1200FGH500C 1200W AC/DC Constant Current LED Driver

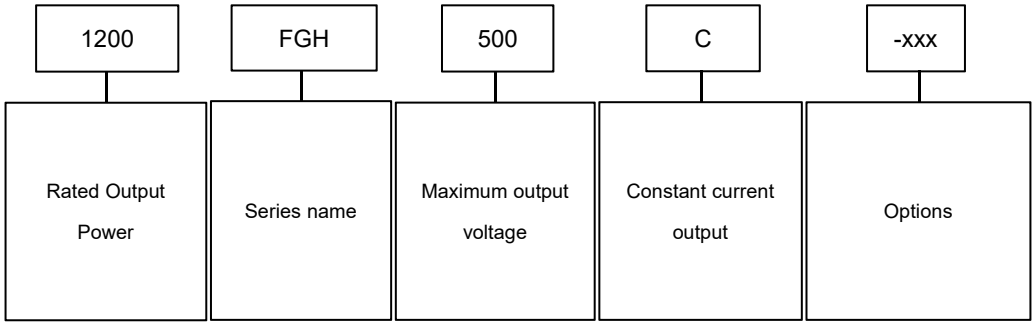
Features

- CC programmable outputs
- High efficiency: 96% typical @400VAC, full load
- High power factor: 0.97 typical. @ 230VAC, full load
- Isolated 0-10V/PWM Dimming optional
- With Lightning Protection & all-round protections (OVP, OCP,SCP,OTP)
- IP65

Description

This specification describes the performance characteristics of a 1200W/4.5A versatile power supply for LED Driver. The output current of this series are programmable, and designed for 0-10V/PWM dimming applications.

Model Name Definition



Specifications

Part Number	Vin_AC (VAC)	PO_MAX (W)	IO_RANGE @ CC (A)	VO_RANGE (V)	Typical η (%)
1200FGH500C	208-305	1080	1.6-4	200-420	95@277VAC
	306-480	1200	1.6-4.5	200-500	96@400VAC

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1.Input Specifications

	Parameter	Min.	Typ.	Max.	Unit	Notes
V_{IN_AC}	Rated Input AC Voltage	208	-	480	VAC	
V_{IN_RANGE}	Input AC Voltage Range	187	-	528	VAC	
F_{LINE}	Input Frequency	47	50/60	63	Hz	
I_{LKG}	Leakage Current	-	-	0.75	mA	At 480 VAC/ 60Hz input , grounding effectively
I_{IN_AC}	Input AC Current	-	-	3.4	A	Measured at 25°C, full load and 400 VAC input.
		-	-	5.5	A	Measured at 25°C, full load and 347 VAC input.
		-	-	6.3	A	Measured at 25°C, full load and 277 VAC input.
I_{PK_INRUSH}	Inrush Peak Current	-	-	35	A	At 400 VAC input, 25°C cold start. See Inrush Current Waveform for the details.
PF	Power Factor	0.95	-	-		At 208-399 VAC, 80%-100% load, 25°C and 50Hz
		0.9	-	-		At 400-480 VAC, 80%-100% load, 25°C and 50Hz
THD	Total Harmonic	-	-	20	%	At 208-399 VAC, 80%-100% load, 25°C and 50Hz
		-	-	30	%	At 400-480 VAC, 80%-100% load, 25°C and 50Hz
η	Efficiency	94	95	-	%	Measured at 277 VAC input、100% load and steady-state temperature in 25°C ambient
		95	96	-	%	Measured at 400 VAC input、100% load and steady-state temperature in 25°C ambient

2.Output Specifications

	Parameter	Min.	Typ.	Max.	Unit	Notes
I_{O_ACCU}	Output Current Accuracy relative to Io set	-5	-	5	%	At 25°C and full load condition.Can contact sales ask for better current tolerance.
I_{O_RIPPLE}	Total Output Current Ripple (pk-pk) relative to Io max	-	-	10	%	At 25°C and full load condition, 8kHz BW
$I_{O\_OVERSHOOT}$	Startup Overshoot Current relative to Io max	-	-	10	%	At 25°C and full load condition, 8kHz BW
V_{O_OCV}	No Load Output Voltage	-	-	550	V	
V_{O_LINE}	Line Regulation	-	-	±3	%	Measured at 25°C and full load
V_{O_LOAD}	Load Regulation	-	-	±3	%	At 25°C condition
T_{ON_DELAY}	Turn-on Delay Time	-	-	1	s	Measured 400 VAC input to 90% output current

