LED Driver
1600HTH400CV

V0.2

2026/3/18

Powerland Signatures						
Prepared	Checked			Approved	Marketing	CPO
	Mechanical Engineer	Safety Engineer	R&D Manager			

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请客户确认签字后回传我司此规格承认书。

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1600HTH400CV 1600W AC/DC CC/CV LED Driver

Features

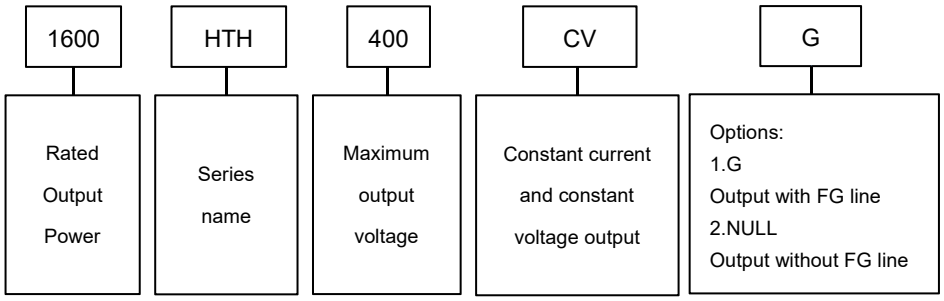
- Dimming port programming without driver power on
- 187-528 VAC wide range high line input
- CC/CV hybrid output
- High efficiency (typical 95.5%), active power factor correction
- Ultra low THD at light load
- Isolated 0~10V/ PWM/Resistor dimming, Dim to off option
- 12V/200mA AUX Output

Description

1600W LED Drivers offers digital programmable drivers with wide-range adjustable output current, together with 12V/200mA auxiliary output (optional) for smart lighting.

The output current of this series are programmable, and designed for 0-10V/PWM/Resistor dimming applications.

Model Name Definition



Specifications

Part Number	PO_MAX (W)	IO_RANGE @ CC (A)	VO_RANGE (V)	VO_RANGE @CV (V)	Typical η (%) @ 400 VAC
1600HTH400CV	1600	1.88-4.7	300-400	340-400	95.5

Table of Contents

1.Input Specifications

	Parameter	Min.	Typ.	Max.	Unit	Notes
V_{IN_AC}	Rated Input AC Voltage	208	-	480	VAC	The upper limit voltage of CE certification:400 VAC
V_{IN_RANGE}	Input AC Voltage Range	187	-	528	VAC	
F_{LINE}	Input Frequency	47	-	63	Hz	
I_{LKG}	Leakage Current	-	-	0.75	mA	At 480 VAC/ 60 Hz input , grounding effectively
I_{IN_AC}	Input AC Current	-	-	3.9	A	Measured at 25°C, full load and 480 VAC input.
		-	-	6.6	A	Measured at 25°C, full load and 208 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	0.9	-	-		At 208-480 VAC, full load, 25°C and 50 Hz
THD	Total Harmonic	-	-	20	%	
η	Efficiency	94	95.5	-	%	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, 8 kHz BW
$I_{O\_OVERSHOOT}$	Startup Overshoot Current relative to Io max	-	-	20	%	At 25°C and full load condition, 8 kHz BW
V_{O_OCV}	No Load Output Voltage	-	-	440	V	
V_{O_LINE}	Line Regulation	-	-	±1	%	Measured at 25°C and full load
V_{O_LOAD}	Load Regulation	-	-	±2	%	At 25°C condition
T_{ON_DELAY}	Turn-on Delay Time	-	0.8	1.5	s	Measured at 277 VAC input.
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	
I_{O_AUX}	12V Auxiliary Output Current	0	-	200	mA	Return terminal is “Dim−“
T_{OTP}	Over Temperature Protection Threshold	90	-	100	°C	Output current will drop to 50% lowest, or shut down.

