

Product Datasheet



The global certified TLD-400-C is a dual stage extremely wide input smart LED driver with **independent multi-channel** outputs. 10kV surge protection level, 100khour long life and 7-year warranty provide high confidence to luminaire users. All around protections including digital OTP with auto-recovery secure 24 hour non-stop operation for luminaires.

☒ Stadium ☒ Flood ☒ Harbor



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Features

- Absolute Supply Voltage: 180-528Vac
- Great Surge Immunity 10kV
- 93% Efficiency Max.
- Low Inrush Current
- 100,000Hour Life @ Tc=75°C
- 7 Year Warranty @ Tc<=75°C
- Output Current Programmability
- Live Broadcasting Level Low Ripple
- DMX/RDM/DALI2.0 Dimmable
- Fast Dynamic Response
- DALI Part 150, 250 Support
- DALI Type 6 (SimplySnap Compatible)
- Global Certified Model Available
- IP67/IP66 Rated Waterproof
- Safety according to UL8750, EN 61347-1, 61347-2-13, 62384

Model List

Model Number	Input Voltage Range	Output Power	Output Voltage	Full Power Settable Current Min	Full Power Settable Current Max	Certification
TLD-400-C12A-XYZ-NNNNS3 (To be stopped)	180-528Vac	P1: 133W P2: 133W P3: 133W	20-49Vdc	2.7A	4A	FCC/CE
TLD-400-C990-XYZ-NNNNS3	180-528Vac	P1: 133W P2: 133W P3: 133W	24-53Vdc	2.5A	3.3A	FCC/CE
TLD-400-C360-XYZ-NNNNS3	180-528Vac	P1: 133W P2: 133W P3: 133W	67-166Vdc	0.8A	1.2A	FCC/CE
XY=	Dimming Method	Programmable	Vaux		Dim-off	
AN	DALI2.0/DT6	Cable	24V 150mA		√	
MN	DMX512 + RDM	Cable	-		√	
Z=	U	V	S	W	D	
Input Cable	3 pin UL cable with ground	3 pin UL cable with ground	3 pin VDE cable with ground	3 pin VDE cable with ground	2 pin VDE cable without ground	
Output Cable	4 pin UL cable without Ground	5 pin UL cable with ground	4 pin VDE cable without ground	5 pin VDE cable with ground	4 pin VDE cable without ground	
Certified Input Voltage Range	UL Listed Class P 200-480Vac	UL Listed Class P 200-480Vac	Class I 200-480Vac	Class I 200-480Vac	Class II 200-480Vac	

■ Technical Data

Input Voltage	180~528Vac
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	1.7Amax@277Vac & Full-Load, 1.0Amax@480Vac & Full-Load
Inrush Current	See Inrush Current Section in the datasheet
Leakage Current	0.75MIU max @480Vac 60Hz, UL8750 0.7mA max @400Vac 50/60Hz, IEC60598-1
Input Under Voltage	Shut down and auto-restart
Surge Protection	Line to line 6kV, line to ground 10kV, IEC 61000-4-5
Current Accuracy	±2%Io for programmable model
Ripple Current	Ip _k -p _k : low frequency (<=3kHz) 2%Io max, high frequency (>3kHz) 15%Io max
TLA (Temporal Light Artifacts)	PstLM<0.02, SVM<0.05
Percent Flicker	1% max. Broadcasting level, GB/T-38539-2020
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 ≥105±10°C; Auto Recovery When T _c ≤70±10°C
Operating Temperature	Case Temperature T _c =-40°C~+90°C ; 10%RH~100%RH
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. T _c curve
Case Temperature	90°C max, marked in the T _c point of label
Dimension	284x 90 x 41.5 by mm (body), 311 x 90 x 41.5 by mm (endcaps included)
Net Weight	2000g
Packing	See Package Information Section in the datasheet

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

■ 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 d.c. or a.c. supplied electronic control gear for LED modules
IEC 62384	DC or AC supplied electronic control gear for LED modules - Performance requirements
IEC 55015/FCC Part 15	Conducted emission test & radiated emission test; ANSI C63.4:2009 Class B
IEC 61000-3-2	Harmonic current emissions; Class C
IEC 61000-3-3	Voltage fluctuations & 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 (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

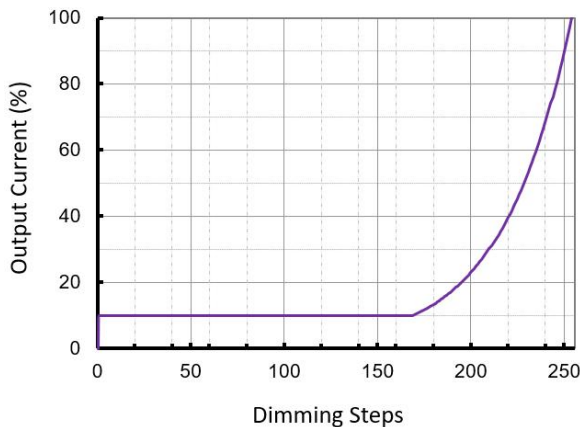
400W, 200-480Vac Input, RGB Triple Output LED Driver