I_{O_TC}	Temperature Coefficient of Io set	-0.03	-	0.03	%/°C	Case temperature = 0°C ~Tc max
V_{O_AUX}	12V Auxiliary Output Voltage	11	12	15	V	OVP voltage less than 20 V
I_{O_AUX}	12V Auxiliary Output Current	0	-	200	mA	Return terminal is “Dim−“
T_{OTP}	Over Temperature Protection Threshold	85	90	95	°C	Output current will drop to 50% lowest
SCP	Short Circuit Protection Threshold					Self recovery (auxiliary sources 12V), Locked (main circuit)

3.General Specifications

	Parameter	Min.	Typ.	Max.	Unit	Notes
$P_{STANDBY}$	Standby power	-	-	1.5	W	Measured at 277 VAC/60 Hz; Dimming off
T_{MTBF}	Mean Time Between Failure	234,000	-	-	Hours	Measured at 230 VAC input, 80% load and25°C ambient temperature (MIL-HDBK- 217F)
$T_{LIFETIMELY}$	Lifetime	61320	-	-	Hours	Measured at 230 VAC input, 100% load and 60°C case temperature; See lifetime vs. Tc curve for the details
T_C	Operating Case Temperature	-40	-	90	°C	
T_A	Operating Ambient Temperature	-40	-	50	°C	See Output Load vs Ambient Temperature
T_{STG}	Storage Temperature	-40	-	85	°C	Humidity: 5%RH to 90%RH
	IP Grade	IP65				
	Dimensions L × W × H	10.54×4.52×2.18			inch	
		267.6×114.8×55.4			mm	
	Net Weight/pcs	-	3.1	-	kg	

Note:There are three points could be maximum Tc point, depending on different Vac input and Vdc output.These three points(Tc,Tc1,Tc2) position are shown in below mechanical drawing.

4.Dimming Specifications

Parameter	Min.	Typ.	Max.	Unit	Notes
Absolute Maximum Voltage on the Vdim (+) Pin	-1	-	12	V	
Source Current on Vdim (+)Pin	90	100	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	-	10	V	Default 0-10V dimming mode.
Dim off Voltage	0.3	0.5	0.8	V	
Dim on Voltage	0.5	0.7	1	V	
Hysteresis	-	0.2	-	V	
PWM_in High Level	9.5	10	10.5	V	

PWM_in Low Level	-0.3	-	0.6	V	
PWM_in Frequency Range	0.5	-	3	KHz	
PWM_in Duty Cycle	1	-	98	%	
PWM Dimming off	3	5	8	%	
PWM Dimming on	5	7	9	%	

5.Isolation

Isolation	AC Input	DC Output	Dimming (SELV)	Housing
AC Input	/	No isolation	Double isolation	Basic
DC Output	No isolation	/	Double isolation	Basic
Dimming (SELV)	Double isolation	Double isolation	/	Basic
Housing	Basic	Basic	Basic	/

6.Safety & EMC Compliance

Safety Category	Standard
UL/CUL	UL8750,CAN/CSA-C22.2 No. 250.13-12
CE	EN61347-1
Dielectric Strength(Hi-pot)	Primary to Secondary: 4200VAC 10mA max
	Primary to Earth: 2100 VAC 10mA max.
	Dimming to Earth: 500 VAC 10mA max.
Insulation Resistance	50Mohm min.@ primary to secondary add 500Vdc test voltage
Grounded Resistance	0.1Ω max. @ 25A, 1 minute
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 B
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 4 kV, line to earth 6 kV，criteria B
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS，criteria A
EN 61000-4-11	Voltage Dips，criteria B
EN IEC 61547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

Note1: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.

7.Performance Curve

7.1.Inrush Current Curve

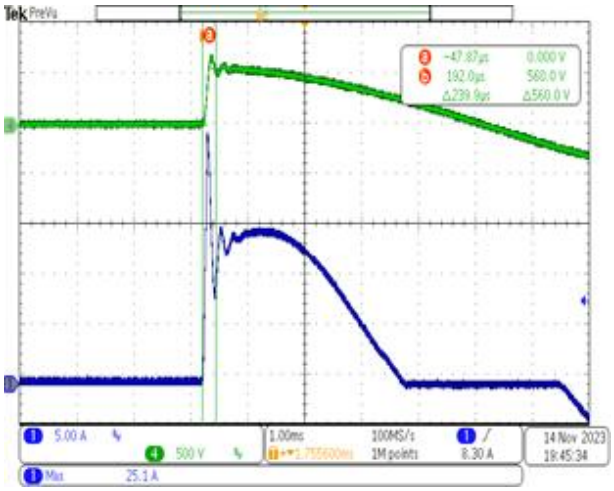


Figure 1.Inrush Current @ full load and cold start

Vin(VAC)	Fin(Hz)	Ipeak(A)	T duration(ms)
220	50	15	0.22
277	50	21.7	0.16
400	50	25.1	0.24
480	50	28.8	0.29