SCP	Short Circuit Protection Threshold					Auxiliary source: Hiccup mode, Auto recover Main output:Locked or auto recover
OCP	Over Current Protection Threshold					Locked or auto recover

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 277 VAC input, 80% load and 25°C ambient temperature (MIL-HDBK-217F)
$T_{LIFETIMELY}$	Lifetime	50,000	-	-	Hours	Measured at 400 VAC input, 100% load and 75°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	
T_{STG}	Storage Temperature	-40	-	85	°C	Humidity: 5%RH to 95%RH
	IP Grade	IP65				
	Dimensions L × W × H	16.69×4.05×2.04			inch	
		500×102.9×51.8			mm	
	Net Weight	-	TBD	-	kg	

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	0.6	0.8	1.0	V	
Dim on Voltage	0.8	1.0	1.2	V	
Dim off Resistance	5	8	10	kΩ	
Dim on Resistance	7	10	12	kΩ	
Hysteresis	-	0.2	-	V	
PWM_in High Level	9.8	10	10.2	V	
PWM_in Low Level	-0.3	-	0.6	V	

PWM_in Frequency Range	0.5	-	3	KHz	
PWM_in Duty Cycle	1	-	100	%	
PWM Dimming off	4	7	10	%	
PWM Dimming on	6	9	12	%	

5.Isolation

Isolation	AC Input	DC Output	Dimming (SELV)	Housing
AC Input	/	Double isolation	Double isolation	Basic
DC Output	Double isolation	/	Basic	Basic
Dimming	Double isolation	Basic	/	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: 3760 VAC 10mA max.
	Primary to Earth: 1960 VAC 10mA max.
	Secondary to Earth: 1880 VAC 10mA max.
	Dimming to Output: 1880 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	ANSI C63.4:2009 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 4 kV, line to earth 6 kV, 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.

