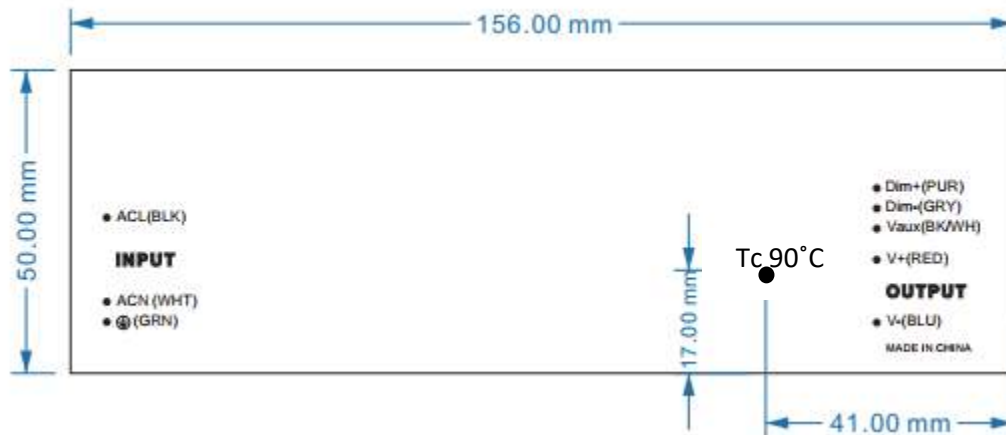
■ THD vs. Load



■ Efficiency vs. Load (1.05A Model)

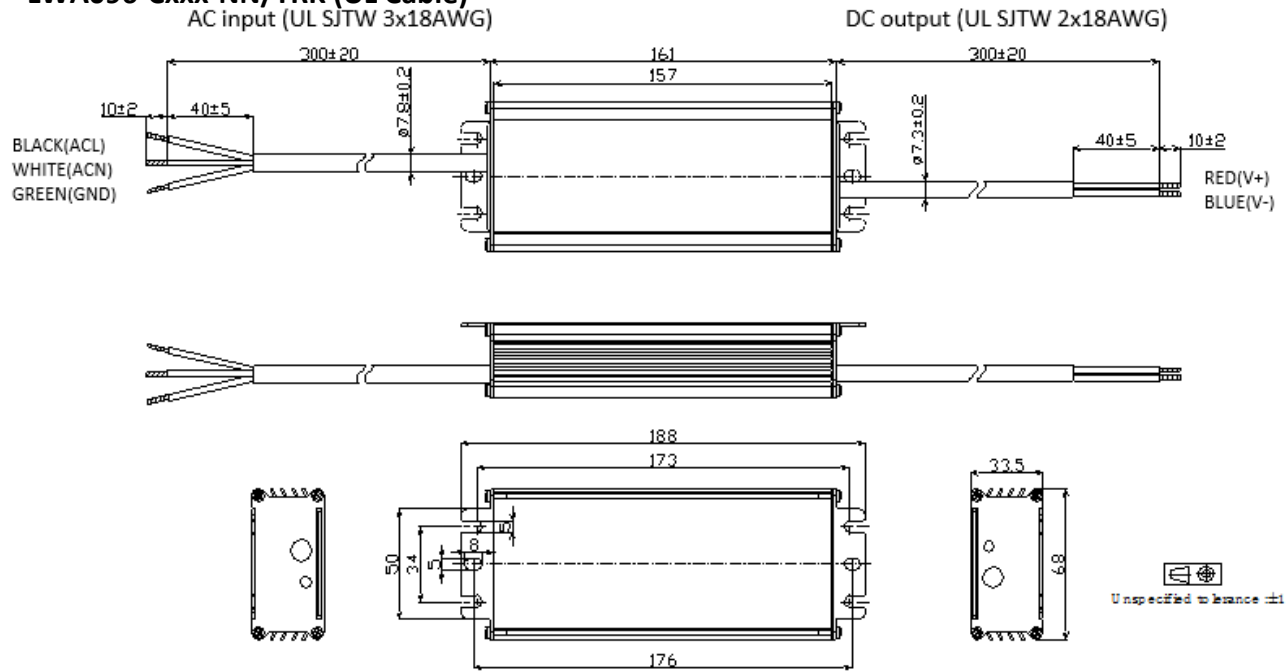


■ Tc Location(LED Driver Label)