7.2.Derating Curve

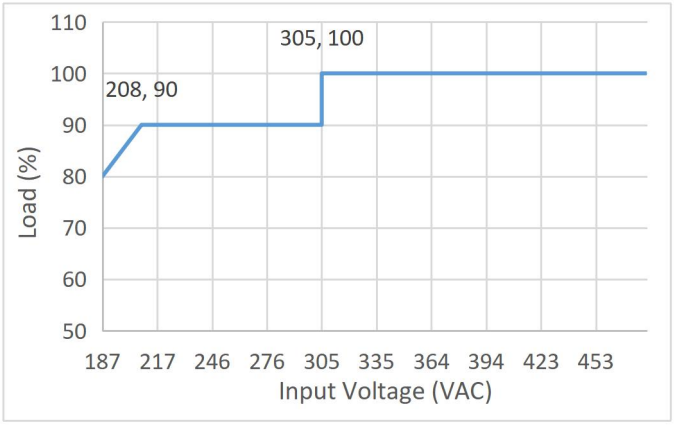


Figure 2.Input Voltage Derating Curve

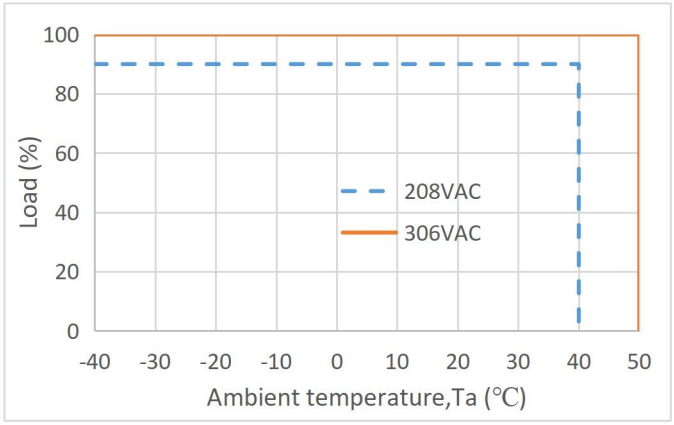


Figure 3.Output Load vs Ambient Temperature

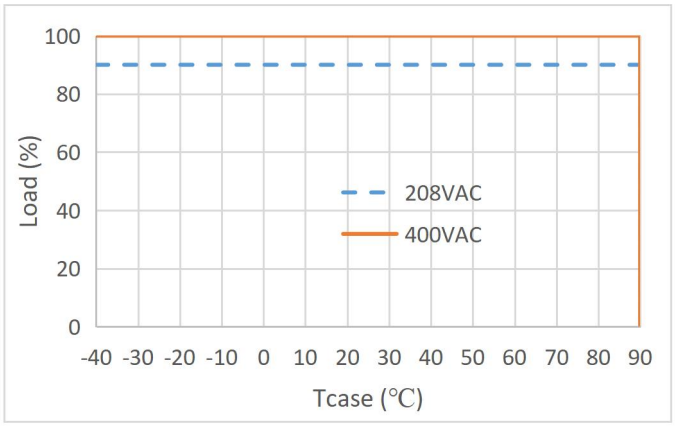


Figure 4.Output Load vs Tcase

7.3.Lifetime Curve

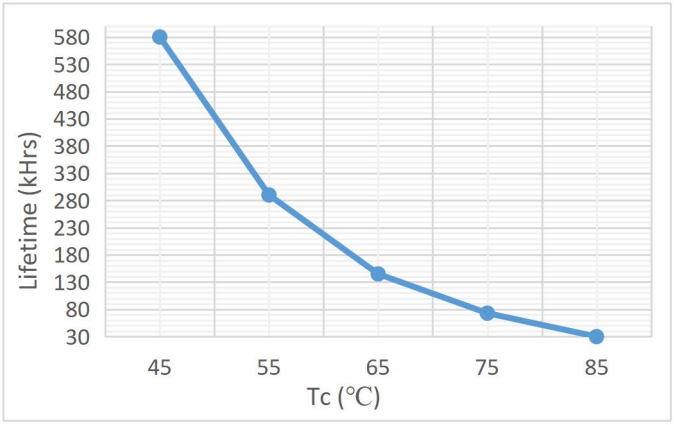


Figure 5.Life vs Case Temperature

7.4.Operation Range Curve

