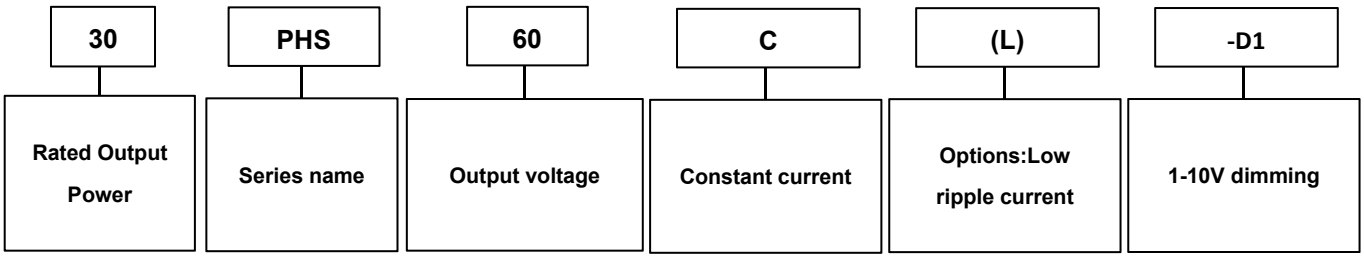
Features

- Super compact design
- Dimming port programming without driver power on
- Constant current output
- High efficiency (Typical 90%), active power factor correction
- Ultra low THD at light load
- Isolated 1~10V/ PWM /Resistor dimming

Description

30W LED Drivers offers digital programmable drivers with wide-range adjustable output current, together with dim to off function for smart lighting.
The output current of this series are programmable, and designed for 1-10V/PWM/Resistor dimming applications.

Model Name Definition



Specifications

Part Number	Max. Output Power	Constant Power Output Voltage Range	Programmable Constant Current Region	Efficiency typical @220VAC	Output current ripple
30PHS60C-D1	30W	30-60V	0.332-0.83A	90%	80%
30PHS60CL-D1	30W	30-60V	0.332-0.83A	88%	10%

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Rated Input AC Voltage	100Vac	-	277Vac	
Limit Input AC Voltage	90Vac	-	305Vac	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75mA	At 277Vac / 60Hz input , grounding effectively
Input AC Current	-	-	0.15A	Measured at full load and 277 Vac input.
	-	-	0.32A	Measured at full load and 120 Vac input.
Inrush Current	-	-	65A	At 220Vac input, 25°C cold start
PF	0.9	-	-	At 100-277Vac, 100% load
THD	-	-	20%	

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)	-	-	80%Io max	At 25°C and full load condition, 200Hz BW
No Load Output Voltage	-	-	75V	
Line Regulation	-	-	±3%	Measured at 25°C and full load
Load Regulation	-	-	±8%	At 25°C condition
Turn-on Delay Time	-	0.8 s	1.5 s	Measured at 120Vac and 220Vac input.
Temperature Coefficient of Ioset	-0.05%/°C	-	0.05%/°C	Case temperature = 0°C ~Tc max
OTP Tc	90°C	-	100°C	1. Input voltage is 120~277Vac; 2. Output current is reduced by 50% when triggered.
SCP				Hiccup mode, 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 Tc	-40°C	-	90°C	
Operating Ambient Temperature Ta	-40°C	-	60°C	
Storage Temperature	-40°C	-	85°C	Humidity: 5%RH to 100%RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	4.09 × 2.04 × 1.25 104 × 51.8 × 31.8			
Net Weight	-	317g	-	

Dimming Specifications

Parameter	Min.	Typ.	Max.	Notes
Absolute Maximum Voltage on the Vdim (+) Pin	-1 V	-	15 V	
Source Current on Vdim (+)Pin	90 uA	100 uA	110 uA	
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	0 V	-	10 V	Default 1-10V dimming mode.
PWM_in High Level	9.8 V	10V	10.2 V	
PWM_in Low Level	-0.3 V	-	0.6 V	
PWM_in Frequency Range	500 Hz	-	3 KHz	

