

■ Features

- Power Rating: 400W
- Input Voltage: 180-528Vac
- Constant current design
- Output current settable(1400mA-4200mA)
- +/-2% Output Current Accuracy (Programmable Model)
- Near Field Communication Programmability
- High-Efficiency @ 90% and above
- 0-10V/PWM/Timer/DALI/DMX (Optional) Dimmable
- Dim to Off with 1.5W Standby Power
- Optional External Thermal Protection NTC
- UL Class P, Type HL
- OVP, SCP, & OTP
- IP67
- 5+ year warranty
- Surge Immunity 10kV


RoHS 
Compliant


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

■ Application

- Bay lights, Pole lights, Stadium lights, Horticultural lighting

■ Model List

Model Number	Input Voltage Range	Output Power	Output Voltage	Output Current Min	Output Current Max	Efficiency	Certification
LHA400-C210-XYZ	180-528Vac	400W	114-286Vdc	1400mA	2100mA	92.5% @ 120Vac 93.5% @ 277Vac	UL/cUL
LHA400-C420-XYZ	180-528Vac	400W	57-142Vdc	2800mA	4200mA	92% @ 120Vac 93% @ 277Vac	UL/cUL
LHA400-C990-XYZ	180-528Vac	400W	24-58Vdc	6900mA	9900mA	TBD	UL/cUL

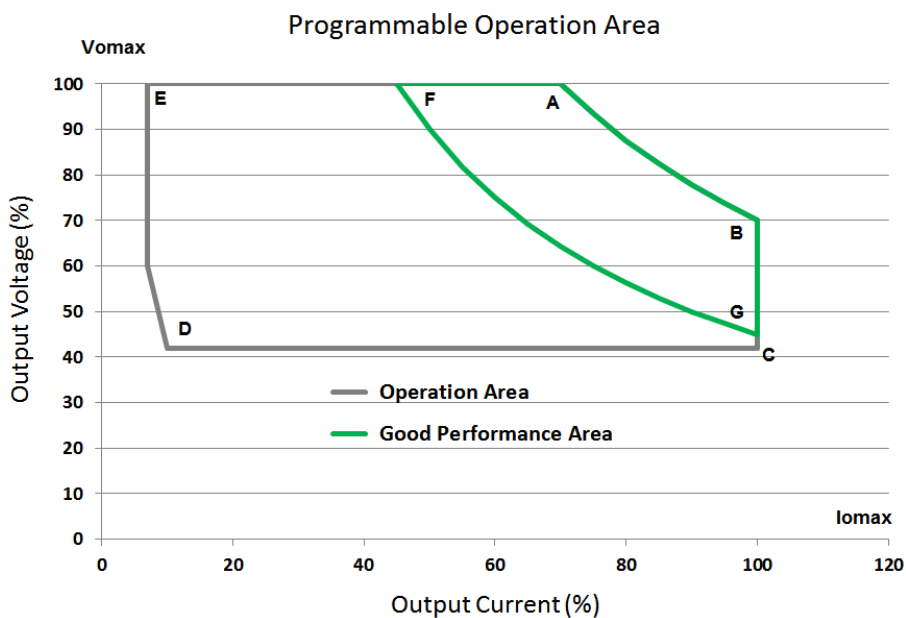
Ordering Options	XY=	Dimming Method	Programmable	12Vaux	Dim-off
	NN	-	-	-	-
	EN	0-10V	-	√	√
	TR	Timer	√	-	-
	ER	0-10V/PWM/Timer	√	√	√
	AN	DALI	-	-	√
	MX*	DMX	√	-	√
Cable Options	Z=	K=UL cable with ground wire (green), S=VDE cable/Class I, D=VDE cable/Class II			
External Thermal Protection NTC Option	-THR	LHA400-C210-XYZ-THR			

DMX Notes: Works with DMX-512 Presently. DMX Dimming range 10-100% (1% DMX command will be treated as 10% Dimming).