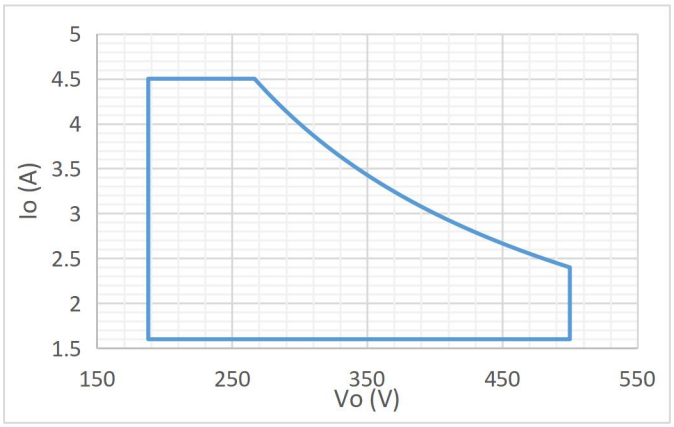


Figure 6.I/V Operating Area

7.5.General Performance Curve

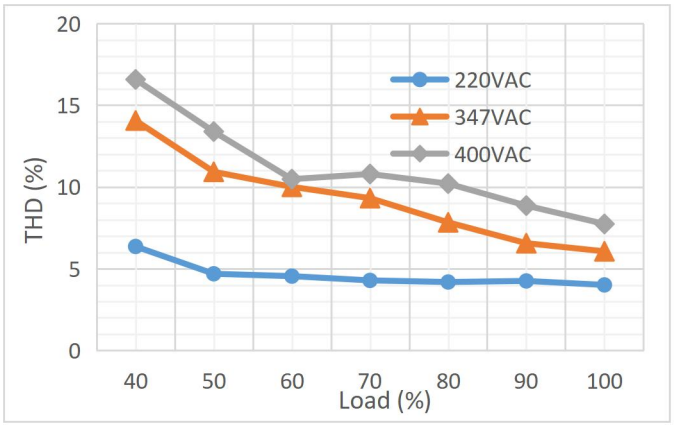


Figure 7.Total Harmonics vs Different Loads

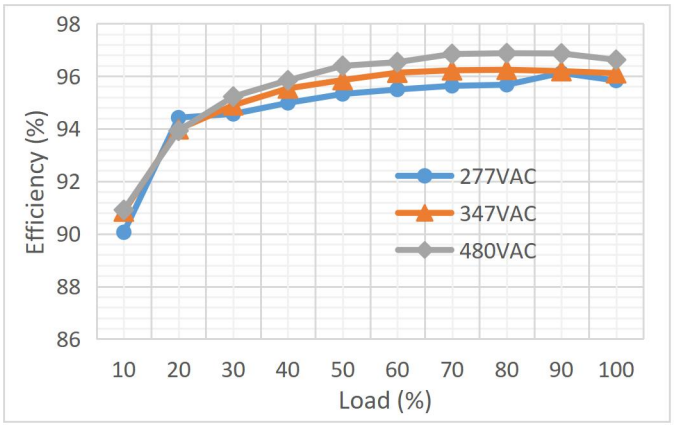


Figure 8.Efficiency vs Different Loads

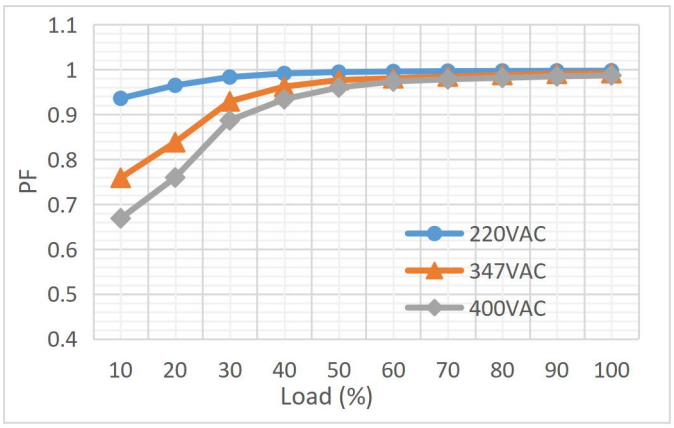


Figure 9.Power Factor vs Different Loads

Note2:Load setting：Vo=400V，Io=3A.