7.Performance Curve

7.1.Inrush Current Curve

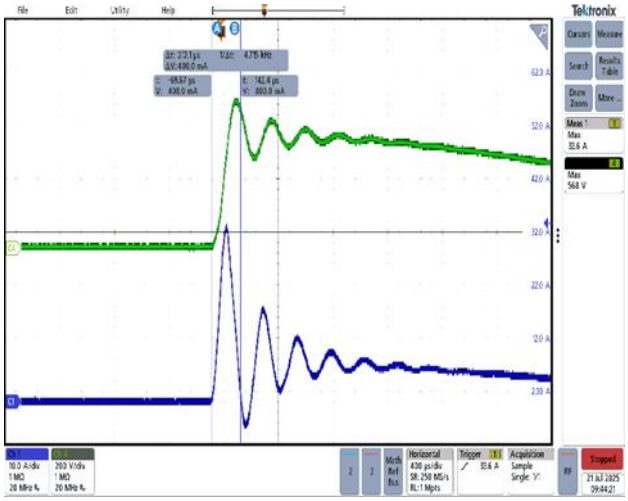


Figure 1.Inrush Current @ full load and cold start

Vin(VAC)	F_{LINE} (Hz)	I_{PK_INRUSH} (A)	$T_{DURATION}$(μs)
400	50	33.6	212.1

7.2.Derating Curve

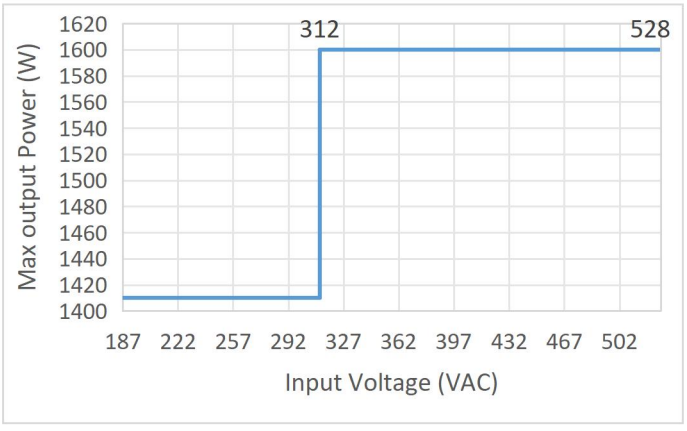


Figure 2.Input Voltage Derating Curve

7.3.Lifetime Curve

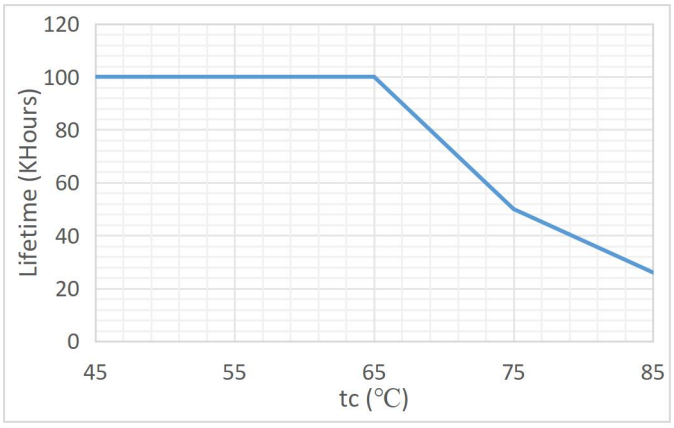


Figure 3.Life vs Case Temperature

7.4.Operation Range Curve

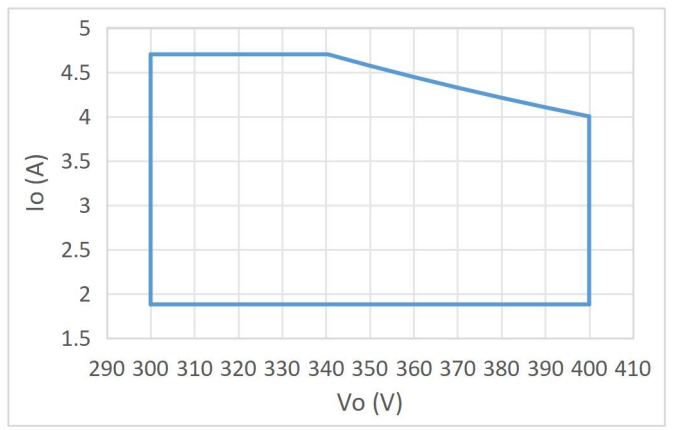


Figure 4.I/V Operating Area

7.5.General Performance Curve

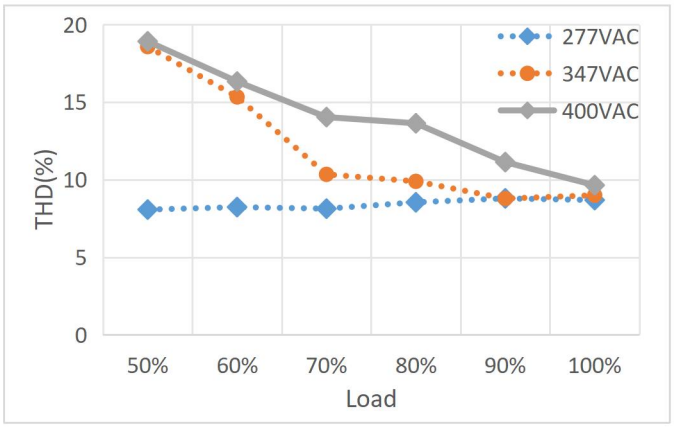


Figure 5.Total Harmonics vs Different Loads

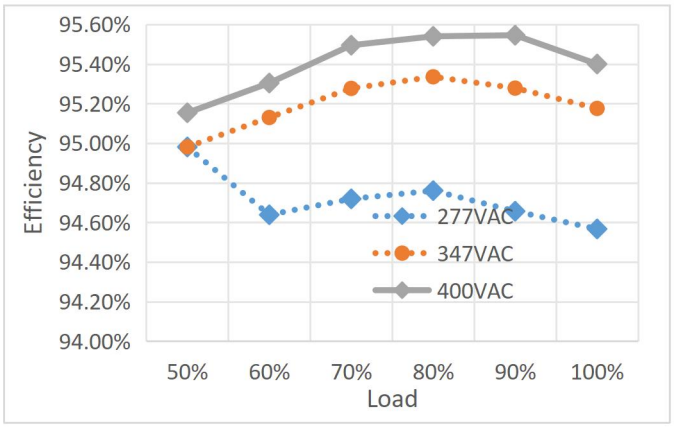