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■ Operation Area



Model	C280		C420	
Item	Io(mA)	Vo (V)	Io(mA)	Vo (V)
A	1400	286	2800	143
B	2100	190	4200	95
C	2100	114	4200	57
D	210	114	420	57
E	140	286	280	143
F	840	286	1680	143
G	2100	114	4200	57

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■ Technical Data

Input Voltage	180-528Vac or 250-740Vdc
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	1.8 Amax@277Vac & Full-Load, 0.9Amax@480Vac & Full-Load
Inrush Current	65A peak, 1.2ms duration@277Vac , <0.25A2s 70A peak, 1.3ms duration@480Vac , <0.5A2s
Leakage Current	1mA max @277Vac 60Hz, UL8750, 0.75mAmax @380Vac 50Hz, IEC61347-1
Input Under Voltage	Shut down and auto-restart
Surge Protection	Line to line 6kV, line to ground 10kV, IEC 61000-4-5
Current Accuracy	±5%Io
Ripple Current	Ip-p:5%Io 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~+90°C ; 10%RH~100%RH (See Derating Curve for more details)
Storage Temperature	-40°C~+85°C; 5%RH~100%RH
MTBF	≥280,000 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	9.44x3.54x1.63 by inch (body), 10.51x3.54x1.63 by inch (endcaps included) 240x90x41.5 by mm (body), 267x90x41.5 by mm (endcaps included)
Net Weight	1650g
Packing	10pcs/Carton/19.2kg, 490x370x345mm

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.

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.

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■ Safety/EMC Compliance

Safety Standards	Description
UL8750	Light emitting diode(LED) equipment for use in lighting products
UL1012	Power units other than class 2
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

■ 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		
DALI Interface Standard		IEC62386	
DA1,DA2 High Level	9.5	16	22.5
DA1,DA2 Low Level	-6.5	0	6.5
DA1,DA2 Current	0		2mA

Note: Dim-off function is only available in the models with 12Vaux power.

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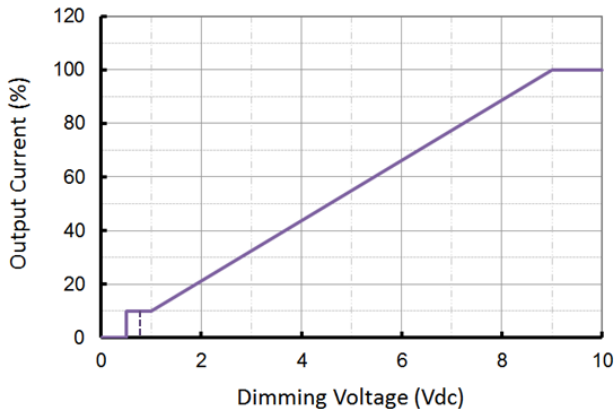
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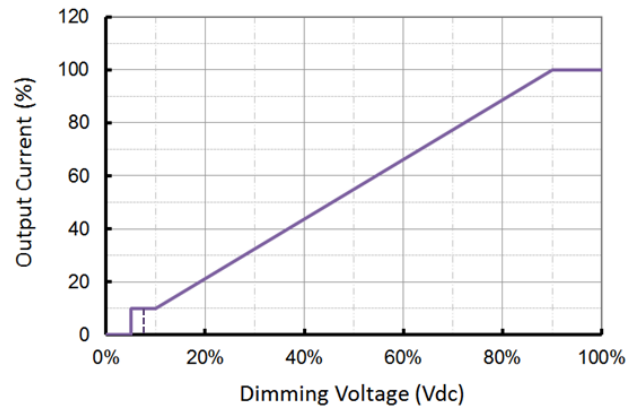
■ Dimming Curve

a. With dim-off (default)