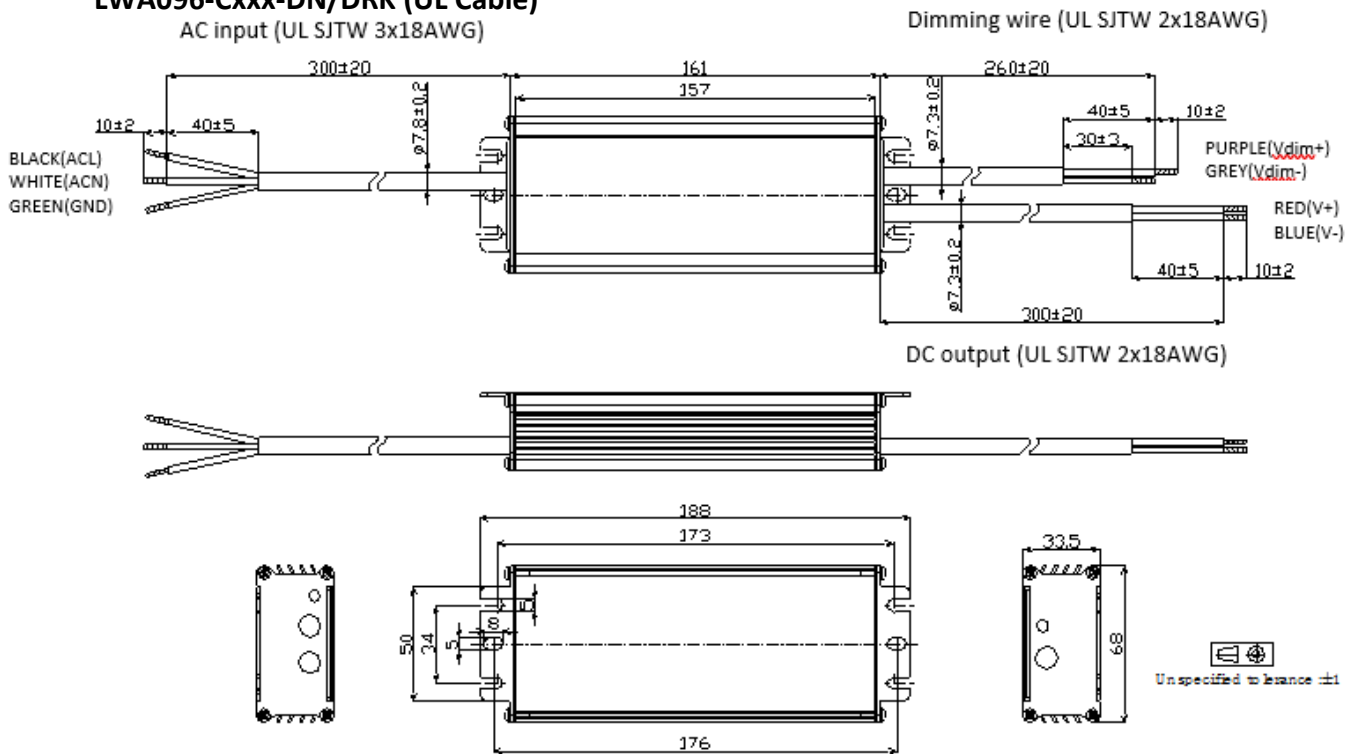


■ **Mechanical Design**

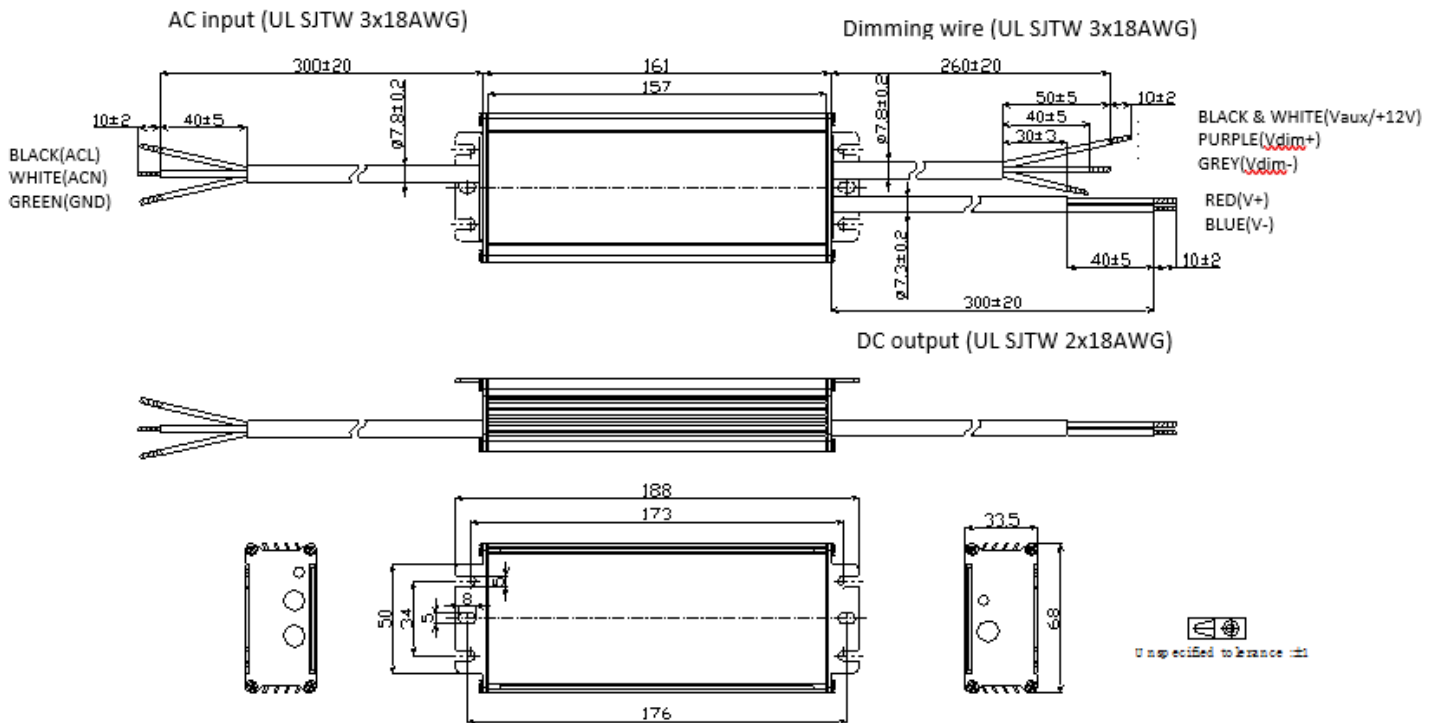
