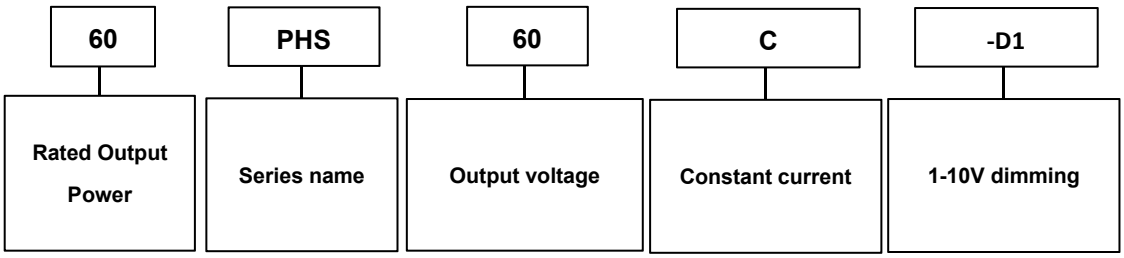
Features

- Super compact design
- Dimming port programming without driver power on
- Constant current output
- High efficiency (Typical 91%), active power factor correction
- Ultra low THD at light load
- Isolated 1~10V/ PWM dimming

Description

60W 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 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
60PHS60C-D1	60W	25-60V	0.57-1.43A	91%	50%
60PHS60CL-D1	60W	25-60V	0.57-1.43A	91%	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	-		0.25A	Measured at full load and 277 Vac input.
	-		0.6A	Measured at full load and 120 Vac input.
Inrush Current	-	-	65A	At 220Vac input, 25°C cold start
PF	0.9	-	-	At 100-277Vac, 80%-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)	-	-	15%Io max	At 25°C and full load condition, 20 MHz BW
Startup Overshoot Current	-	-	10%Io max	At 25°C and full load condition
No Load Output Voltage	-	-	75V	
Line Regulation	-	-	±1%	Measured at full load
Load Regulation	-	-	±1%	
Turn-on Delay Time	-	0.8 s	1.5 s	Measured at 120Vac and 220Vac input.
Temperature Coefficient of Ioset	-0.03%/°C	-	0.03%/°C	Case temperature = 0°C ~Tc max
OTP Tc	85°C	90°C	100°C	Output current will drop to 50%
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)	4.13 × 2.04 × 1.24 105 × 51.9 × 31.4			
Net Weight	-	288g	-	

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%

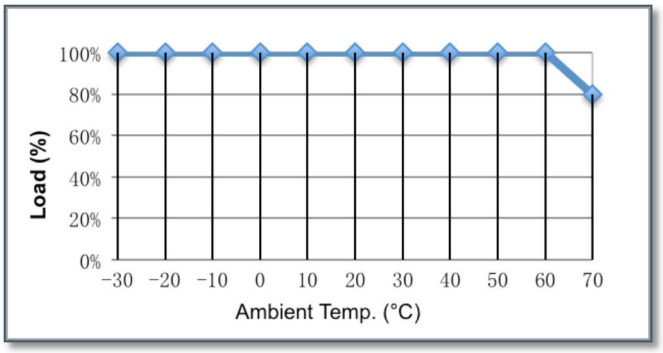
Safety &EMC Compliance

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: 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	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 4kV, line to earth 6kV, 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

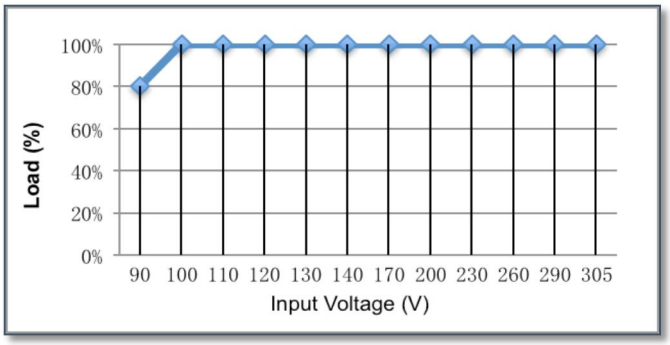
Note：This LED driver meets the EMI specifications above, but EMI performance of a luminaire that contains it depends also on the other devices connected to the driver and on the fixture itself.