0-10V Dimming Curve

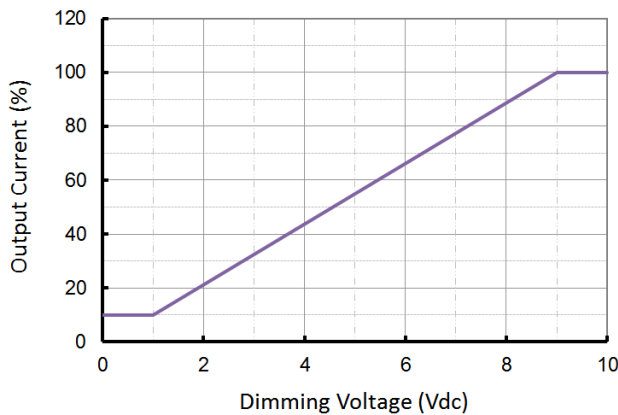


PWM Dimming Curve

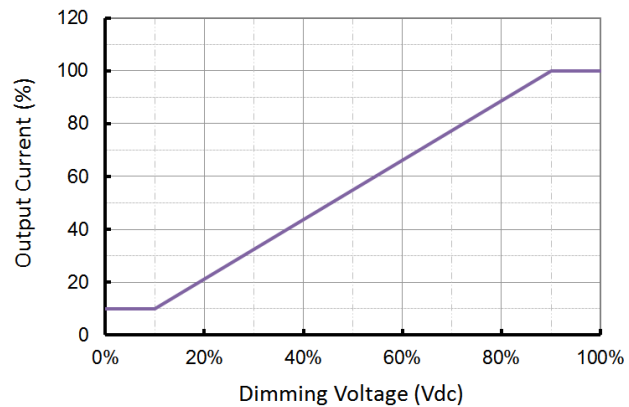


b. Without dim-off (contact sales to get this feature)

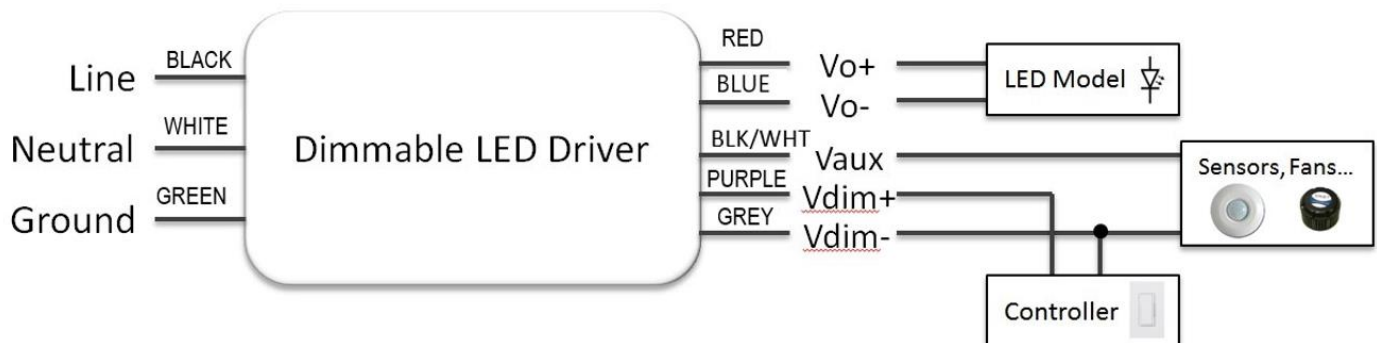
0-10V Dimming Curve



PWM Dimming Curve



■ Wiring Diagram

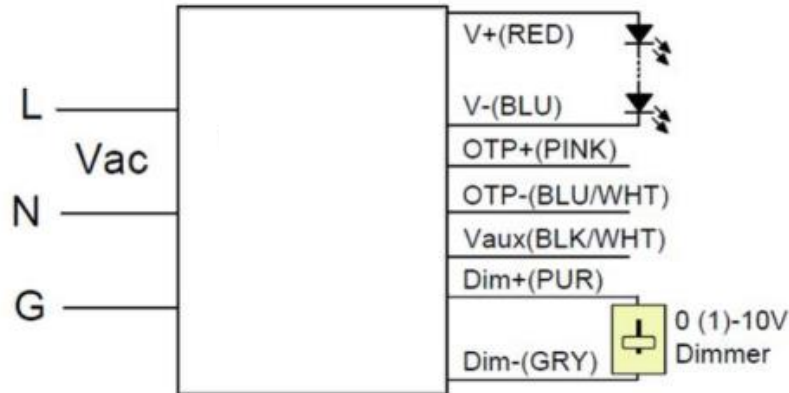


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■ Wiring Diagram/Optional External Thermal Protection



■ External Thermal Protection Table

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>lomin (default setting is 60%)
		lomin	60%loset	100%loset	10%loset≤lomin (default setting is 60%)

