

30PHL Series Specification

30PHL系列规格书

V1.5

2024/1/9

Powerland Signatures					Customer Approval Signature
Prepared	Checked		Approved	Marketing	
	ME	RD Manager			

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Powerland Technology Inc.

南京博兰得电子科技有限公司

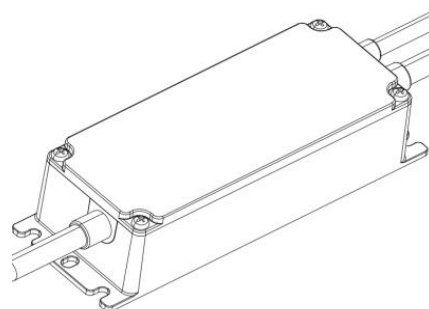
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Features

- Programmable constant current and voltage output
- High efficiency: 88% typical @220Vac, full load
- High power factor: 0.98 typical. @ 220Vac, full load
- Isolated 0-10V/PWM/ Resistor Dimming
- With Lightning Protection & all-round protections
- 6kV/10kV surge capability



Description

This specification describes the performance characteristics of a 30W versatile power supply for LED Driver. The output current of this series are programmable, and designed for 0-10V/PWM/Resistor dimming applications.

Model Name Definition

30	PHL	60	CV	-	XX	X	-	XXX
Rated Output Power	Series name	Maximum output voltage	Constant current and constant voltage output		Options: 1. D0 2. D1 3. DA	Options: 1. U(UL Wire) 2. V(VDE&CCC Wire) 3. Blank(UL&VDE&CCC Wire)		Options

Specifications

Part Number	Max. Output Power	Programmable Current Range	Output Voltage Range	Efficiency typical@220VAC	Dimming	AUX power
30PHL60CV-D0	30W	0.29-0.71A	30-60V	88%	0-10V	12V 200mA
30PHL60CV-D1	30W	0.29-0.71A	30-60V	88%	1-10V	/
30PHL60CV-DA	30W	0.29-0.71A	30-60V	88%	DALI	24V 125mA

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Rated Input AC Voltage	100 Vac	-	277Vac	
Limit Input AC Voltage	90Vac	-	305Vac	
Input Frequency	47 Hz	50/60 Hz	63 Hz	
Leakage Current	-	-	0.75 mA	At 220Vac / 50Hz input , grounding effectively
Input AC Current	-	-	0.17A	Measured at full load and 220 Vac input.
Inrush Current	-	-	60A	At 220Vac input, 25°C cold start.
PF	0.95	-	-	At 220Vac, 80%-100% Load
THD	-	-	15%	At 220Vac, 80%-100% Load

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%Io set	-	5%Io set	At 25°C and full load condition
Total Output Current Ripple (pk-pk)	-	-	15%Io max	At full load condition, 20 MHz BW
Startup Overshoot Current	-	-	10%Io max	At full load condition
No Load Output Voltage	-	-	75V	
Line Regulation	-	-	±3%	Measured at full load
Load Regulation	-	-	±3%	
Turn-on Delay Time	-	-	2.0 s	Measured at 220Vac input.
Temperature Coefficient of Io set	-0.05%/°C	-	0.05%/°C	Case temperature = 0°C ~Tc max
12V Auxiliary Output Voltage (30PHL60CV-D0)	11V	12 V	15 V	
12V Auxiliary Output Source Current (30PHL60CV-D0)	0 mA	-	200 mA	Return terminal is "Dim-"
24V Auxiliary Output Voltage (30PHL60CV-DA)	21.6V	24V	26.4V	
24V Auxiliary Output Source Current (30PHL60CV-DA)	0 mA	-	125mA	Return terminal is "Dim-"
OTP Tc	85°C	90°C	95°C	Output current will drop to 50% lowest, or shut down.
SCP				Hiccup mode, Auto recover
OPP				Auto recover
OCP				Auto recover

