Product Datasheet

The global certified BLD-500-C is an extremely high efficiency **smart LED driver for tunable spectrum grow lights**. 100khour long life and 5-year warranty provide high confidence to luminaire users. NFC and cable programming are both available for users. All around protections including digital OTP (internal and external by NTC) with auto-recovery secure non-stop operation for luminaires.

Features

- Absolute Supply Voltage: 100-305Vac
- **4 Channel Output**
- **Ground Wire at Output Connector**
- 94% Efficiency Max.
- **Low Inrush Current**
- 100,000Hour Life @ Tc=75℃
- 5 Year Warranty @ Tc<=75℃
- Cable Programmability and Isolated Dimming (NFC Optional)
- Knob Dimming
- RJ25 Daisy Chain Connection
- Dim Off with 0.5W Standby Power
- 12V 300mA Auxiliary Power to Power Controllers and Fans
- UL Class P, ENEC/CB/CCC SELV Output
- Global Certified Model Available
- Safety according to EN 61347-1, 61347-2-3,61347-2-13, 623847

Model List

Model Number	Input Voltage Range	Output Channel	Max Output Power	Output Voltage	Full Power Settable Current Min	Full Power Settable Current Max	Protocol
BLD-500-C11A-ENV #abcdTS	100-305Vac	1	P1: 500W	27 - 56Vdc	9A	11A	0-10V
		2	P2: 100W	15 - (V_{CH1}-4V)	1.95A	3A	
		3	P3: 100W	15 - (V_{CH1}-4V)	1.95A	3A	
		4	P4: 100W	15 - (V_{CH1}-4V)	1.95A	3A	

Note: 1. P=P1+P2+P3+P4, P is <=500W
2. See the Output Operation Range Section for programmable model details
3. Suffix #abcd definition is shown in the Mechanical Design section
4. TS=T2, 2 channel version, TS=T3, 3 channel version, TS=T4, 4 channel version

Technical Data

Input Voltage	90～305Vac, 380Vac for 2 hours
Input Frequency	47～63Hz
Power Factor	>0.95@60-100%load, refer to PF vs. Load curve
THD	<15%@60-100%load, refer to THD vs. Load curve
Input Current	4.5Amax@120Vac & Full-Load, 2.7Amax@220Vac & Full-Load
Inrush Current	See Inrush Current Section in the datasheet
Leakage Current	1mA max @277Vac 60Hz, UL8750,0.75mAmax @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	±2%Io for programmable model, ±5%Io for non-programmable model
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 Tc≧105±10℃; Auto Recovery When Tc≦70±10℃
Auxiliary Power (Vaux)	12V+/-5%, 300mA max
Operating Temperature	Case Temperature Tc=-40℃～+90℃； 10%RH～100%RH
Storage Temperature	-40℃～+85℃； 5%RH～100%RH
MTBF	≥280,000 hours, 75℃ case temperature (MIL-HDBK-217F)
Lifetime	≥100,000 hours, 75℃ case temperature, refer to life vs. Tc curve
Case Temperature	90℃ max, marked in the Tc point of label
Dimension	Check with us according to different configurations
Net Weight	1600g
Packing	See Package Information Section in the datasheet