■ 41Near Field Communication Programmability



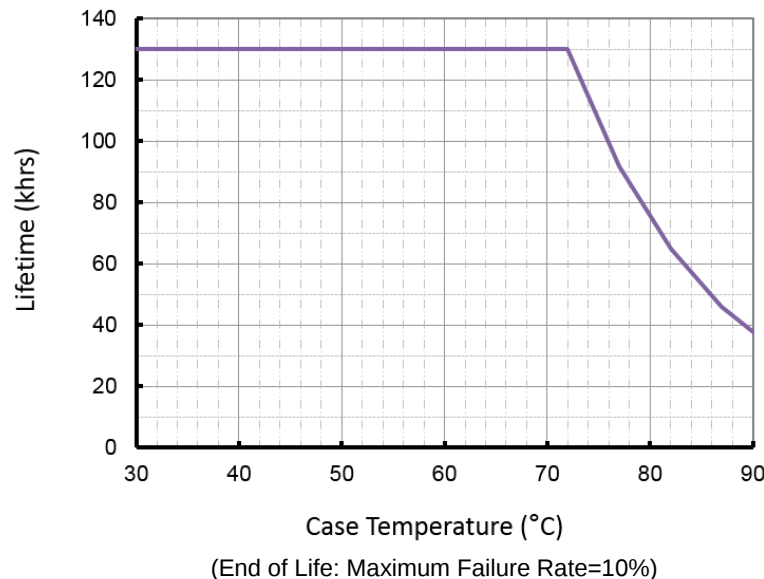
Programming Module
REF. Part# UPRG-NFC

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.