Performance Curve

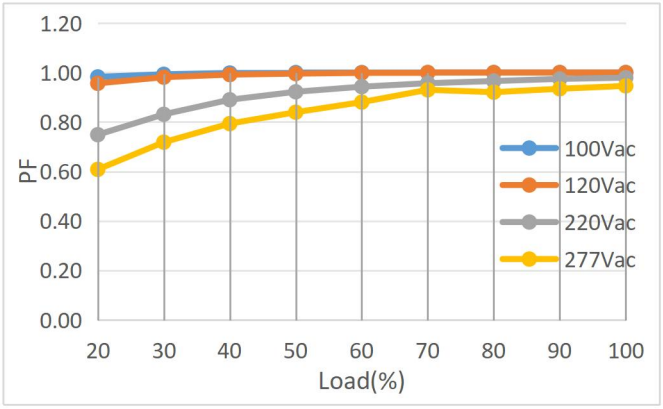
Derating Characteristics



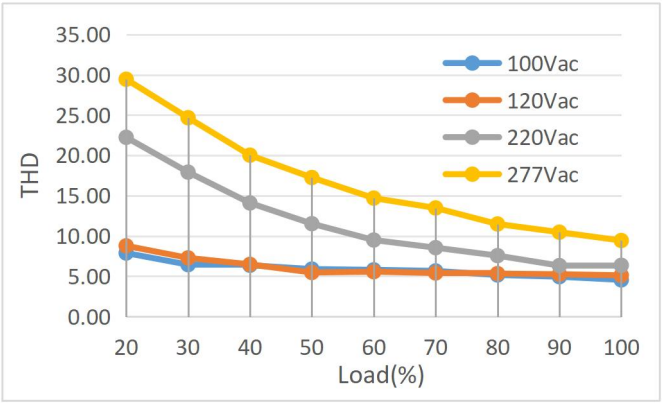
Static Characteristics



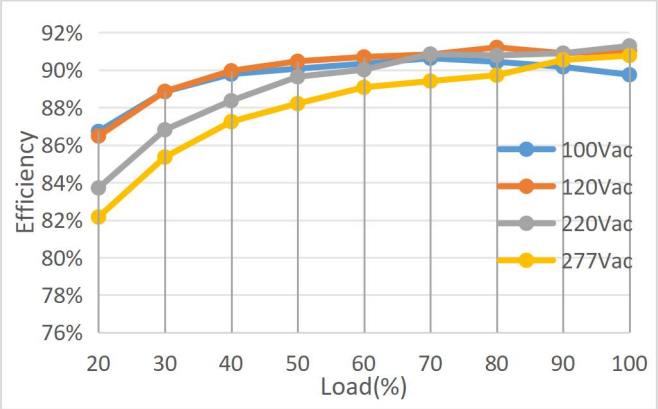
60PHS60C-D1 PF vs Output



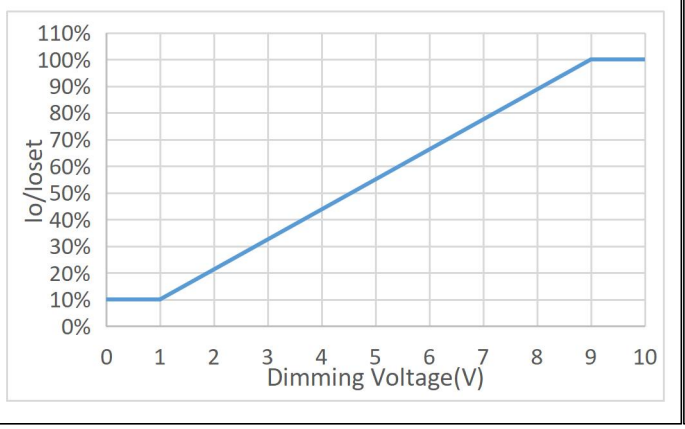
60PHS60C-D1 THD vs Output

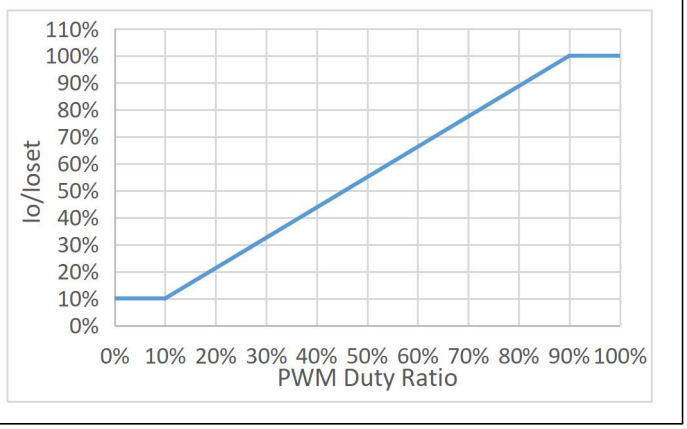


60PHS60C-D1 Efficiency vs Output

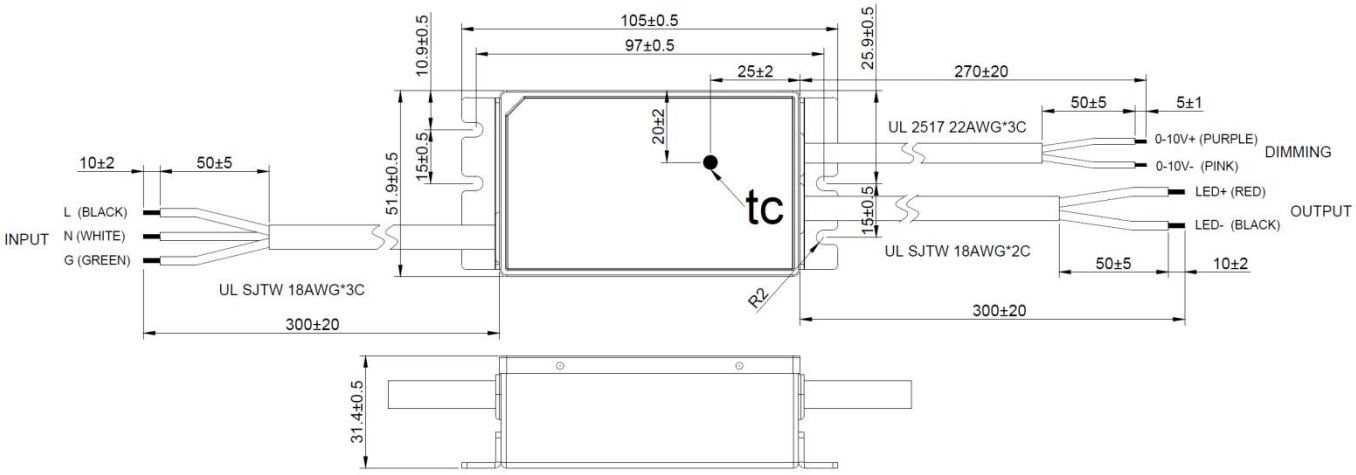


1-10V Analog Dimming





Mechanical Specification



Unit： mm

Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2024/3/12	V1.0			