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

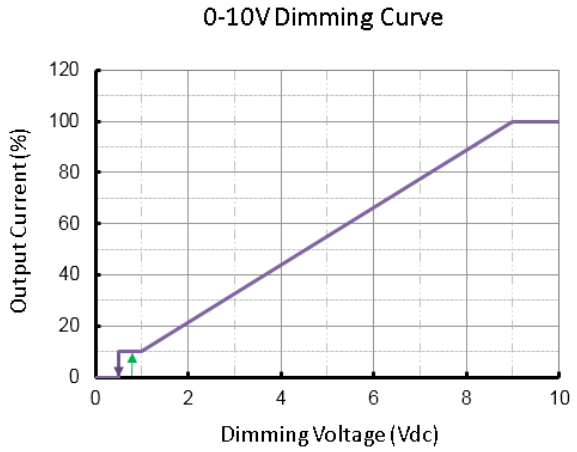
Safety/EMC Compliance

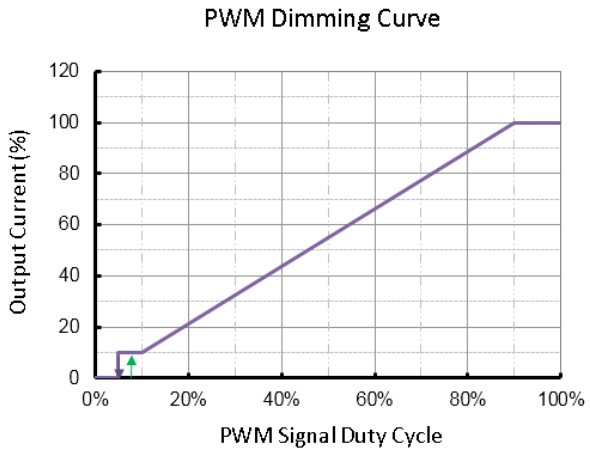
Safety Standard	Description
UL8750	Light emitting diode(LED) equipment for use in lighting products
UL1012	Power units other than class 2
IEC 61347-1	Lamp control gear Part 1: general and safety requirements
IEC 61347-2-13	Lamp control gear Part 2-13: particular requirement for d.c. or a.c. supplied 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	100uA	150uA	200uA
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	3.8V		10V
PWM Low	0V		0.6V
PWM Frequency	300Hz		2kHz
External PWM Controller Current Sinking Capability	300uA		

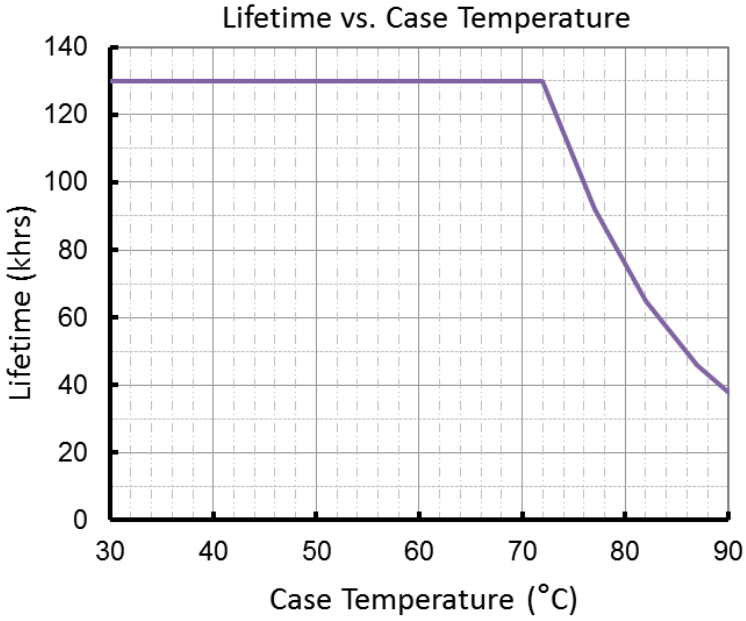
- **Dimming Curve**





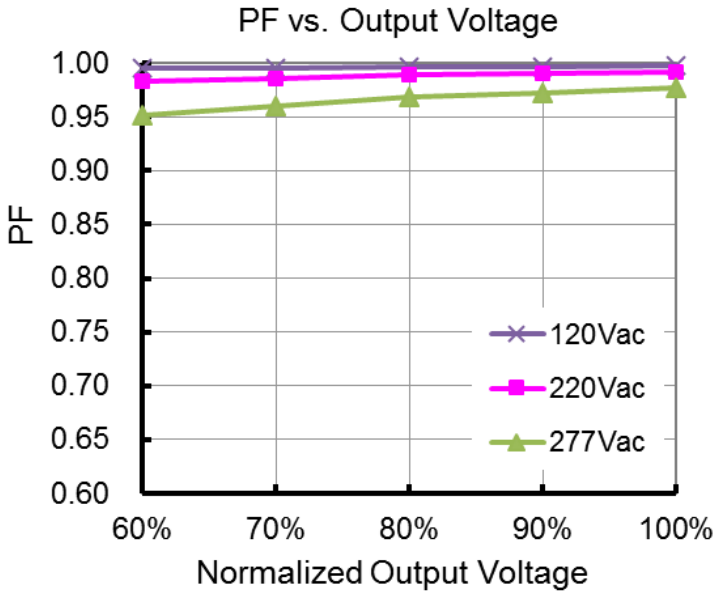
Note: CH1 can not reach the target output current if CH2, CH3 or CH4 is on and P1 +P2+P3+P4>500W.