■ Dimming

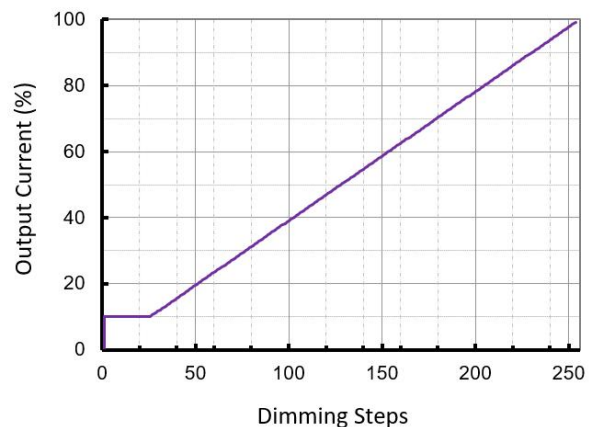
DALI Interface Standard	IEC62386, part 101,102,207,150,250		
DA1,DA2 High Level	9.5	16	22.5
DA1,DA2 Low Level	-6.5	0	6.5
DA1,DA2 Current	0		2mA
Default Memory Bank 1 CCT Value (Address 0x22 Definition)	CH1: Red, 0x01, CH2: Green, 0x02, CH3: Blue, 0x03 (SimplySnap Compatible)		
DMX+ & DMX- Voltage	-6V		6V
DMX to Ground Resistance	25Mohm		
Logic 0/1 (DMX+ to DMX-) Threshold		0.2V	
Communication Baud Rate		250kbps	
Fast Dimming On-Off Transition		50ms	
Fast Dimming 10-100% Io Transition		30ms	
Flashing Speed	-	-	44fps

- DALI and DMX dimming curves

DALI Dimming Curve



DMX/RDM Dimming Curve

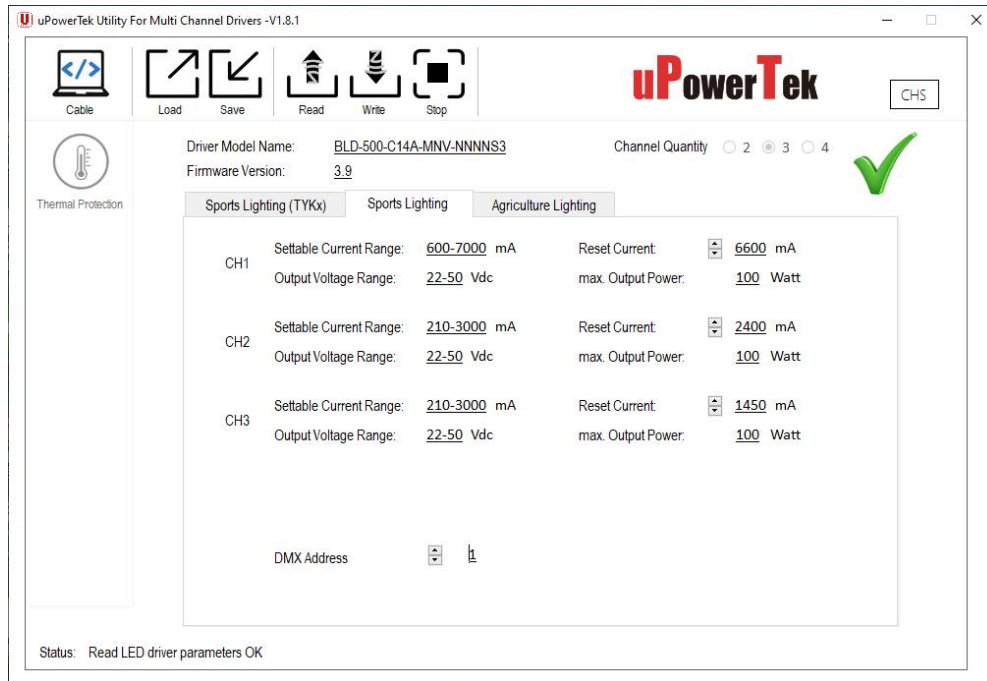


Note: Both DALI and DMX dimming curves can be customized to be linear or logarithmic as default.

■ Programming

- Programmable Functions

uPowerTek LED drivers offer a range of configurable functions to meet specific lighting requirements. The Output Current, Dimming Mode and DMX addressing can be set as basic programming functions. .