General Specifications

Parameter	Min.	Typ.	Max.	Notes
MTBF	234,000 Hours	-	-	Measured at 220Vac input, 80%Load and 25 ° C ambient temperature (MIL-HDBK- 217F)
Lifetime	50,000 Hours	-	-	Measured at 220Vac input, 80%Load and 75°C case temperature; See lifetime vs. Tc curve for the details
Operating Case Temperature for Safety Tc_s	-40°C	-	+90°C	
Operating Case Temperature for Warranty Tc_w	-40°C	-	+80°C	
Operating Ambient Temperature Ta	-40°C	-	+70°C	
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 90%RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	5.45 × 1.92 × 1.26 in 138.3 × 48.6 × 32.1mm			
Net Weight/pcs	-	420g	-	

Dimming Specifications

1. 0-10V Dimming(30PHL60CV-D0)

Parameter	Min.	Typ.	Max.	Notes
Absolute Maximum Voltage on the Vdim (+) Pin	-1 V	-	15 V	
Source Current on Vdim (+)Pin	90uA	100uA	110uA	
Dimming Output Range	10%Io set	-	Io set	80%Io max ≤ Io set ≤ 100%Io max
	8%Io max	-	Io set	Io set < 80%Io max
Recommended Dimming Input Range	0V	-	10 V	Default 0-10V dimming mode.
Dim off Voltage	0.3 V	0.5 V	0.8V	
Dim on Voltage	0.5V	0.7 V	1 V	
Hysteresis	-	0.2 V	-	
PWM_in High Level	9.5 V	10V	10.5 V	
PWM_in Low Level	-0.3 V	-	0.6 V	
PWM_in Frequency Range	500 Hz	-	3 KHz	
PWM_in Duty Cycle	1%	-	98%	
PWM Dimming off	3%	5%	7%	
PWM Dimming on	5%	7%	9%	

2. 1-10V Dimming(30PHL60CV-D1)

Parameter	Min.	Typ.	Max.	Notes
Absolute Maximum Voltage on the Vdim (+) Pin	-1 V	-	15 V	
Source Current on Vdim (+)Pin	90uA	100uA	110uA	
Dimming Output Range	10%Io set	-	Io set	80%Io max ≤ Io set ≤ 100%Io max
	8%Io max	-	Io set	Io set < 80%Io max
Recommended Dimming Input Range	1V	-	10 V	Default 1-10V dimming mode.
PWM_in High Level	9.5 V	10V	10.5 V	
PWM_in Low Level	-0.3 V	-	0.6 V	
PWM_in Frequency Range	500 Hz	-	3 KHz	
PWM_in Duty Cycle	1%	-	98%	

3. DALI Dimming(30PHL60CV-DA)

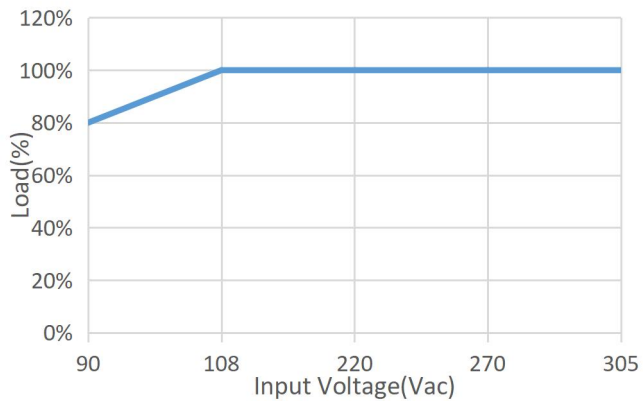
Parameter	Min.	Typ.	Max.	Notes
DA+, DA- High Level	9.5V	16V	22.5V	
DA+, DA- Low Level	-6.5V	0V	6.5V	
DA+, DA- Current	0mA	-	2mA	
Dimming Output Range 10%-100%	10%Io set	-	Io set	