■ Lifetime vs. Case Temperature

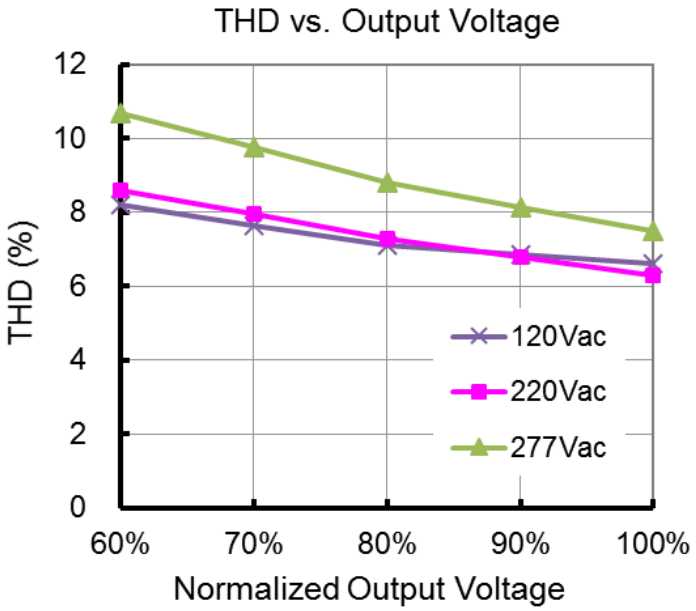


(End of Life: Maximum Failure Rate=10%)