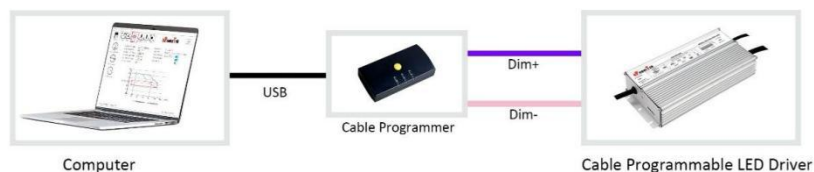


uPowreTek Programming Software Interface

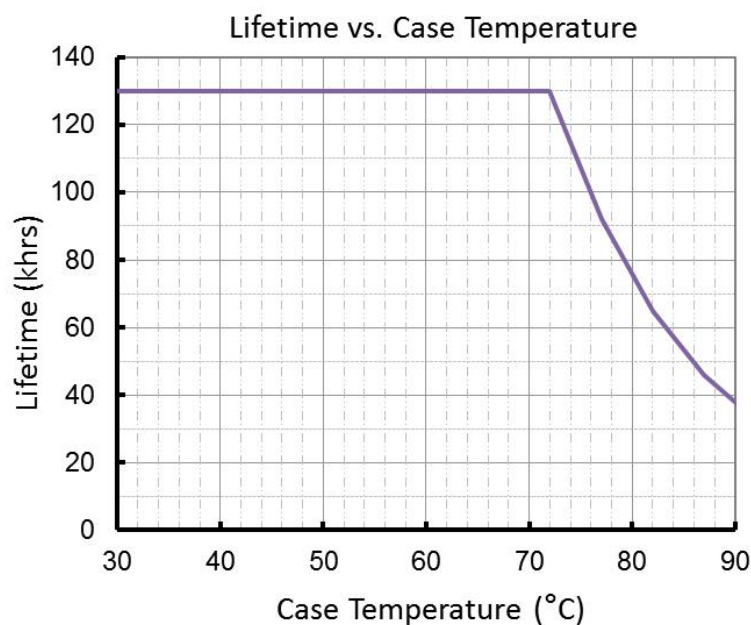
- Connection Guide

This guide provides simple connection diagrams to help users understand the programming system. For more detailed operating instructions, including step-by-step procedures and additional configurations, please visit our website. You can download the comprehensive user manual and necessary software from the following link:

<https://www.upowertek.com/download-2/>.