- **LWA096-Cxxx-NN/TRK (UL Cable)**
 AC input (UL SJTW 3x18AWG)



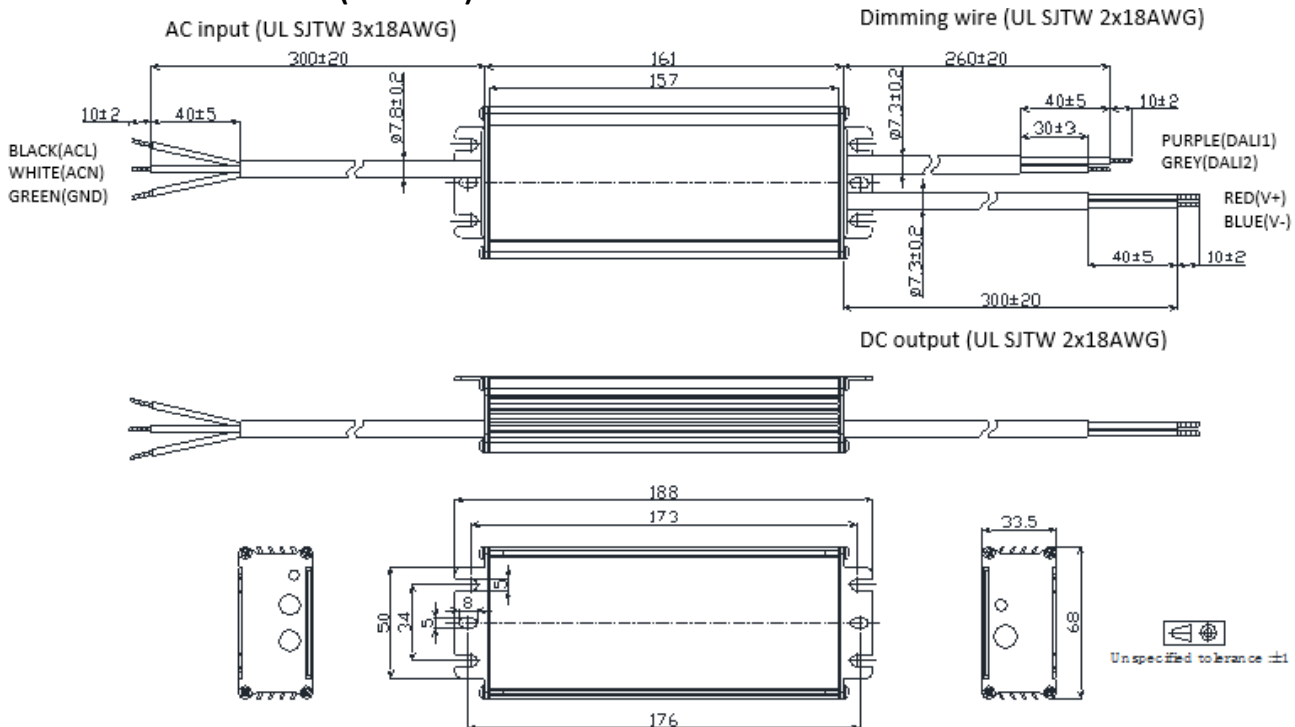
- **LWA096-Cxxx-DN/DRK (UL Cable)**
 AC input (UL SJTW 3x18AWG)