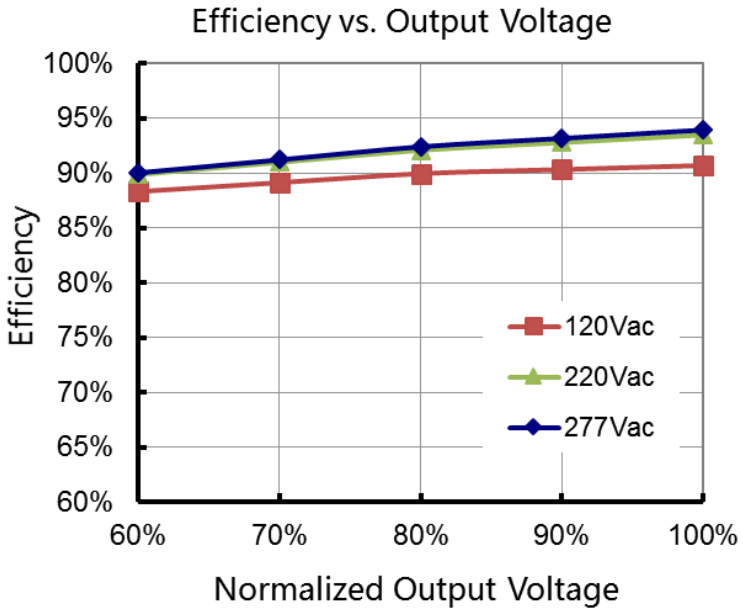
Power Factor vs. Load



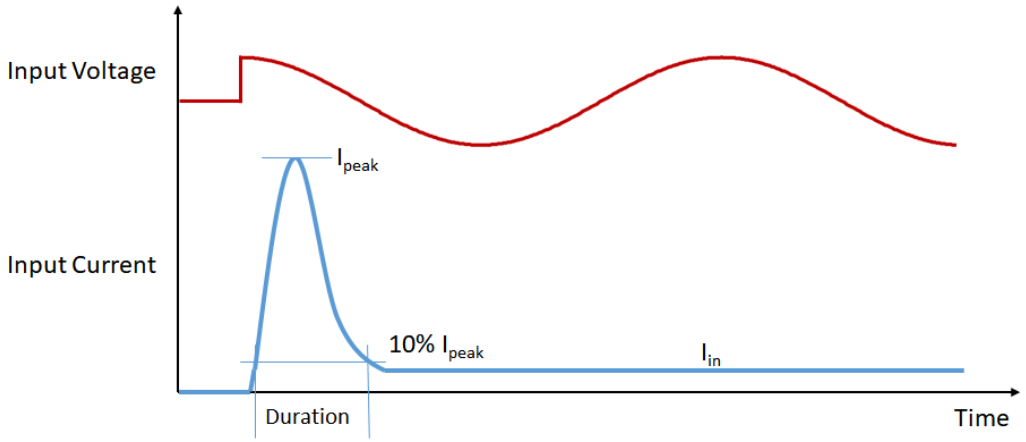
THD vs. Load



Efficiency vs. Load



Inrush Current



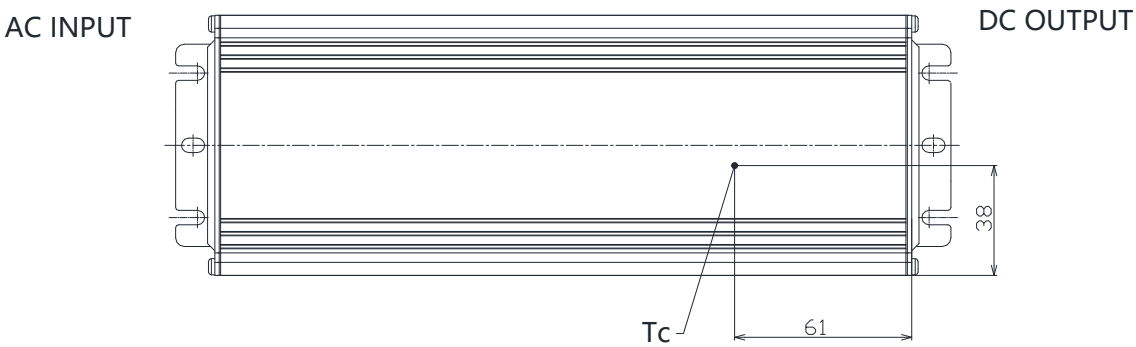
Input Voltage	I_{peak}	Duration
120Vac	18.0A	5.32mS
220Vac	30.8A	5.24mS
277Vac	42.2A	5.08mS

Please contact with us for MCB calculation and waveforms.

Dielectric Strength

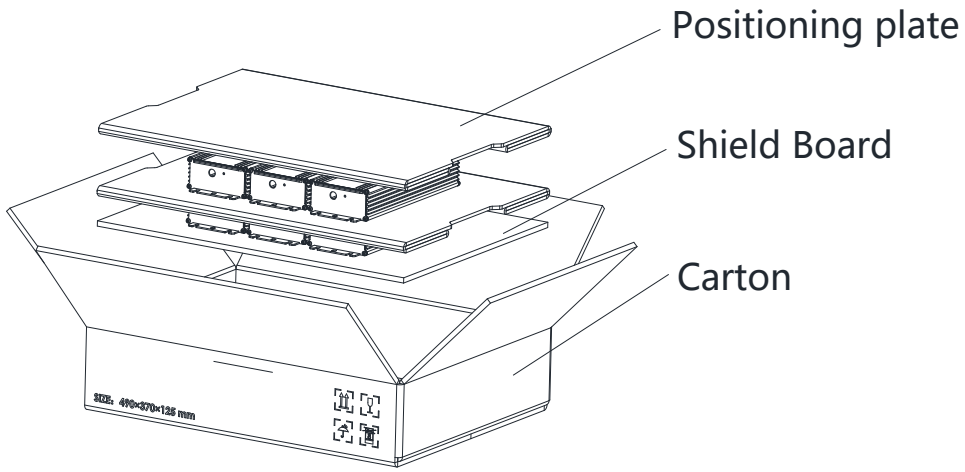
Unit: Vac	Input	Output	Dimming	Case
Input	-	3750	3750	1554
Output	3750	-	1554	1554
Dimming	3750	1554	-	1554
Case	1554	1554	1554	-

Tc Point



Packaging Information

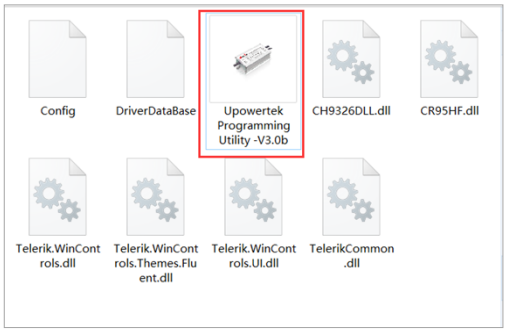
Typical Carton Dimension(L×W×H)	490×370×125 mm
Positioning plate	2pcs/carton
Shield Board	1pcs/carton
LED Drivers	6pcs/carton