Figure 6.Efficiency vs Different Loads

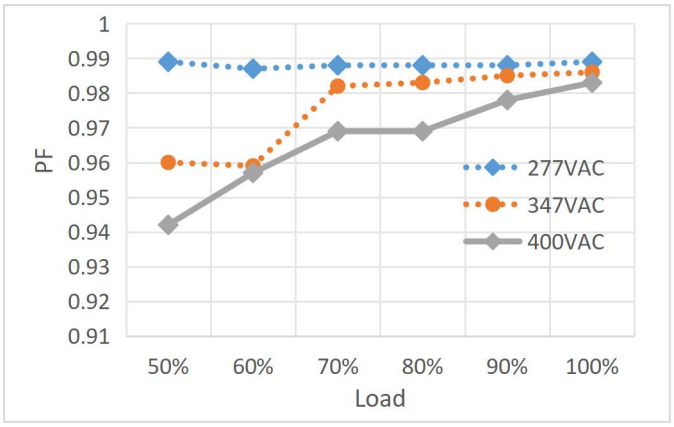


Figure 7.Power Factor vs Different Loads

7.6.0-10V Analog Dimming &PWM Dimming

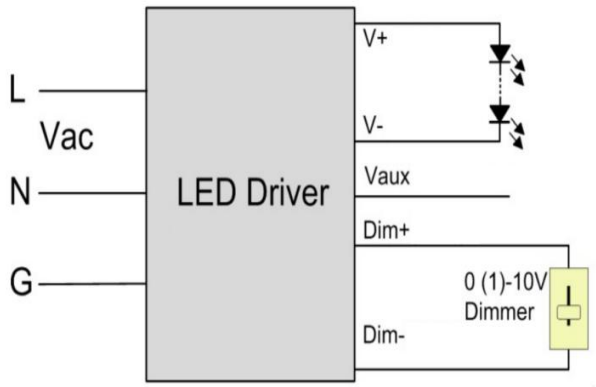


Figure 8.The block diagram of 0-10V Analog Dimming

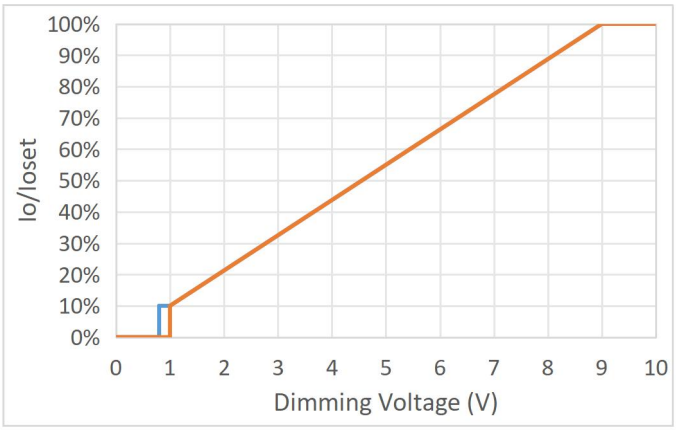


Figure 9.Io/Ioset vs Dimming Voltage

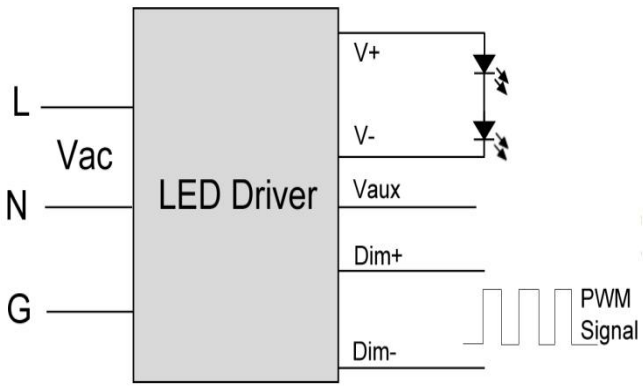


Figure 10.The block diagram of PWM Dimming

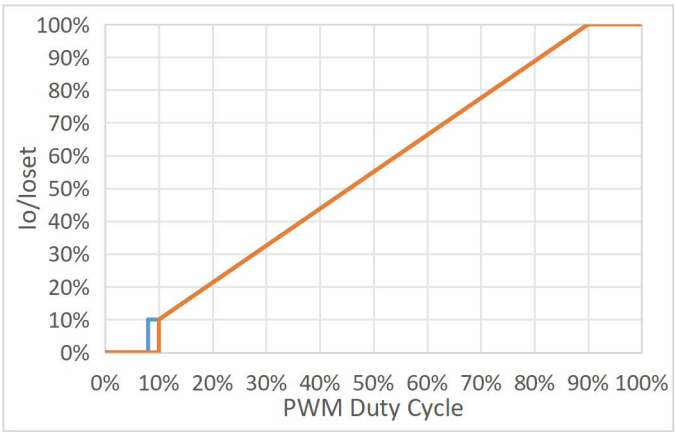


Figure 11.Io/Ioset vs PWM Duty Cycle

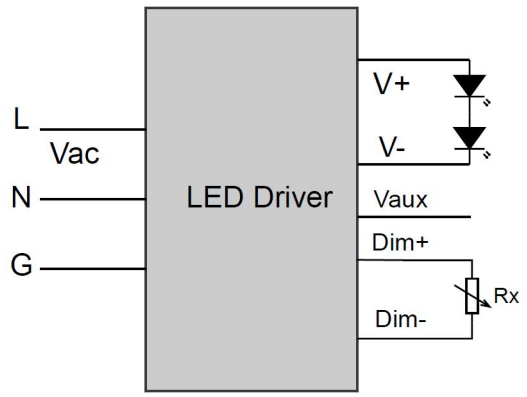


Figure 12.The block diagram of Resistor Dimming

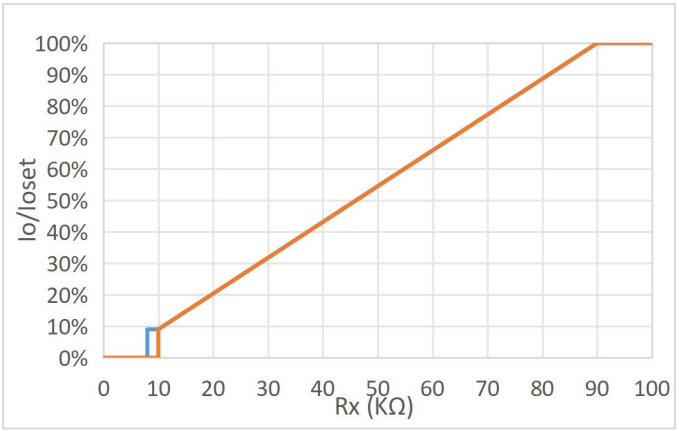