7.6.0-10V Analog Dimming &PWM Dimming

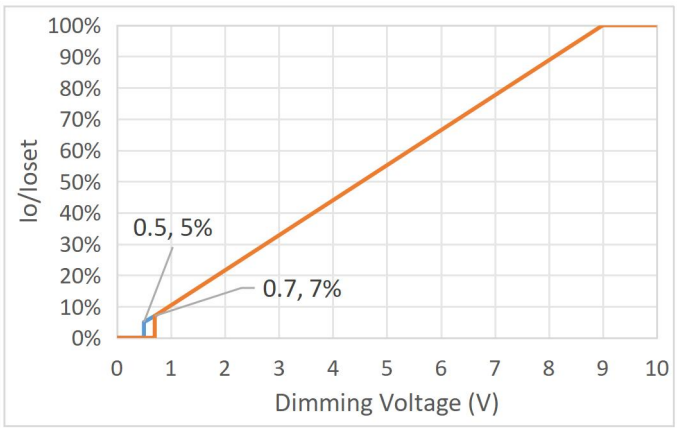


Figure 10.Io/Ioset vs Dimming voltage

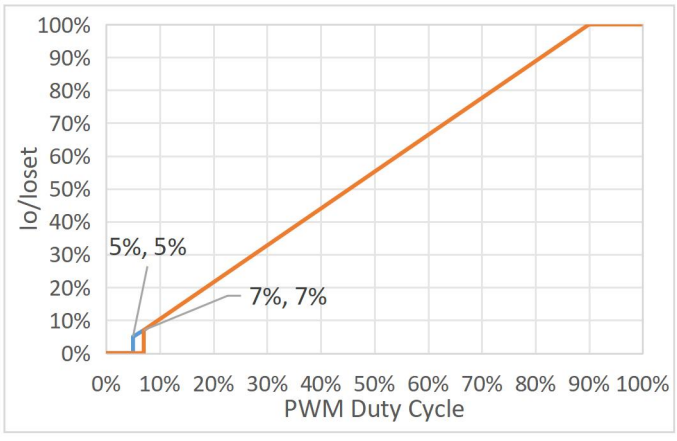
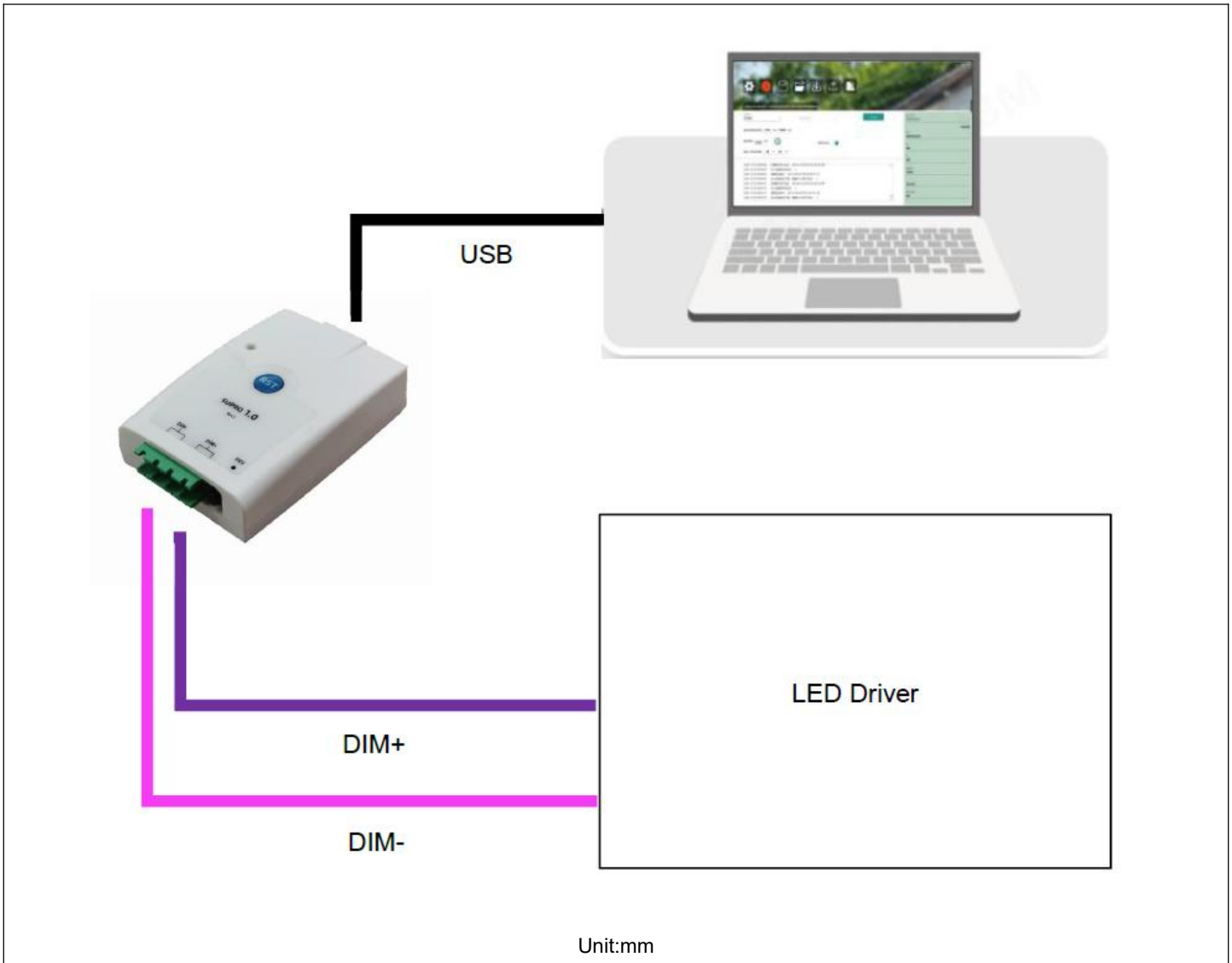