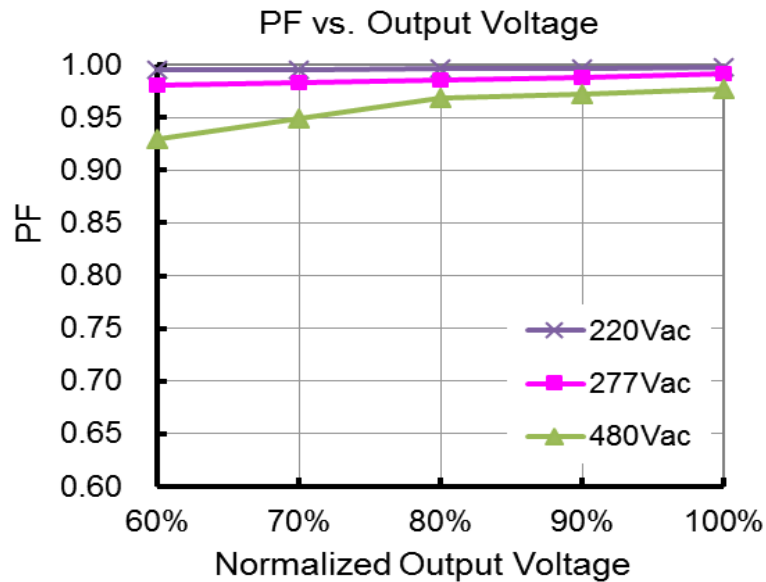
■ Lifetime vs. Case Temperature

Lifetime vs. Case Temperature

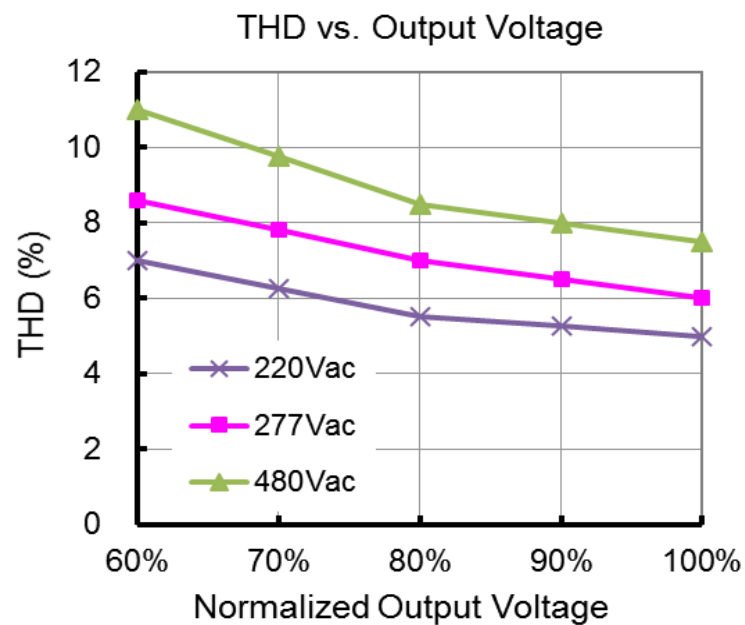


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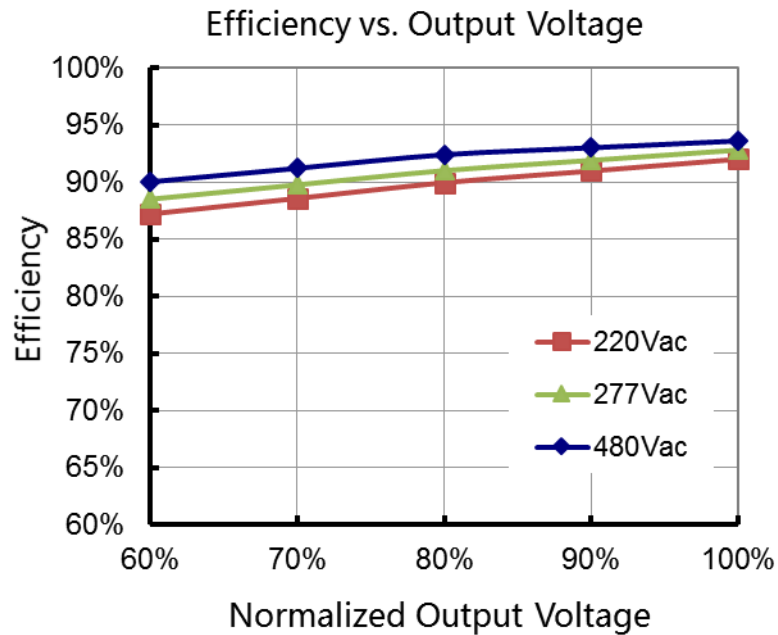
■ Power Factor vs. Load



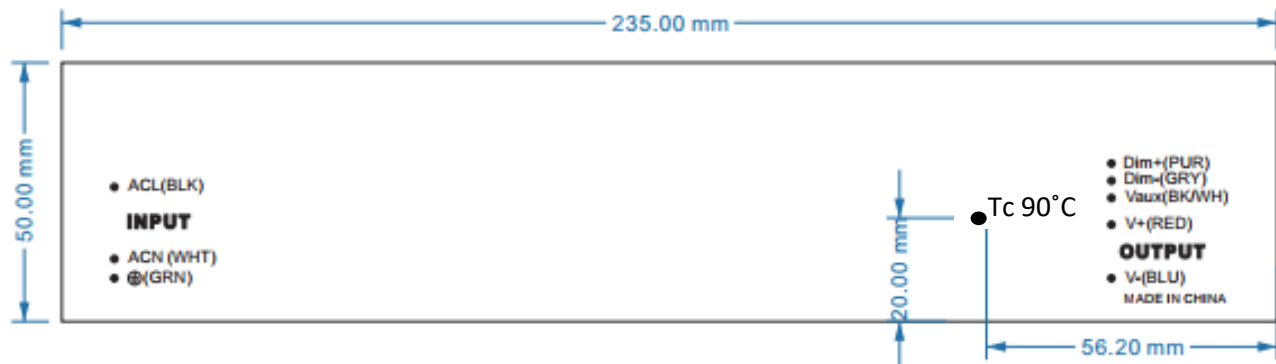
■ THD vs. Load



■ Efficiency vs. Load(4.2A Model)



■ Tc Location(LED Driver Label)