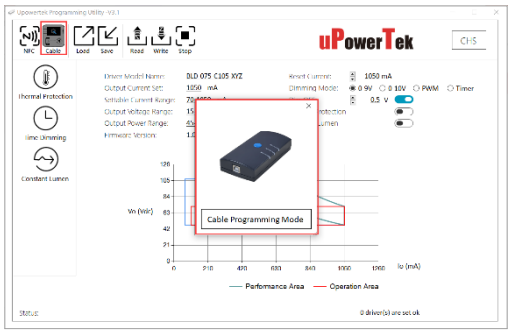


Programming

- **Cable Programming**

a. Download PC Software at https://www.upowertek.com/download-2/
b. Click Upowertek Programming Utility.exe
c. The GUI start and notify you the programming mode (cable programming or NFC programming)



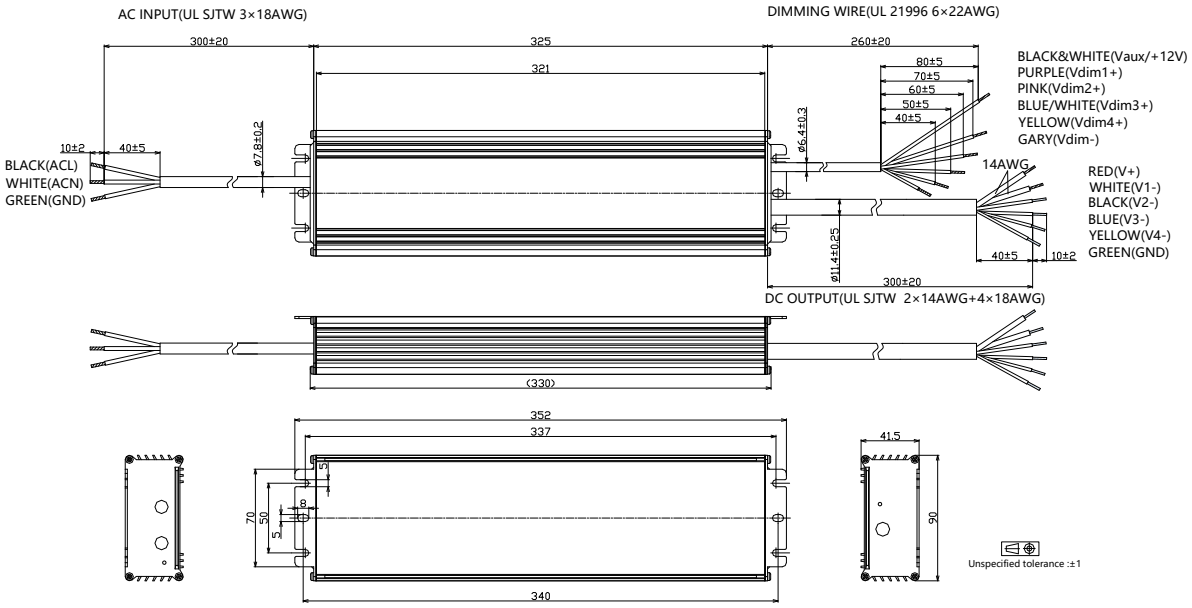


d. Click “Cable” button if it’s not cable programming mode.
e. Connect the Vdim+ and Vdim- wires to the right ones (the same color) of the programmer.

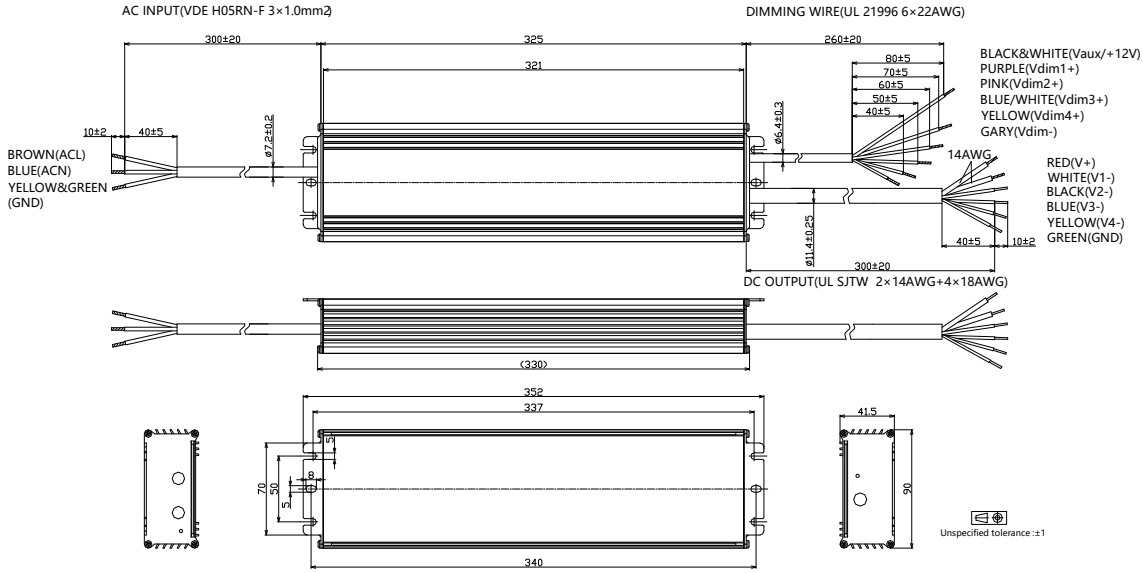
- **Please contact with us for product user manual and more information such as:**
  a. Output Lumen Compensation
  b. Luminaire Thermal Protection by External NTC (with extra cable)
  c. Dimming Curve Customization (dim off threshold, minimum dimming level, maximum dimming voltage etc.)
  d. Adjustable Startup Time
  e. Time Dimming (adaptive mid-night, percentage, etc.)
  f. Customized Control Protocol