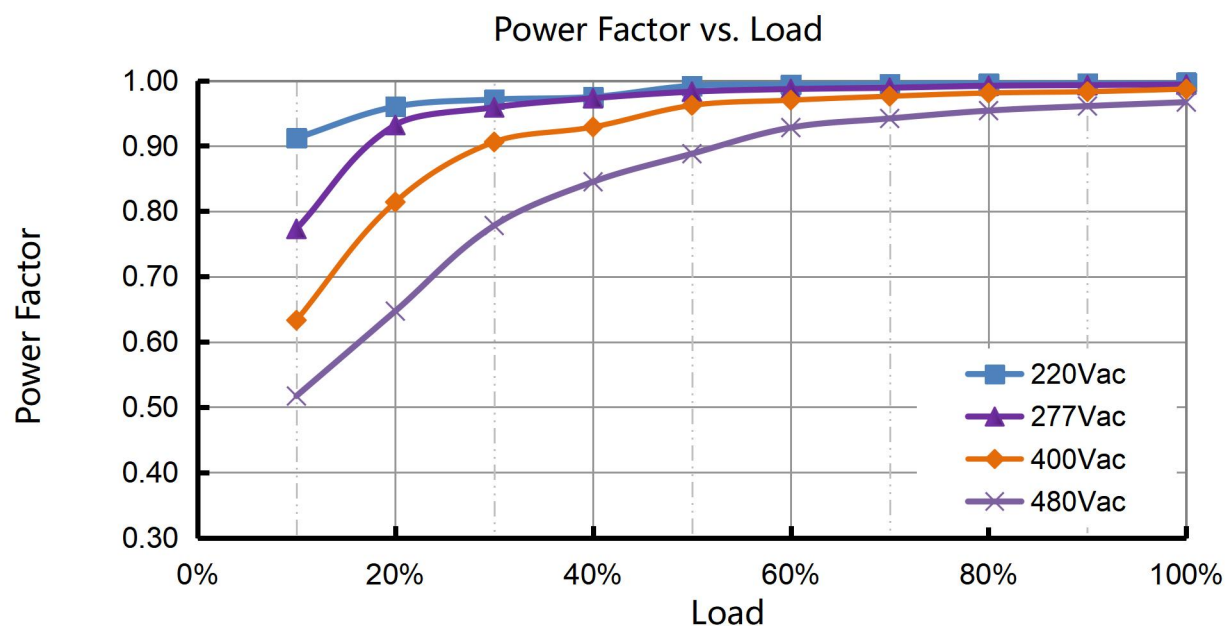


Lifetime vs. Case Temperature

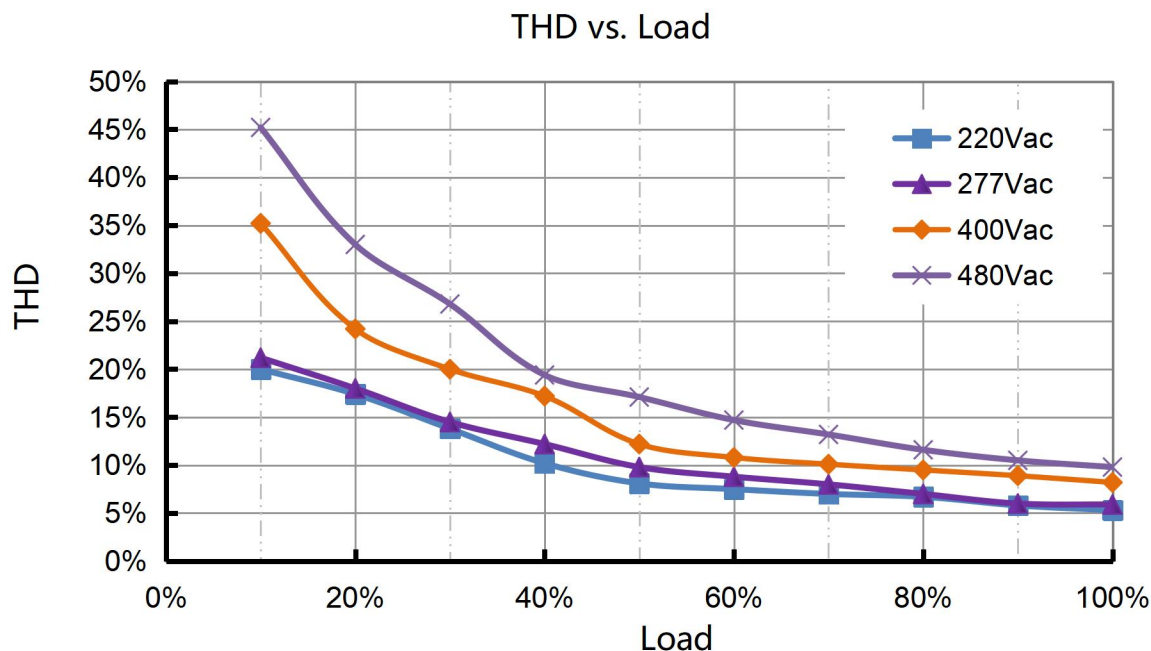


(End of Life: Maximum Failure Rate=10%)