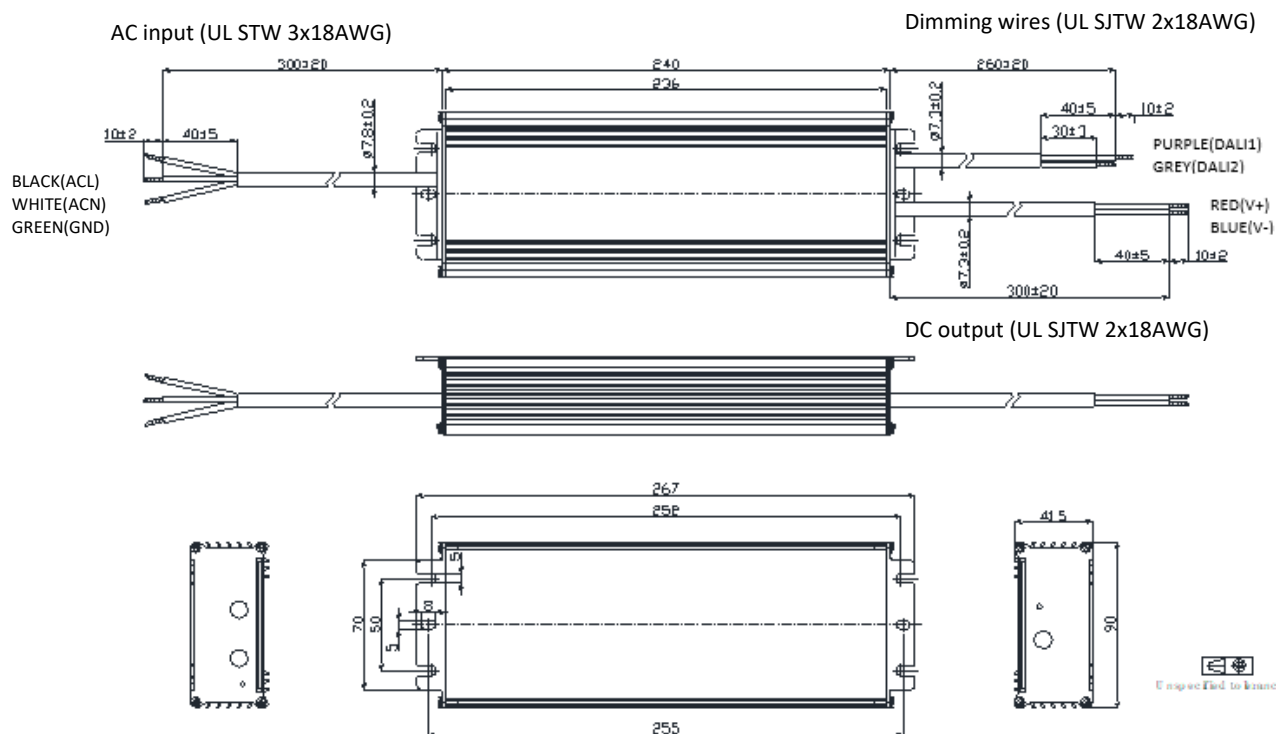
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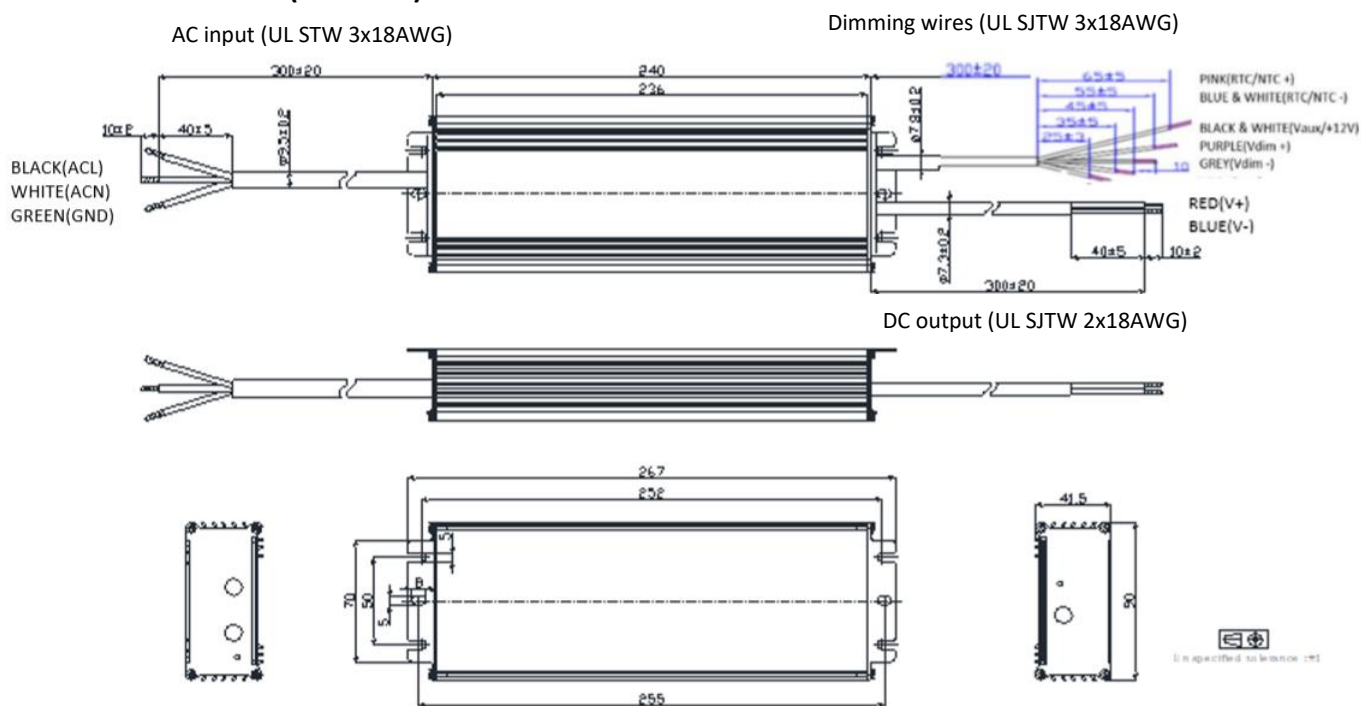
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400W, 180-528Vac Input, Constant Current Programmable LED Driver