Mechanical Design

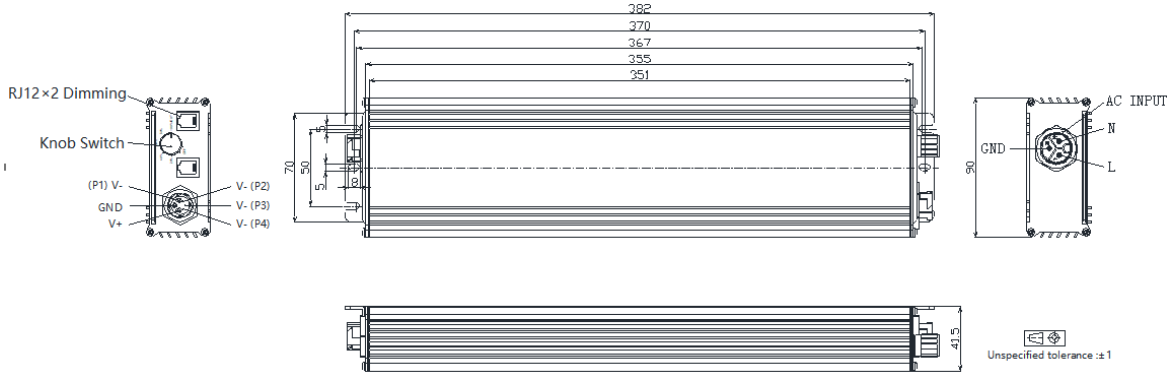
- UL Cable



- VDE Cable



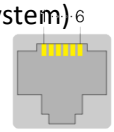
- Customized Endcap Version



- Add suffix #abcdTS to the end of part number to indicate different configuration.

Item	Value Definition	Description
Input	a	F: M19 waterproof connector P: C14 plug N: Same cable as standard version
Output	b	F: M19 waterproof connector, 2 pin N: Same cable as standard version
Dimming	c	F: M12 waterproof connector R: RJxx (xx=25,14,12,11) connector x 2 N: Same cable as standard version
Knob	d	K: Knob with steps B: Knob without steps N: No knob

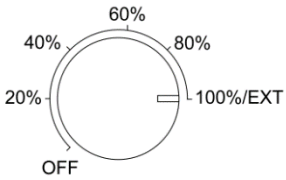
- RJ25 Pin Description (can be customized according to control system)



Pin	Description	Pin	Description
1	CH1 0-10V	4	CH4 0-10V
2	CH2 0-10V	5	12V Aux-power
3	CH3 0-10V	6	Dim-/RTN

- Knob Description

Position	Description
100%/EXT	If there is no external control, 100% output. If there is external control, output is controlled by external signal.
Off,20%,40%,60%,80%	External signal invalid. Using knob control will turn off CH2, 3 and 4, with only CH1 left.



Output Operation Range

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C11A	11000	500	27	45	1100
	10500	500	29	48	1050
	10000	500	30	50	1000
	9500	500	32	53	950
	9000	500	33	56	900
	8500	472	33	56	900
	8000	444	33	56	900
	7500	417	33	56	900
	…	…	…	…	…
	900	50	34	56	900

Revision History

Revision	Date	Contents
A	2022-06-26	New Release
B	2022-09-07	Mechanical Design Update