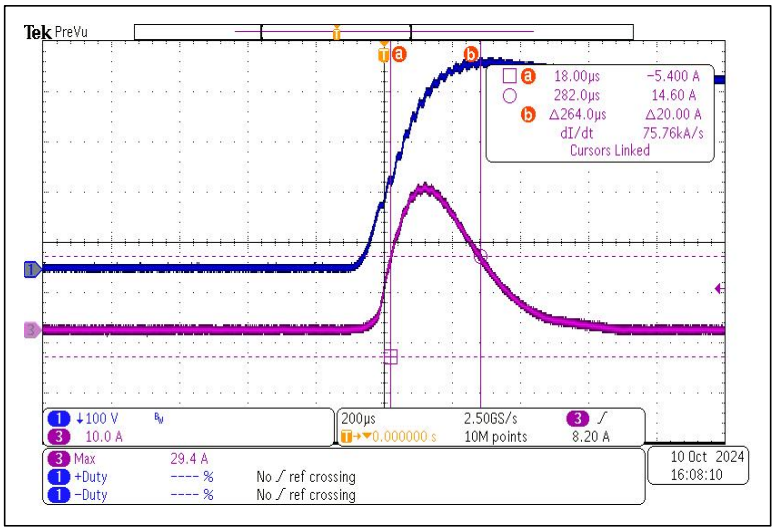
PWM_in Duty Cycle	1%	-	100%	

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: 500Vac 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	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 A
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

Note：This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

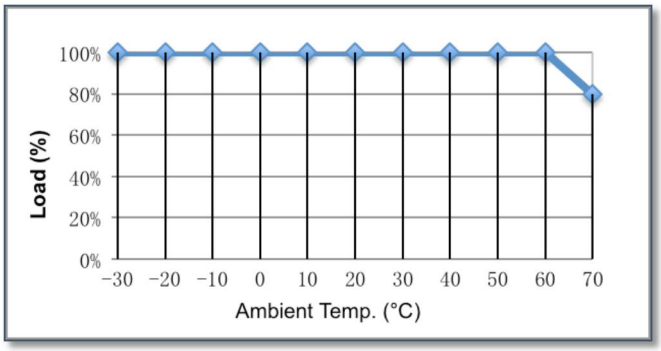
Inrush Current Curve



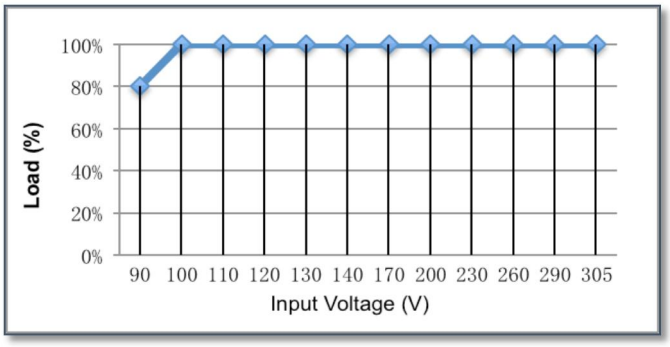
Vin(Vac)	Fin(Hz)	Ipeak(A)	T duration(us)	I^2t(A^2s)
120	60	14	252	0.05
220	50	21	264	0.12
277	60	29.4	264	0.23