Figure 11.Io/Ioset vs PWM Duty Cycle

8.Programming wiring diagram

- **Programmer:Supro1.0**
- **Software:Supro1.0**



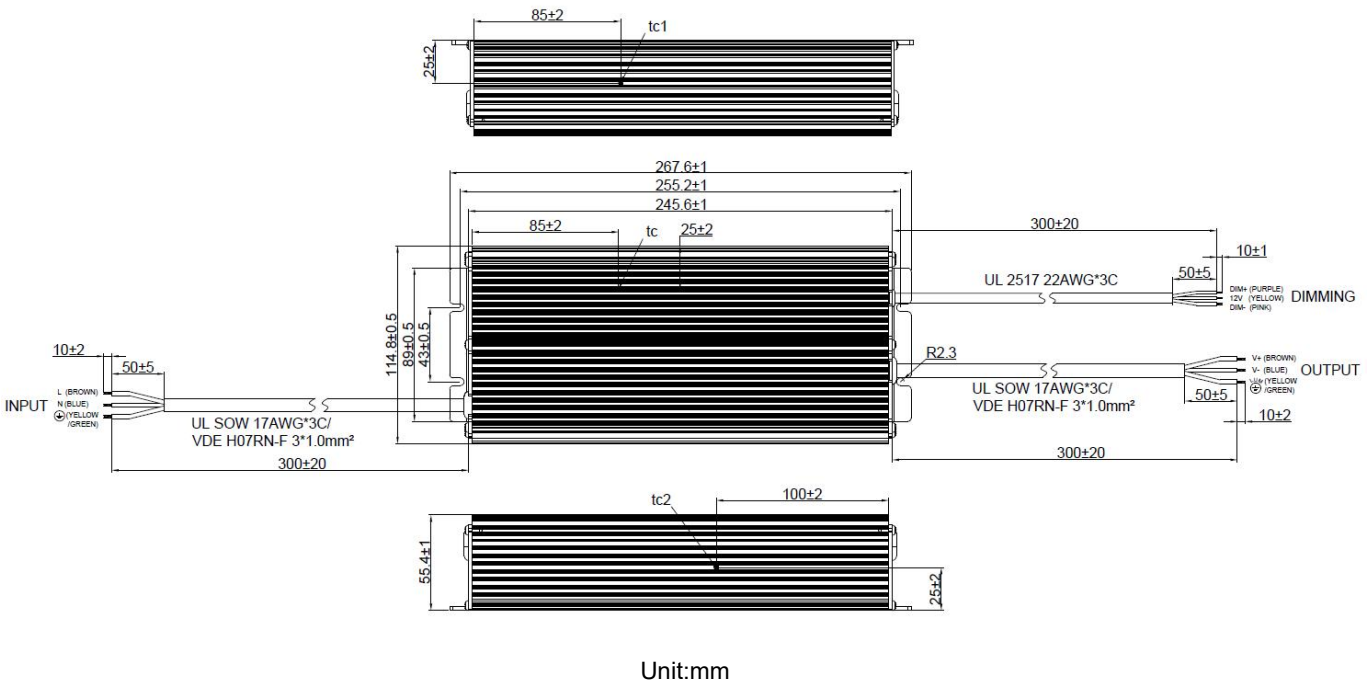
Unit:mm

Figure 12.Programming Wiring

Note3:Please download related documents on the website or ask sales for help.

Website like:https://led.powerlandtech.com/product_new/Other

9.Mechanical Specification



Unit:mm

Figure 13.Mechanical Drawing

Wire Type	Wire	Wire outer diameter
		mm
INPUT	UL SOW 17AWG*3C/VDE H07RN-F 3*1.0mm2	Ø9.5±0.4
OUTPUT	UL SOW 17AWG*3C/VDE H07RN-F 3*1.0mm2	Ø9.5±0.4
DIMMING	UL 2517 22AWG*3C	Ø5.8±0.4

10.Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2023/3/7	V1.0			
2023/3/20	V1.1	Add 0-10V Analog Dimming &PWM Dimming		
		Add Inrush Current（@Full load and cold start)		
		Update Mechanical Drawing		Add tc point
		Update Performance Curve		
2023/9/12	V1.2	Add OVP voltage less than 20V		
		Update Mechanical Drawing		
2023/10/20	V1.3	Update PF and THD curves		
2023/11/14	V1.4	Update Mechanical Drawing		Add wire color
2024/1/26	V1.5	Update Output Load Vs Ambient Temperature		
		Update Output Load Vs Tcase		
		Lifetime	MIN：100000Hours	MIN：61320Hours

		PF		Min：0.9(At 400-480Vac, 80%-100% Load)
		THD		Max：30%(At 400-480Vac, 80%-100% Load)
		Update Inrush Current（@Full load and cold start)		