- **LHA400-Cxxx-ANK (UL Cable)**



- **LHA400-Cxxx-ANK (UL Cable)**



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

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■ Operation Range

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
LHA400-C210	2100	400	114	190	210
	2000	400	120	200	200
	1900	400	126	211	190
	1800	400	133	222	180
	1700	400	141	235	170
	1600	400	150	250	160
	1500	400	160	267	150
	1400	400	171	286	140
	1300	371	171	286	140
	1200	343	171	286	140
	1100	314	171	286	140
	1000	286	171	286	140
	...	...	171	286	...
	140	40	171	286	140

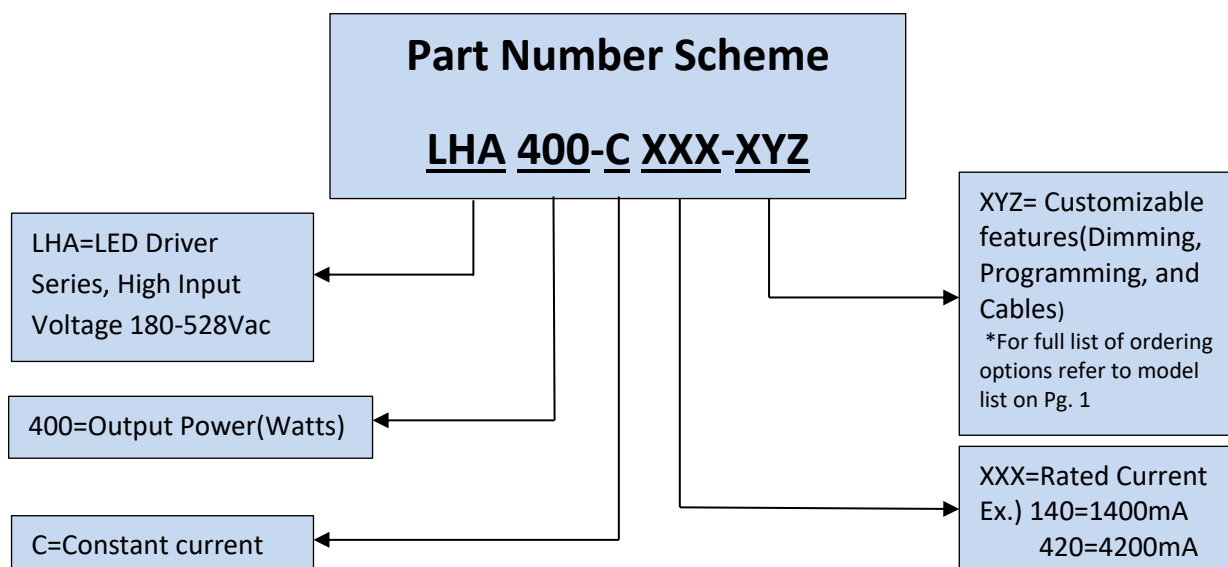
Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
LHA400-C420	4200	400	57	95	420
	4100	400	59	98	410
	4000	400	60	100	400
	3900	400	62	103	390
	3800	400	63	105	380
	3700	400	65	108	370
	3600	400	67	111	360
	3500	400	69	114	350
	3400	400	71	118	340
	3300	400	73	121	330
	3200	400	75	125	320
	3100	400	77	129	310
	3000	400	80	133	300
	2900	400	83	138	290
	2800	400	86	143	280
	2700	386	86	143	280
	2600	371	86	143	280
	...	...	86	143	...
	280	40	86	143	280