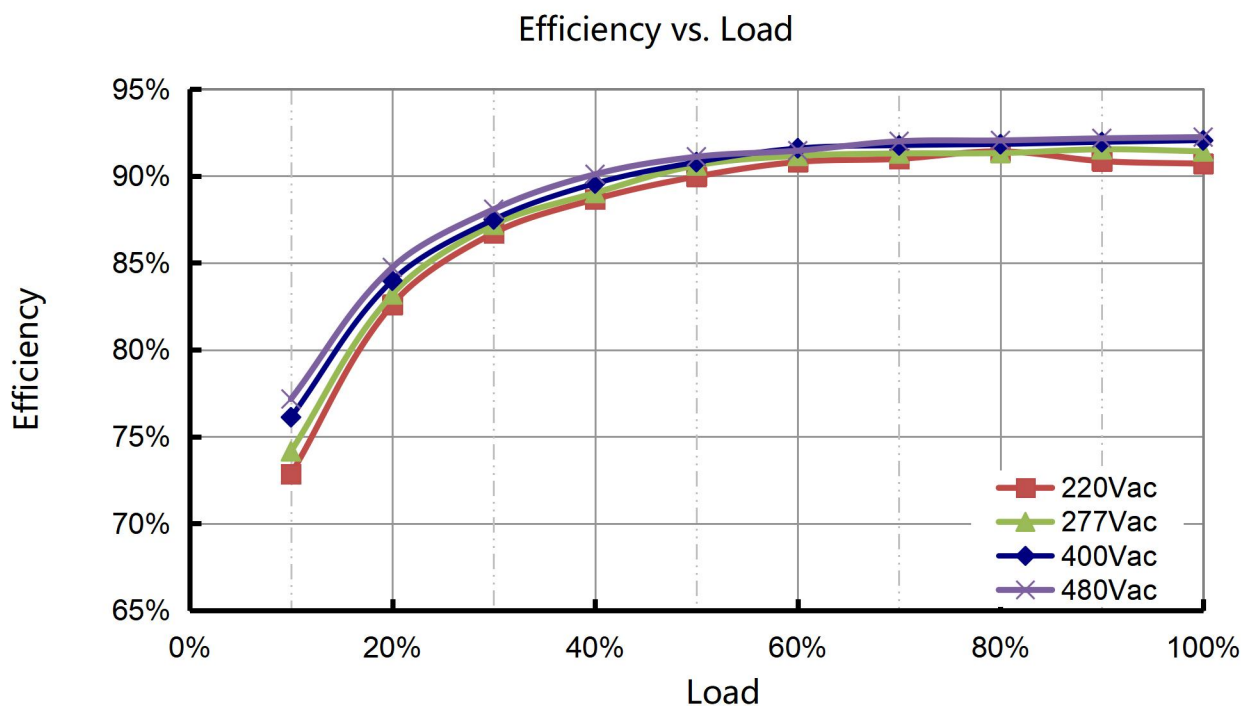
Power Factor vs. Load



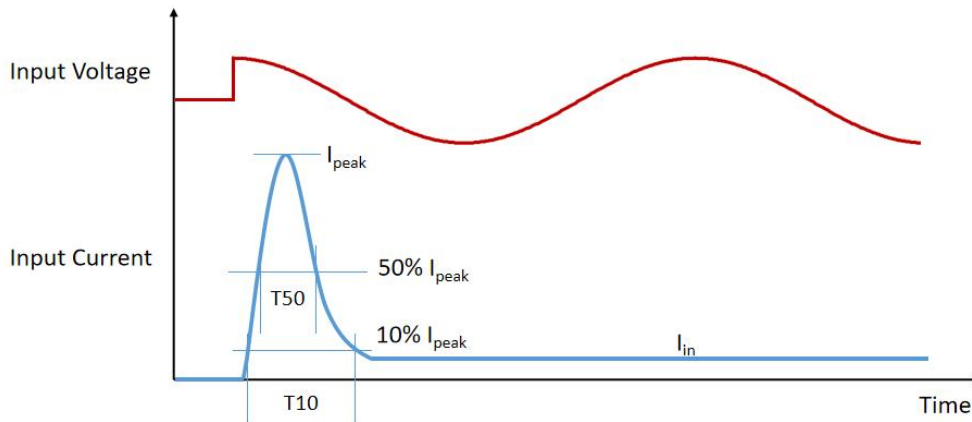
■ THD vs. Load



■ Efficiency vs. Load



Inrush Current

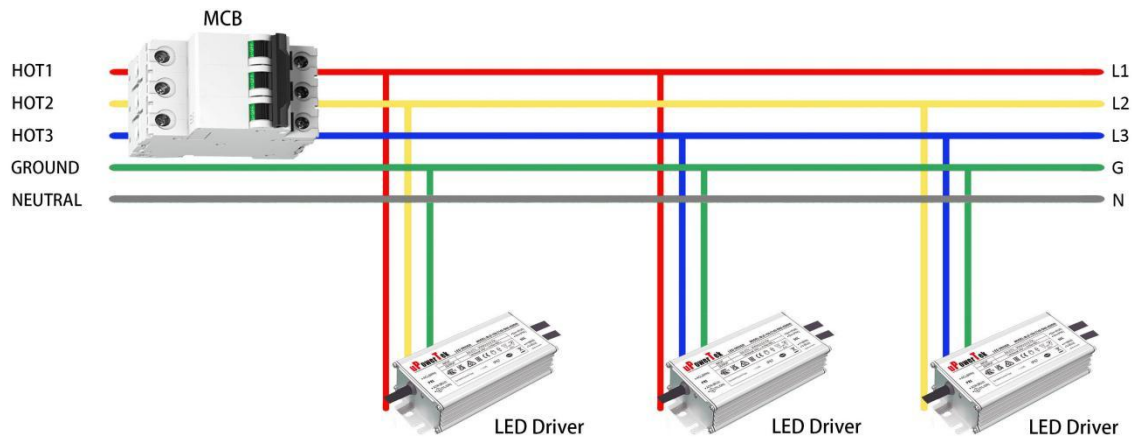


Input Voltage	I_{peak}	10% -10% T10 Duration	50% -50% T50 Duration
220Vac	64A	824 μ s	400 μ s
277Vac	87.6A	804 μ s	390 μ s
400Vac	101.2A	680 μ s	320 μ s
480Vac	121.2A	660 μ s	300 μ s