Performance Curve

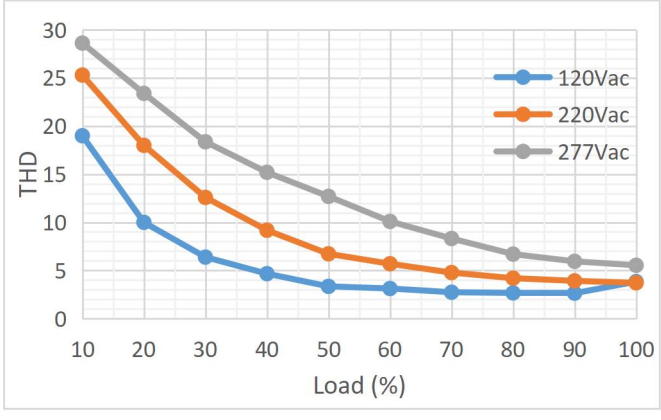
Derating Characteristics



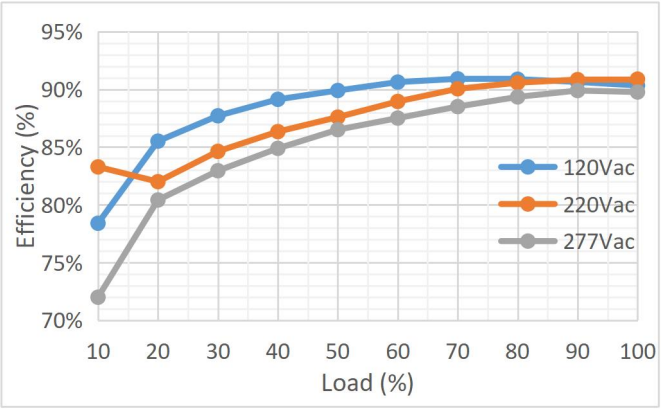
Static Characteristics



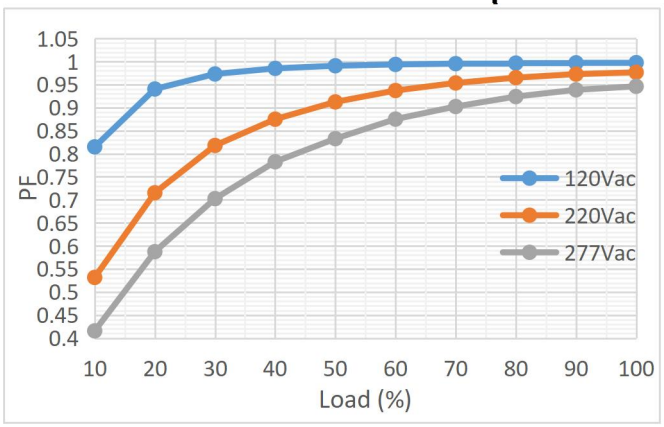
30PHS60C-D1 THD vs Output



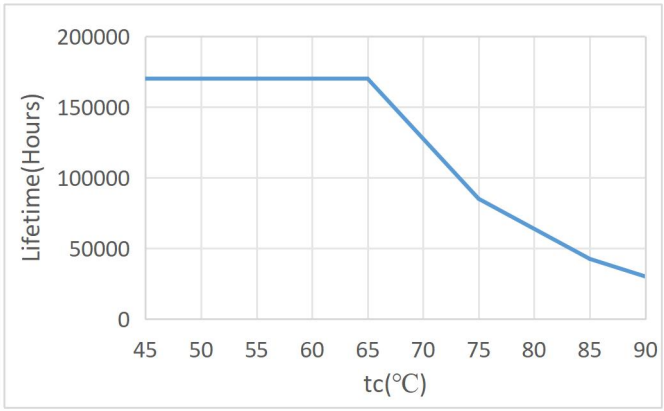
30PHS60C-D1 Efficiency vs Output



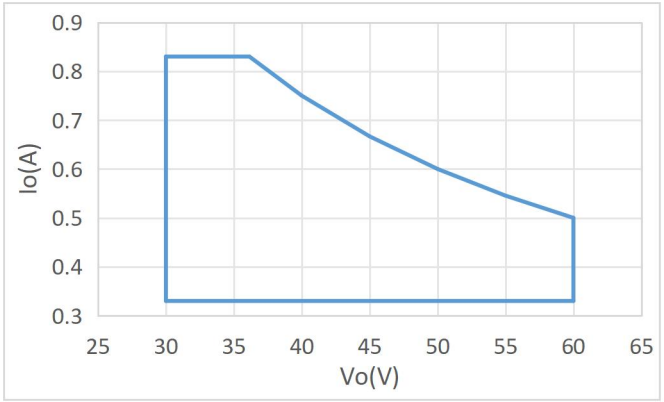
30PHS60C-D1 PF vs Output



Life Vs Case Temperature

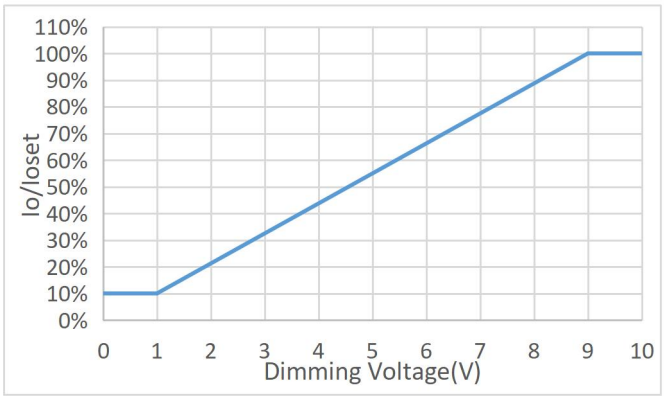


I/V Operating Area

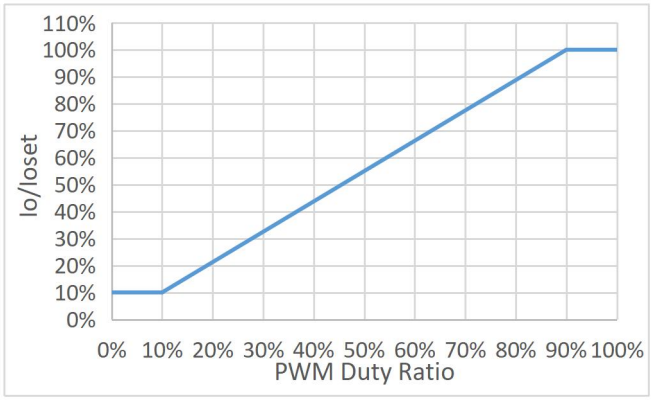


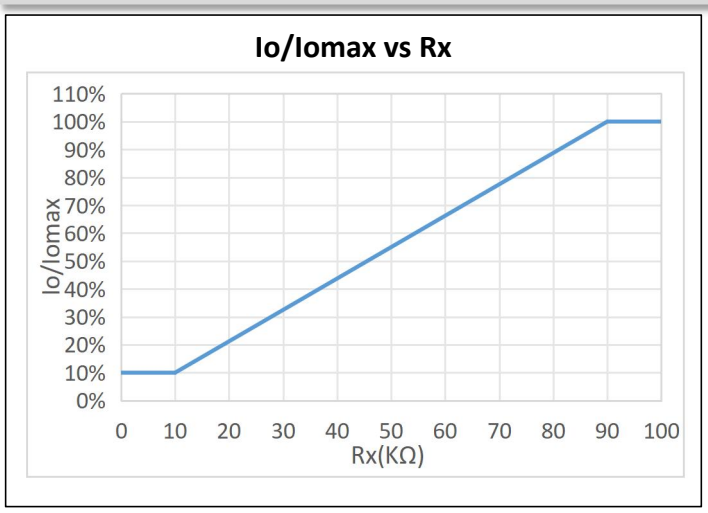
1-10V Analog Dimming

Io/Ioset vs Dimming Voltage

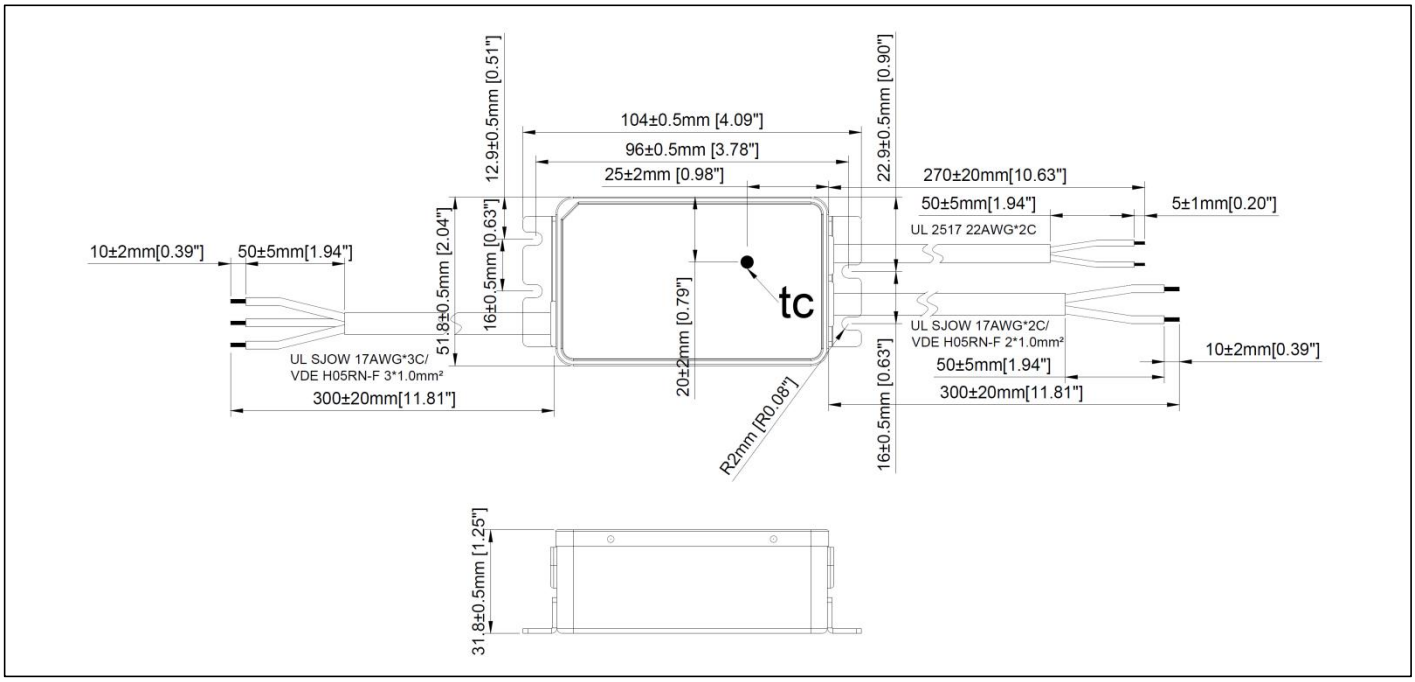