Safety & EMC Compliance

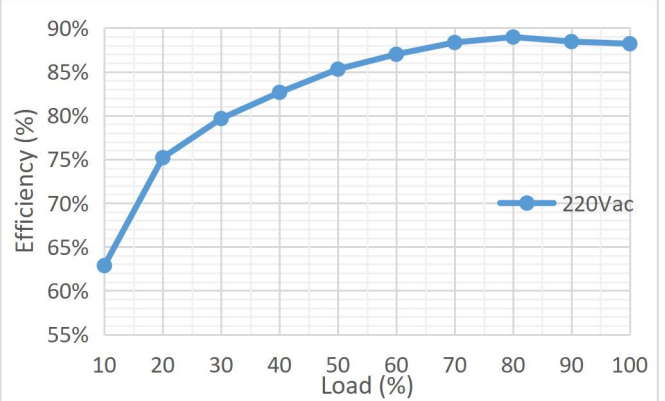
Safety Category	Standard
UL/cUL	UL8750,CAN/CSA-C22.2 No. 250.13-12
Dielectric Strength(Hi-pot)	Primary to Secondary: 3750Vac 10mA max
	Primary to Earth: 1600Vac 10mA max.
	Secondary to Earth: 1600Vac 10mA max.
	Dimming to Secondary: 1600Vac 10mA max.
Insulation Resistance	50Mohm min.@ primary to secondary add 500Vdc test voltage
Grounded Resistance	0.1Ω max. @ 25A, 1 minute
ENEC&CE	EN61347-1, EN 61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
CCC(Except 30PHL60CV-DA)	GB19510.1, GB19510.14
EMI Standards	Notes
EN55015	Class B
	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired Operation.
EMS Standards	Notes
EN 61000-4-2	Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge, Criteria A
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS, Criteria A
EN 61000-4-4	Electrical Fast Transient / Burst-EFT: level 3, Criteria B
EN 61000-4-5	Surge Immunity Test: AC Power Line: line to line 6kV, line to earth 10kV, Criteria B
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS, Criteria A
EN 61000-4-8	Power Frequency Magnetic Field Test, Criteria A
EN 61000-4-11	Voltage Dips Criteria B
EN 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