- MCB Suggestion

Type	B10	B16	B25	B32	C10	C16	C25	C32	D10	D16	D25	D32
220Vac	3	4	7	9	3	5	8	11	4	6	10	12
277Vac	2	3	5	7	3	6	9	12	5	8	12	16
400Vac	3(x3)	4(x3)	7(x3)	9(x3)	3(x3)	5(x3)	8(x3)	11(x3)	4(x3)	6(x3)	10(x3)	12(x3)
480Vac	2(x3)	3(x3)	5(x3)	7(x3)	3(x3)	6(x3)	9(x3)	12(x3)	5(x3)	8(x3)	12(x3)	16(x3)

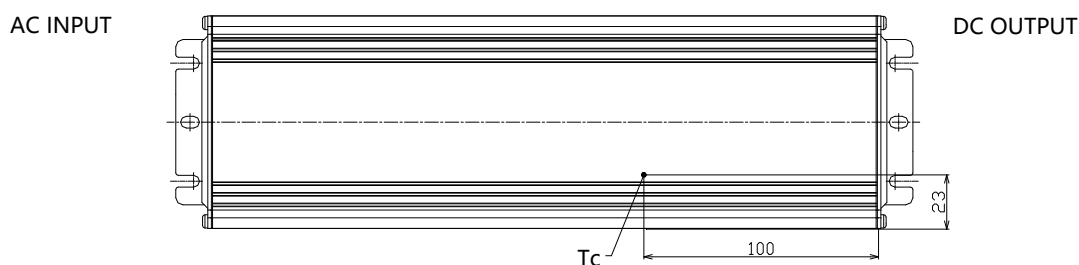
Three phase wiring suggestion.



■ Dielectric Strength

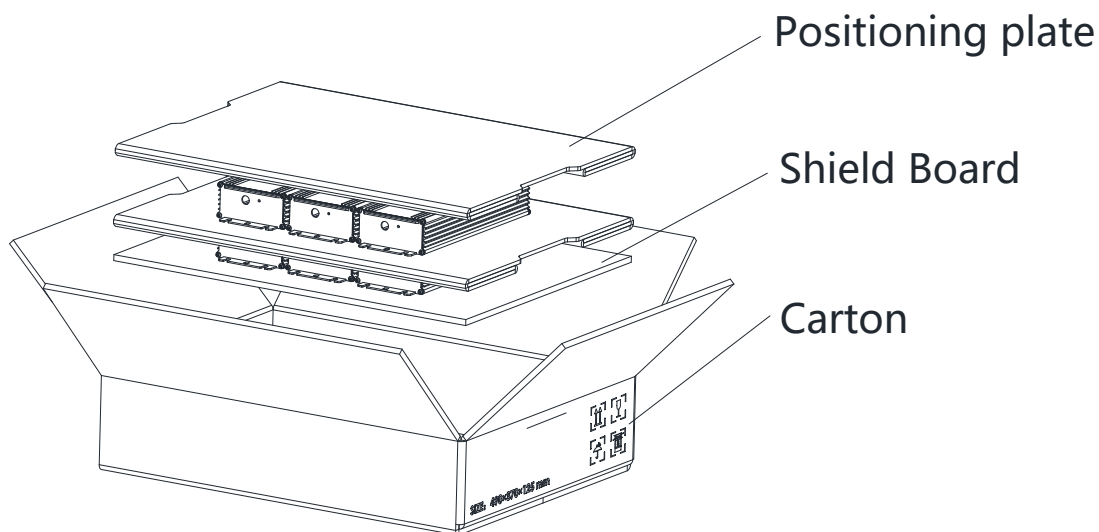
Unit: Vac	Input	Output	Dimming	Case
Input	-	3920	3920	1960
Output	3920	-	1960	1960
Dimming	3920	1960	-	1960
Case	1960	1960	1960	-