Io/Ioset vs PWM Duty Ratio





Mechanical Specification



Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2024/3/12	V1.0			
2024/9/5	V1.1	Update THD/PF/EFF curve		
		Efficiency typical@220VAC	30PHS60C-D1:87.5% 30PHS60CL-D1:85%	30PHS60C-D1:90% 30PHS60CL-D1:88%
		Output current ripple	30PHS60C-D1:50%	30PHS60C-D1:60%
2024/12/30	V1.2	Update Mechanical Specification		
		Add Inrush Current Curve		
		Add Io/Iomax vs Rx		
		Load Regulation	Max：±5%	Max：±8%(Notes: At 25°C condition)

		EN 61000-4-4	Criteria B	Criteria A
		Line Regulation	Max：±1%(Note：Measured at full load)	Max：±3%(Note：Measured at 25°C and full load)
		Total Output Current Ripple (pk-pk)	Max：15%Io max	Max：80%Io max
		Constant Power Output Voltage Range	25-60V	30-60V
		Dielectric Strength(Hi-pot)	Dimming to Secondary: 1600Vac 10mA max.	Dimming to Secondary: 500Vac 10mA max.
		OTP Tc	Min：85°C，Typ：90°C Notes：Output current will drop to 50%	Min：90°C，Typ：- Notes：1.Input voltage is 120~277Vac；2.Output current is reduced by 50% when triggered.
			line to line 4kV, line to earth 6kV	line to line 6kV, line to earth 10kV
		Add Life Vs Case Temperature/I/V Operating Area		
		Net Weight	288g	317g
		Output current ripple	60PHS60C-D1:60%	60PHS60C-D1:80%
2025/1/10	V1.3	Delete Startup Overshoot Current		