2025/11/17	V1.6	Input AC Current	Measured at full load and 277 Vac input. Measured at full load and 347 Vac input. Measured at full load and 400 Vac input.	Measured at 25°C, full load and 277 Vac input. Measured at 25°C, full load and 347 Vac input. Measured at 25°C, full load and 400 Vac input.
		PF/THD	At 208-399Vac, 80%-100% Load At 400-480Vac, 80%-100% Load	At 208-399Vac, 80%-100% load, 25°C and 50Hz At 400-480Vac, 80%-100% load, 25°C and 50Hz
		Total Output Current Ripple (pk-pk)	At 25°C and full load condition, 20 MHz BW	At 25°C and full load condition, 8kHz BW
		Startup Overshoot Current	At 25°C and full load condition	At 25°C and full load condition, 8kHz BW
		Line Regulation	Measured at full load	Measured at 25°C and full load
		Load Regulation		Add Notes：At 25°C condition
		No Load Output Voltage		Add：Max 550V
		Dimming Output Range	Min：10%Io set Min：8%Io max	Typ：10%Io set Typ：8%Io max
		Add Dielectric Strength(Hi-pot)		Primary to Secondary: 4200Vac 10mA max Primary to Earth: 2100Vac 10mA max. Dimming to Earth: 500Vac 10mA max.
		Grounded Resistance		0.1Ω max. @ 25A, 1 minute
		Insulation Resistance		50Mohm min.@ primary to secondary add 500Vdc test voltage
		Mechanical Drawing		Add：Wire Material Annotation Table
		Update Mechanical Drawing		
		General Specifications		Add：IP Grade
		Absolute Maximum Voltage on the Vdim (+) Pin	Max：15V	Max：12V
2026/5/19	V1.7	Modify:Format		
		0-10V Analog Dimming &PWM Dimming		Modify:Format
		EMS Standards	EN 61547	EN IEC 61547
		Add:Isolation		