■ Tc Point



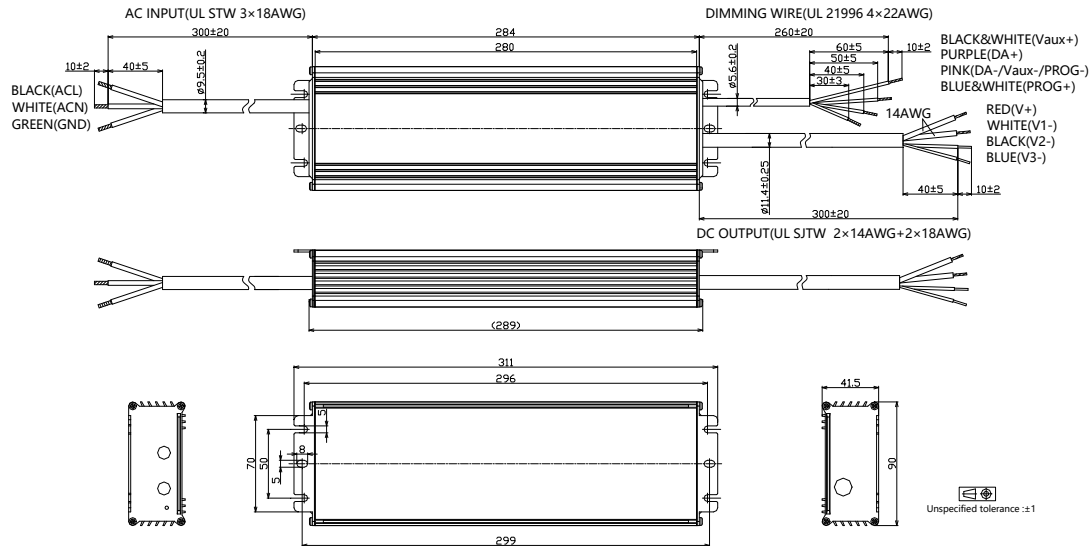
■ Packaging Information

Typical Carton Dimension(L×W×H)	490×370×125 mm
Positioning plate	2pcs/carton
Shield Board	1pcs/carton
LED Drivers/LED	6pcs/carton
Net Weight	12.0 kg/carton
Gross Weight	12.9 kg/carton