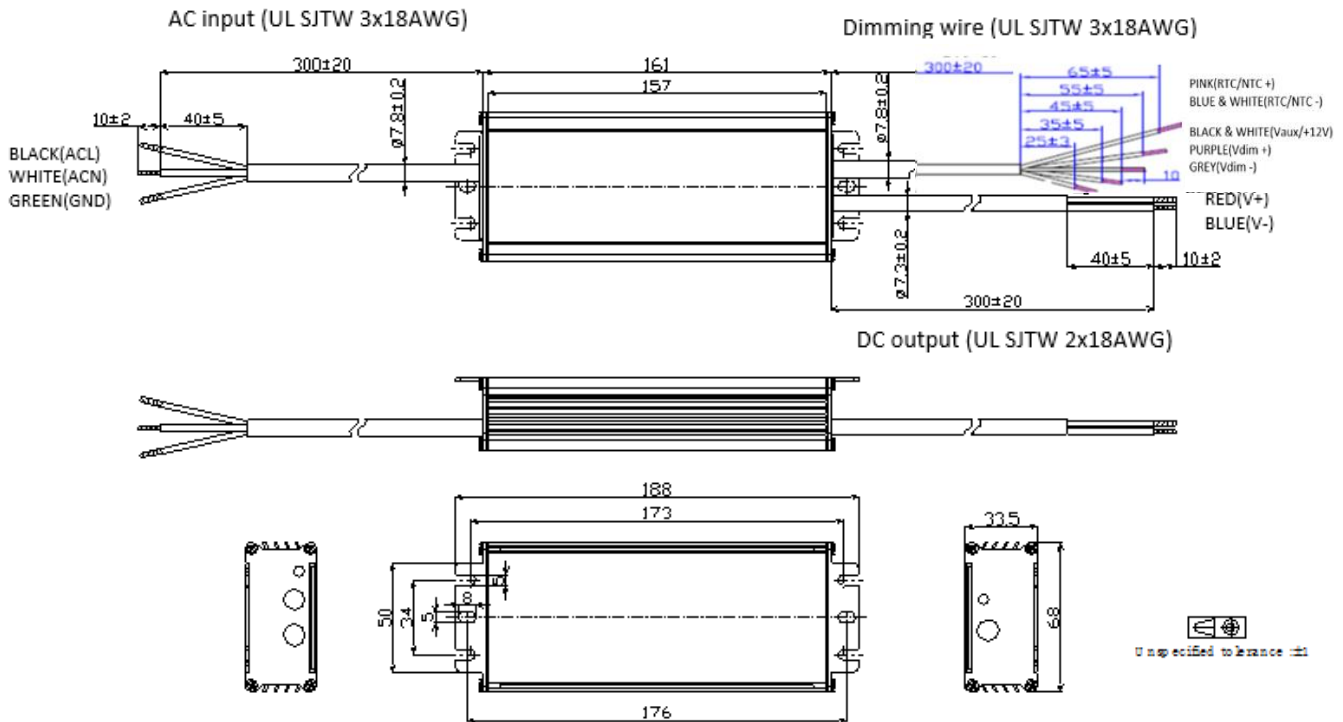
- **LWA096-Cxxx-ERK (UL Cable)**



- **LWA096-Cxxx-ANK (UL Cable)**



- **LWA096-Cxxx-ERK-THR (UL Cable)**



***Contact Autec Sales for non UL Mechanical Diagrams**

■ **Operation Range**

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
LWA096-C050	500	96	115	192	50
	450	96	128	213	45
	400	96	144	240	40
	350	96	165	274	35
	300	82	165	274	35
	250	69	165	274	35
	200	55	165	274	35
	150	41	165	274	35

	35	10	165	274	35

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March 19, 2020

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
LWA096-C070	700	96	82	137	70
	650	96	89	148	65
	600	96	96	160	60
	550	96	105	175	55
	500	96	115	192	50
	450	86	115	192	50
	400	77	115	192	50
	350	67	115	192	50

	50	10	115	192	50

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
LWA096-C105	1050	96	55	91	105
	1000	96	58	96	100
	950	96	61	101	95
	900	96	64	107	90
	850	96	68	113	85
	800	96	72	120	80
	750	96	77	128	75
	700	96	82	137	70
	650	89	82	137	70
	600	82	82	137	70
	550	75	82	137	70
	500	69	82	137	70

	70	10	82	137	70

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
LWA096-C140	1400	96	41	69	140
	1300	96	44	74	130
	1200	96	48	80	120
	1100	96	52	87	110
	1050	96	55	91	105
	1000	91	55	91	105
	950	87	55	91	105
	900	82	55	91	105
	850	78	55	91	105
	800	73	55	91	105
	750	69	55	91	105
	700	64	55	91	105

	105	10	55	91	105

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
LWA096-C210	2100	96	27	46	210
	2000	96	29	48	200
	1900	96	30	51	190
	1800	96	32	53	180
	1700	96	34	56	170
	1600	96	36	60	160
	1500	96	38	64	150
	1400	96	41	69	140
	1300	89	41	69	140
	1200	82	41	69	140
	1100	75	41	69	140
	1000	69	41	69	140

	140	10	41	69	140

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
LWA096-C280	2800	96	21	34	280
	2700	96	21	36	270
	2600	96	22	37	260
	2500	96	23	38	250
	2400	96	24	40	240
	2300	96	25	42	230
	2200	96	26	44	220
	2100	96	27	46	210
	2000	91	27	46	210
	1900	87	27	46	210
	1800	82	27	46	210
	1700	78	27	46	210