Figure 13.Io/Ioset vs Rx

8.Programming wiring diagram

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

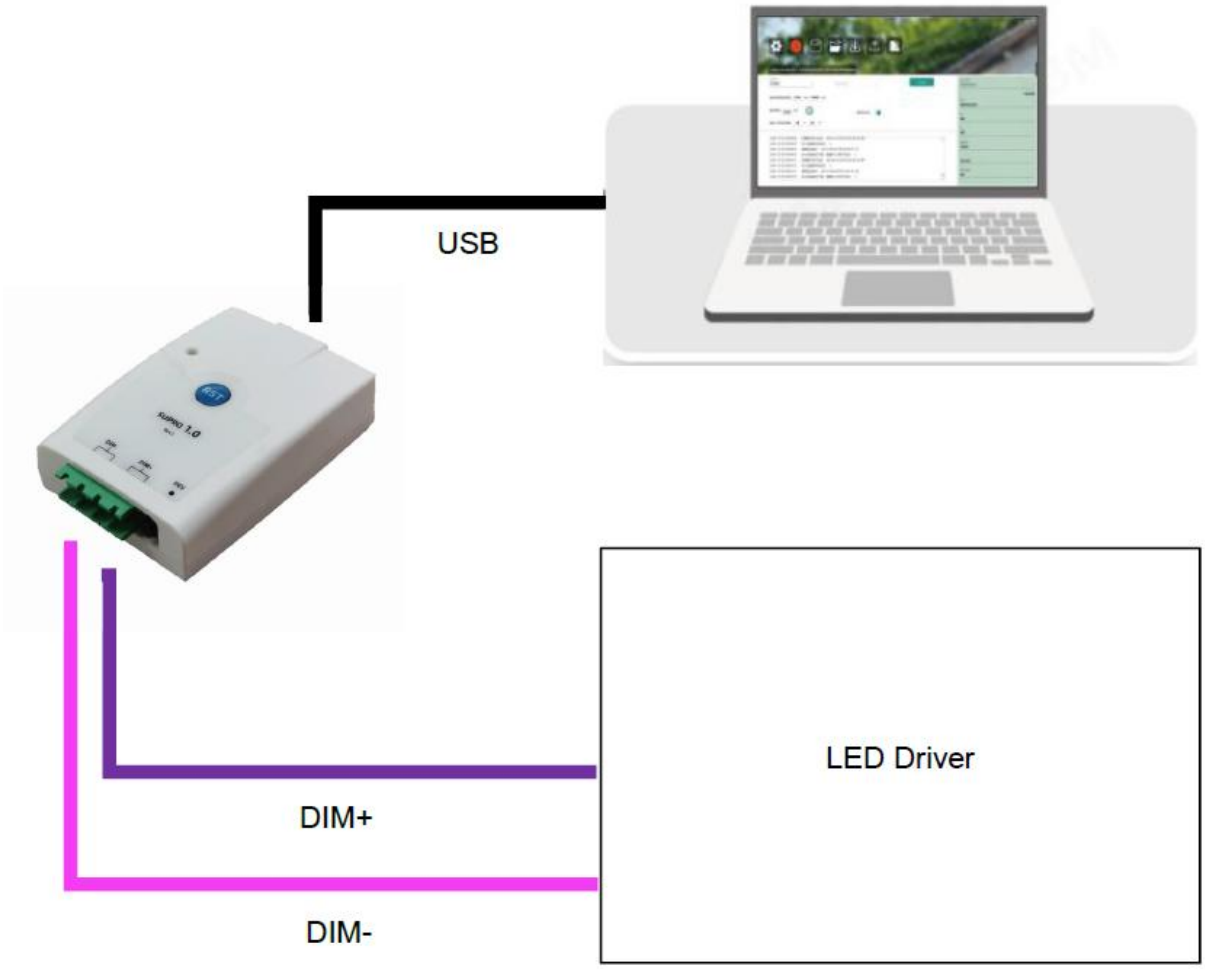


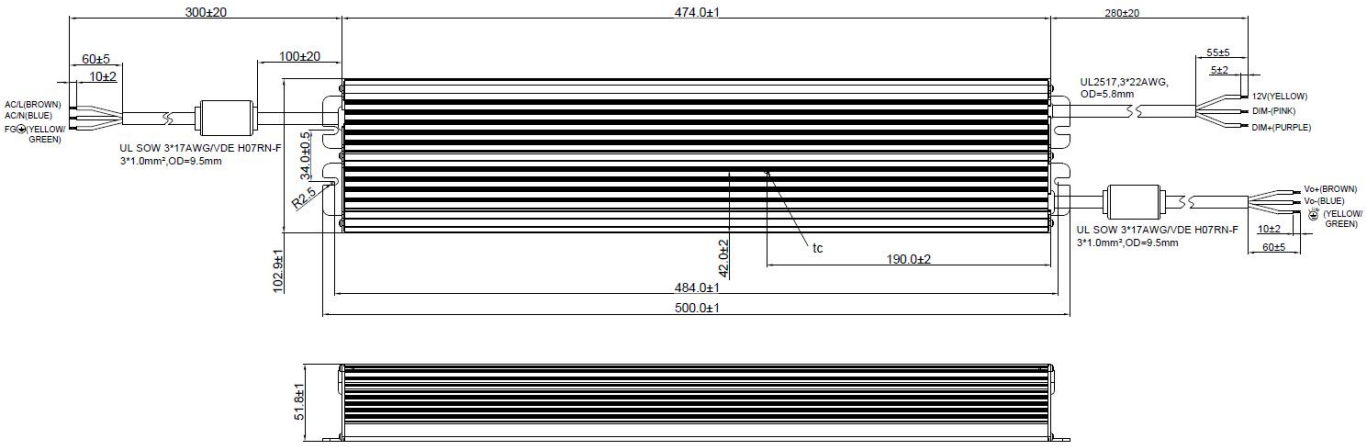
Figure 14.Programming Wiring

Note1:Please download related documents on the website or ask sales for help.

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

9.Mechanical Specification

Take 1600HTH400CVG as a example:



Unit:mm

Figure 15.Mechanical Drawing

10.Ordering information

Part Number	Rated Input AC Voltage (VAC)	Channels output	Output whether with FG line	Dimming
1600HTH400CVG	208-480	1	With	0-10V
1600HTH400CV	208-480	1	Without	0-10V