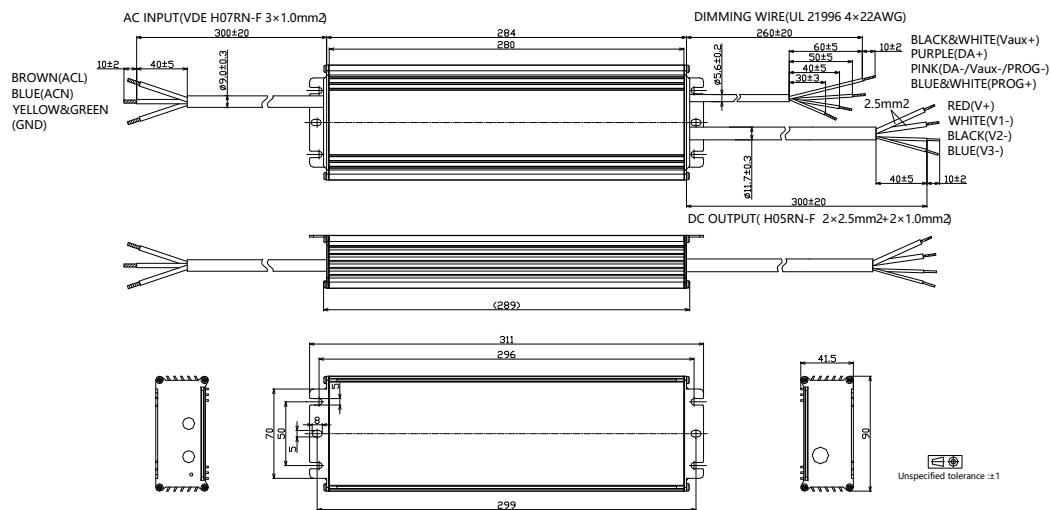


Mechanical Design

- TLD-400-CXXX-ANU-NNNS3

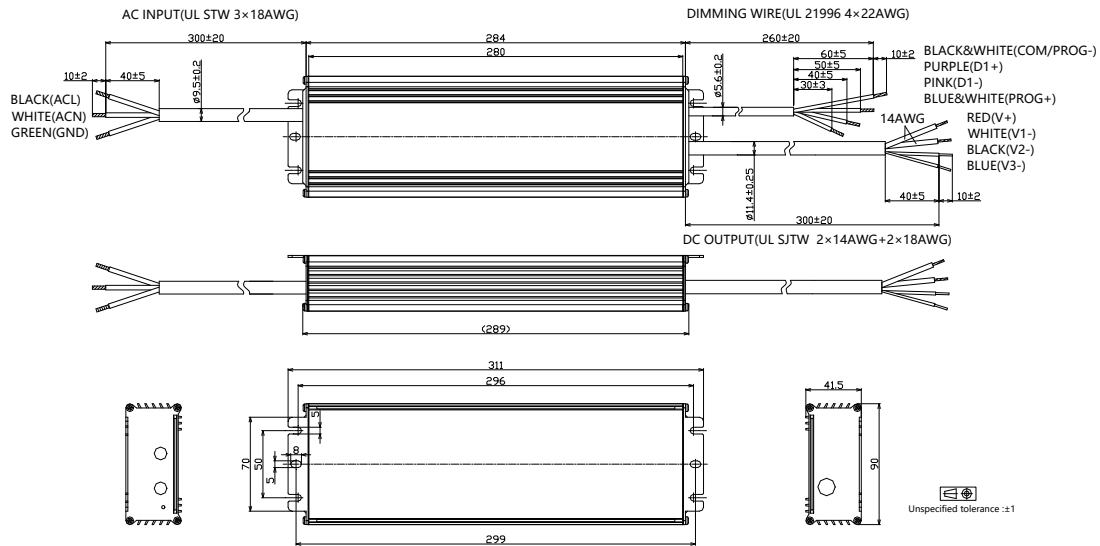


- TLD-400-CXXX-ANS-NNNS3

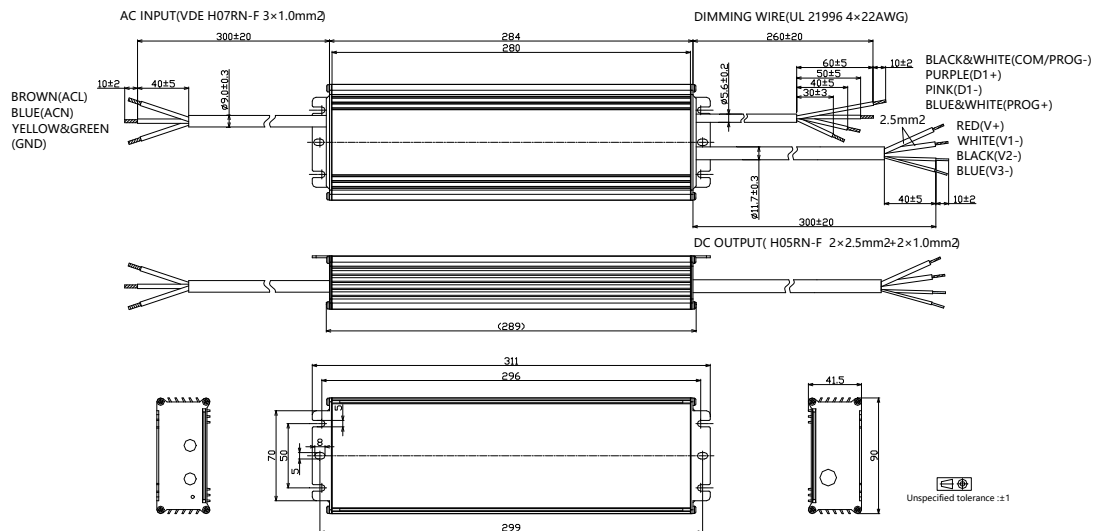


400W, 200-480Vac Input, RGB Triple Output LED Driver

- TLD-400-CXXX -MNU-NNNS3



- TLD-400-CXXX -MNS-NNNS3



■ Output Operation Range

Model	Typical Set Output Current (mA)	Max Output Power (W) /Each Channel	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C12A	4000	400/133	20	33	400
	3900	400/133	20	34	390
	3800	400/133	21	35	380
	3700	400/133	22	36	370
	3600	400/133	22	37	360
	3500	400/133	23	38	350
	3400	400/133	23	39	340
	3300	400/133	24	40	330
	3200	400/133	25	42	320
	3100	400/133	26	43	310
	3000	400/133	27	44	300
	2900	400/133	28	46	290
	2800	400/133	29	48	280
	2700	400/133	30	49	270
	2600	384/128	30	49	270
	...	...	...	...	...
	270	40/13	30	49	270

Model	Typical Set Output Current (mA)	Max Output Power (W) /Each Channel	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
C990	3300	400/133	24	40	330
	3200	400/133	25	42	320
	3100	400/133	26	43	310
	3000	400/133	27	44	300
	2900	400/133	28	46	290
	2800	400/133	29	48	280
	2700	400/133	30	49	270
	2600	400/133	31	51	260
	2500	400/133	32	53	250
	2400	384/128	32	53	250
	2300	366/122	32	53	250
	...	...	...	...	...
	250	40/13	32	53	250

400W, 200-480Vac Input, RGB Triple Output LED Driver

Model	Typical Set Output Current (mA)	Max Output Power (W) /Each Channel	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
C360	1200	400/133	67	111	120
	1150	400/133	69	116	115
	1100	400/133	73	121	110
	1050	400/133	76	127	105
	1000	400/133	80	133	100
	950	400/133	84	140	95
	900	400/133	89	148	90
	850	400/133	94	156	85
	800	400/133	100	166	80
	750	375/125	100	166	80
	700	348/116	100	166	80
	...	...	...	...	...
	80	40/13	100	166	80

■ Revision History

Revision	Date	Contents
A	2024-02-13	New Release
B	2024-07-25	1. Fast dimming description added 2. Power factor, THD, efficiency curves updated by 10-100% load range 3. MCB usage and driver quantity section added 4. Inrush current data updated 5. New models added.
C	2024-11-16	1. DALI memory bank 1 definition for RGB(W) application