Performance Curve

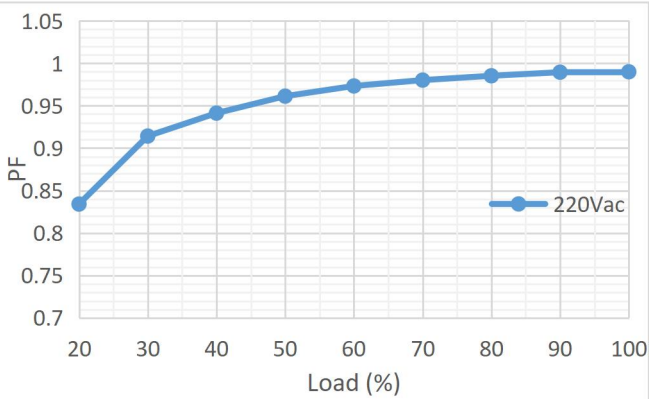
Input Voltage Derating Curve



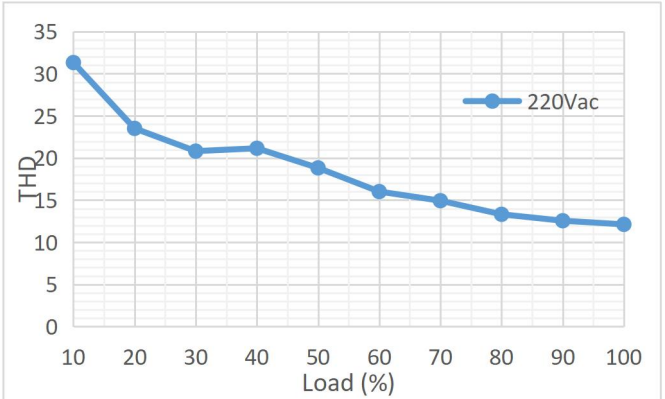
Efficiency Vs Different Loads



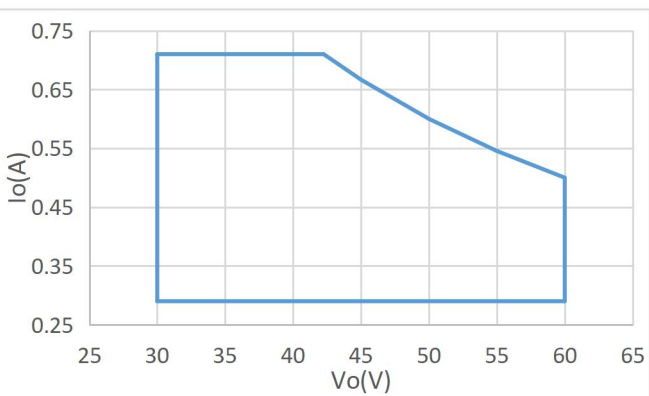
Power Factor Vs Different Loads



Total Harmonics Vs Different Loads

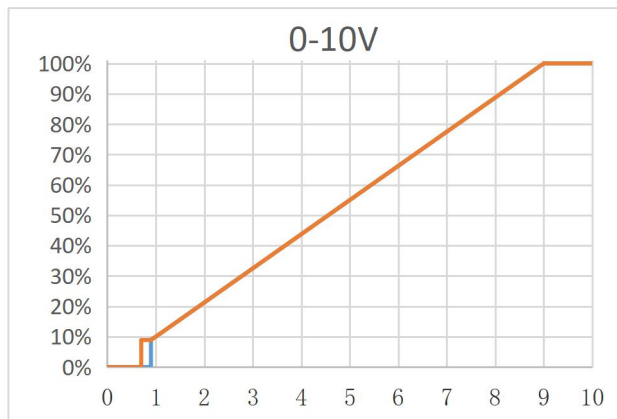


I/V Operating Area



Dimming Curve

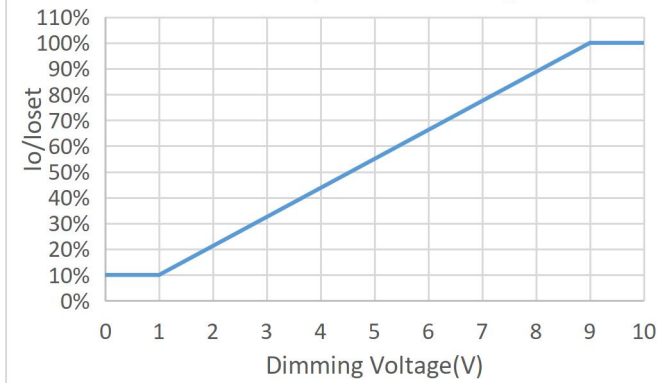
30HPL60CV-D0 Io/Ir vs Vdim



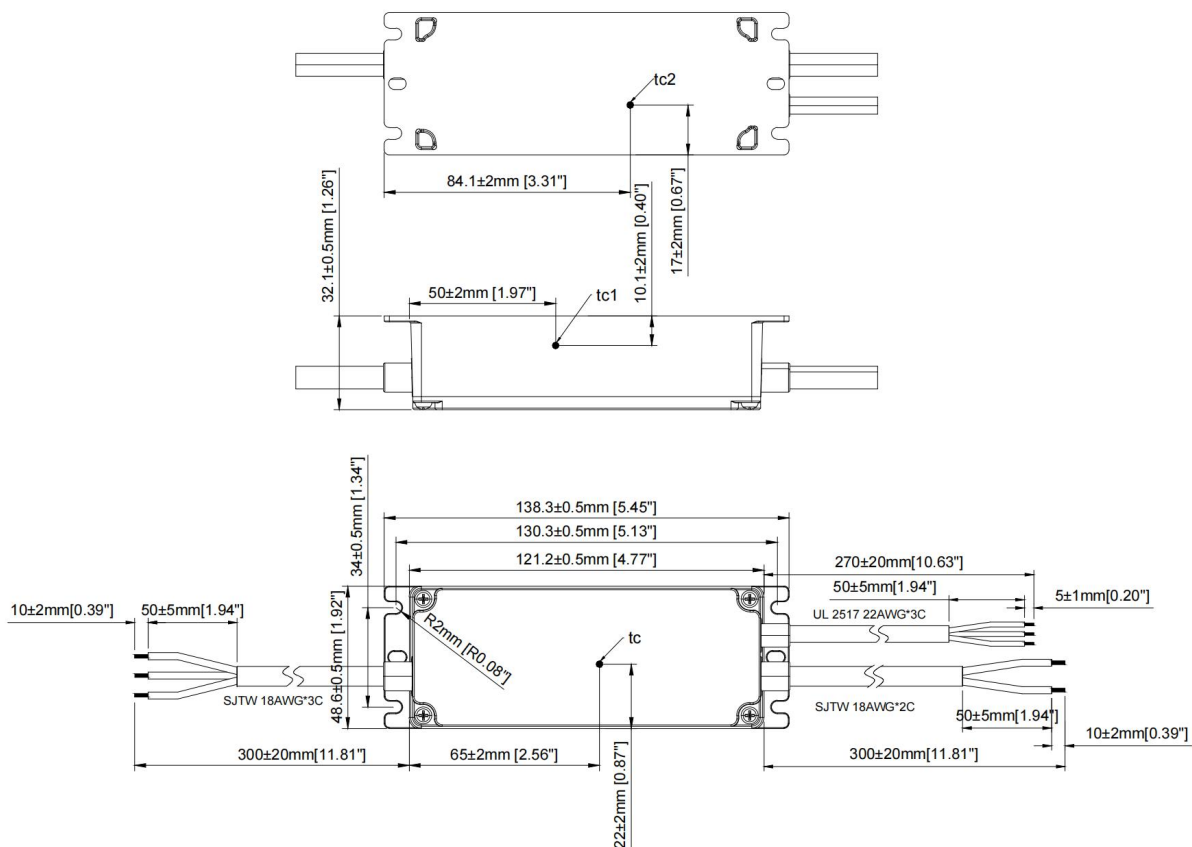
30HPL60CV-D0 Io/Ir vs Vdim



30PHL60CV-D1 Io/Io_{set} vs Dimming Voltage



Mechanical Drawing



Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2023/3/10	V1.0			
2023/9/16	V1.1	Update Mechanical Drawing		
2023/9/28	V1.2	Update Mechanical Drawing		Update the installation size
2023/10/26	V1.3	Update Mechanical Drawing		Update the size and add tc
		Operating Ambient Temperature Ta	MAX:50℃	MAX:70℃
2023/12/27	V1.4	Inrush Current	MAX: 125A	MAX: 60A
		Add Net Weight		
		Update Mechanical Drawing		
		No Load Output Voltage	MAX: 66V	MAX: 75V
2024/1/9	V1.5	Dielectric Strength(Hi-pot)	Primary to Secondary:3000Vac / 10mAMax	Primary to Secondary: 3750Vac 10mA max
			Primary to Earth: 1500Vac 10mA max.	Primary to Earth: 1600Vac 10mA max.
			Secondary to Earth: 500Vac 10mA max.	Secondary to Earth: 1600Vac 10mA max.
			Dimming to Secondary: 1500Vac 10mA max.	Dimming to Secondary: 1600Vac 10mA max.
		Update Model Name Definition		
		Safety Category		Add ENEC/CE/CB/CCC

		Input Frequency	Min: 45Hz	Min: 47Hz