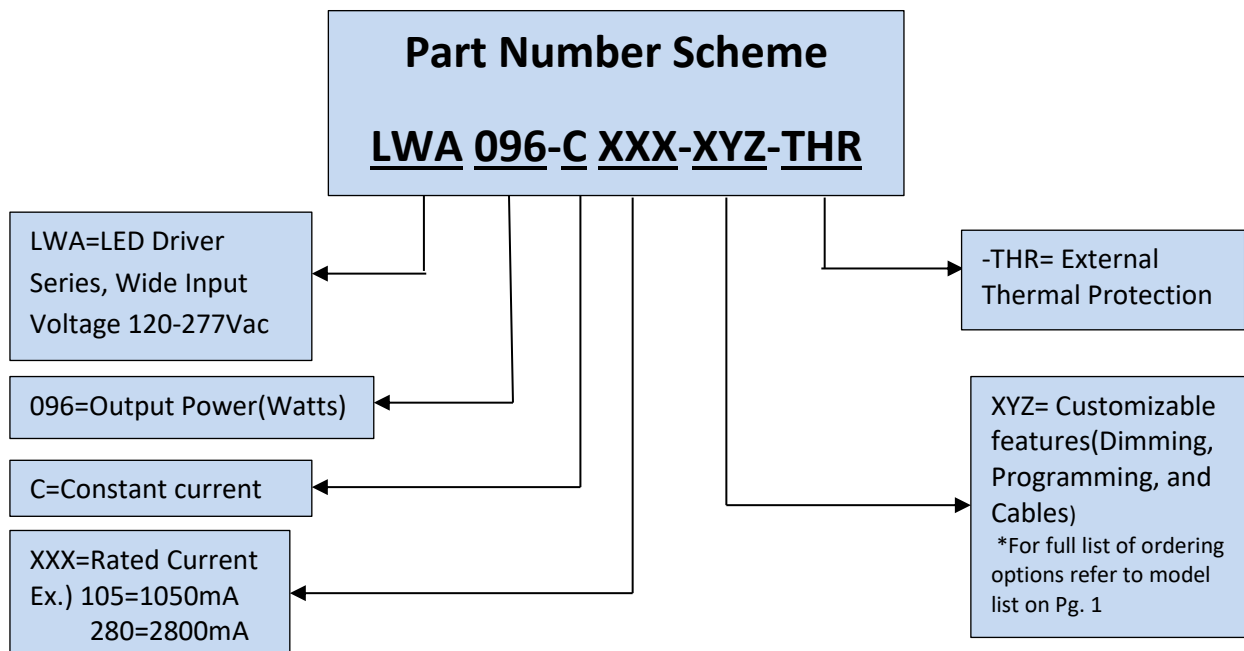
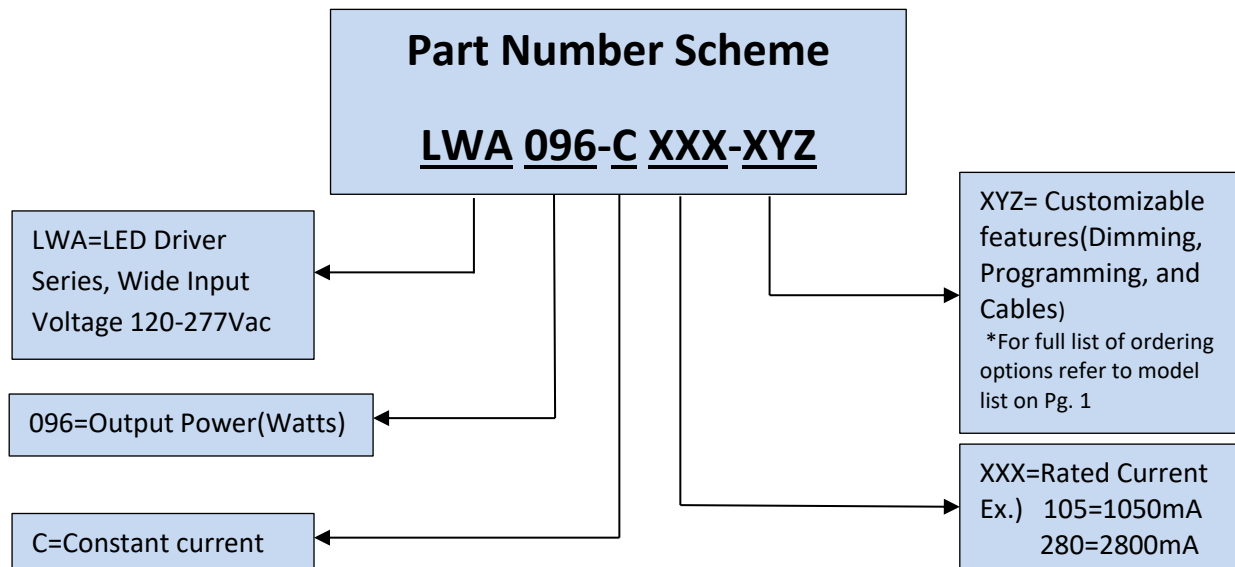
	210	78	27	46	210

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
LWA096-C420	4200	96	14	23	420
	4100	96	14	23	410
	4000	96	14	24	400
	3900	96	15	25	390
	3800	96	15	25	380
	3700	96	16	26	370
	3600	96	16	27	360
	3500	96	16	27	350
	3400	96	17	28	340
	3300	96	17	29	330
	3200	96	18	30	320
	3100	96	19	31	310
	3000	96	19	32	300
	2900	96	20	33	290
	2800	93	20	33	290
	2700	89	20	33	290
	2600	86	20	33	290

	290	9	20	33	290

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