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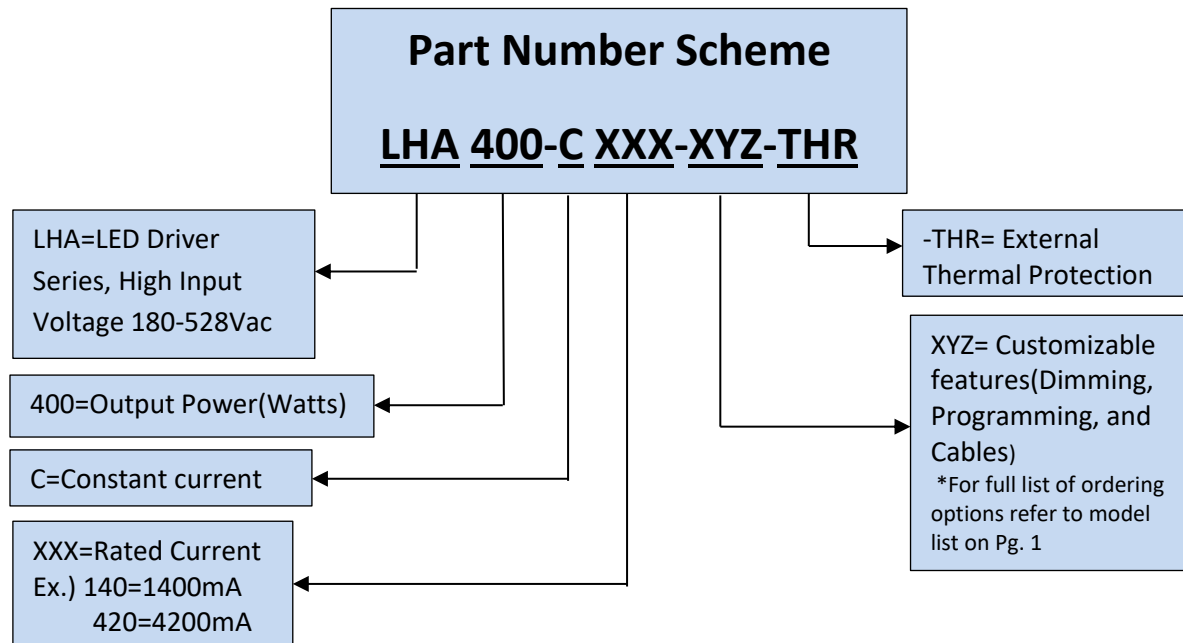
Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
LHA400-C990	9900	400	24	40	990
	9600	400	25	42	960
	9300	400	26	43	930
	9000	400	27	44	900
	8700	400	28	46	870
	8400	400	29	48	840
	8100	400	30	49	810
	7800	400	31	51	780
	7500	400	32	53	750
	7200	400	33	56	720
	6900	400	35	58	690
	6600	400	35	58	690
	6300	400	35	58	690
	6000	400	35	58	690
	5700	400	35	58	690
	5400	379	35	58	690
	5100	358	35	58	690
	...	...	35	58	...
	690	48	35	58	690



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