11.Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2025/7/15	V0.1			
2026/3/18	V0.2	Modify:Format		
		Input AC Current		Max：3.9A(Measured at 25°C, full load and 480 VAC input.)
		No Load Output Voltage	Max：430 (1600HTH400CV)	Max：440 (1600HTH400CV)
		Absolute Maximum Voltage on the Vdim (+) Pin	Max：15v	Max：12v
		Add：Isolation		
		Specifications:VO_RANGE (V)	250-400V(1600HTH400CV)	300-400V(1600HTH400CV)
		Dielectric Strength(Hi-pot)	Primary to Earth: 1800Vac 10mA max. Secondary to Earth: 1840Vac 10mA max(1600HTH400CV).	Add：Primary to Secondary:3760 VAC 10mA max(1600HTH400CV) Primary to Earth: 1960 VAC 10mA max. Secondary to Earth: 1880Vac 10mA max(1600HTH400CV).

			Dimming to Output: 1840Vac 10mA max(1600HTH400CV).	Dimming to Output: 1880Vac 10mA max(1600HTH400CV).
		Performance Curve		Update：Derating Curve
		Programming wiring diagram		Update：Programming Wiring
		Mechanical Specification		Update：Mechanical Drawing
		Add：Ordering information		
		Inrush Peak Current	TBD(At 277Vac input, 25°C cold start.)	35A(At 400 VAC input, 25°C cold start. See Inrush Current Waveform for the details.)
		Performance Curve		Add：Inrush Current Curve&General Performance Curve&I/V Operating Area
		Specifications &No Load Output Voltage&Dielectric Strength(Hi-pot)		Delete：1600HTH260CV
		Efficiency	Typ.：96% Min：95%	Typ.：95.5% Min：94%