



SOSEN LED Driver, Your Smart Choice

Specifications

SS-110PA NFC Programming & DALI-2 & D4i Control Power

Model: SS-110PA-XXF

Description: 110W NFC Programming &
DALI-2 & D4i Control Power

Rev.: V00

Release Date: 2023-05-30

SS-110PA NFC Programming & DALI-2 & D4i Control Power

SOSEN
LED DRIVER



LED DRIVER

PA Series



RoHS



Features:

- Efficiency up to 93%
- Output current can be adjusted through NFC programming
- DALI-2 & D4i certification
- Dim-to-off & Standby power ≤ 0.5W
- Surge Protection: CM: 10kV, DM: 6kV
- AUX Power: 24V/125mA
- Low Inrush Current ≤ 15A
- Built-in 16Vdc DALI-2 bus power supply
- Built-in AC power metering with up to ±1% accuracy
- AC Dimming/Timing/ELA/CLO/NTC
- Protections: SCP/OTP/OVP/OPP
- Suitable for Class I /II lamps
- IP20
- Installation dimensions conform to Zhaga standards
- Warranty: 8 years

Description:

SS-110PA-XXF is 110W NFC intelligent LED driver power supply, which adopts the standardized interface of D4i intelligent lighting system, which can realize interconnection with intelligent lighting system and fine control and management. Which can be compatible and connected with a variety of intelligent lighting systems and controllers. The product has a variety of intelligent functions, which can adjust the power, brightness, color temperature and color parameters of the lamp in real time, support intelligent lighting scene setting and adjustment, monitor the status and fault of the lamp, and carry out remote management and maintenance. In addition, it also has a full range of protection mechanism, extremely high power conversion efficiency and stable and reliable output performance, which can provide stable, safe and reliable power support for LED lamps.

Application:

Street lights, tunnel lights, sports lights.

Model List:

Model	AC Input Range	Max. P.out	Vout Range	Full Power Vo Range	Iout	THD(Typ.)	PF(Typ.)	Eff.(Typ.)	Max.Tc
SS-110PA-105F	176-264Vac 168-280Vdc	110W	35-105V	73-105V	0.2-1.5A	6%	0.98	92.5%	90°C
SS-110PA-160F	176-264Vac 168-280Vdc	110W	52-160V	105-160V	0.2-1.05A	6%	0.98	93%	90°C
SS-110PA-245F	176-264Vac 168-280Vdc	110W	81-245V	157-245V	0.2-0.7A	6%	0.98	93%	90°C

Note:

1. Default Tested: at 230Vac, full load, Ta 25°C.
2. The performance of the LED Driver can be guaranteed within the full power Vo range. The voltage lower than full power Vo range, it is need to test the performance with the LED module;
3. Low inrush current due to istart, which enables a single MCB to control more LED drivers.

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Input Characteristics:

Parameter	Min.	Typ.	Max.	Remark
Rated AC Input Range	220Vac		240Vac	
Input AC Voltage Range	176Vac		264Vac	
Input DC Voltage Range	168Vdc		280Vdc	
Input Frequency Range	47Hz	50/60Hz	63Hz	
Max Input Current			0.8A	200Vac, Full load
Max Inrush Current(230Vac)			15A	Cold start
Power metering	-1%		+1%	220Vac, Full load
No Load Power			0.5W	230Vac/50Hz, Dim to off
Power Factor	0.96	0.98		220Vac/50Hz, Full load
	0.9			220-240Vac/50Hz, 30-100% load
THD		6%	10%	220Vac/50Hz, Full load
			20%	220-240Vac/50Hz, 30-100% load

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O/P Characteristics(SS-110PA-105F):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	35V		105V	Power derated @35-73V
Rated O/P Voltage	73V		105V	$P_o = V_o \cdot I_o = 110W$, Full load
Rated O/P Current	1.05A		1.5A	1.5A for 73V, 1.05A for 105V
Adj. O/P Current (AOC) Range	0.2A		1.5A	Output current can be adjusted through NFC programming
No Load Voltage			130V	
Efficiency @230Vac	89.5%	92.5%		O/P 105V/1.05A
O/P Current Tolerance	-5%		+5%	
O/P Current Ripple(PK-AV)		5%	10%	Full load
Output P_{stLM}			1	Full load
Output SVM			0.4	Full load
Start-up Current Overshoot			10%	Full load
Start-up Time			0.5S	230Vac, Full load
Line Regulation	-1%		+1%	Full load
Load Regulation	-1%		+1%	
Temperature Coefficient	-0.03%/°C		+0.03%/°C	Tc:0°C~90°C
OTP	92°C	95°C	100°C	> Tc Typ., Current derating < Tc Min., Current recovery
Short Circuit Protection				Driver will not be damaged, CC mode

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O/P Characteristics(SS-110PA-160F):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	52V		160V	Power derated @52-105V
Rated O/P Voltage	105V		160V	$P_o = V_o \cdot I_o = 110W$, Full load
Rated O/P Current	0.7A		1.05A	1.05A for 105V, 0.7A for 160V
Adj. O/P Current (AOC) Range	0.2A		1.05A	Output current can be adjusted through NFC programming
No Load Voltage			180V	
Efficiency @230Vac	90.0%	93.0%		O/P 160V/0.7A
O/P Current Tolerance	-5%		+5%	
O/P Current Ripple(PK-AV)		5%	10%	Full load
Output P_{stLM}			1	Full load
Output SVM			0.4	Full load
Start-up Current Overshoot			10%	Full load
Start-up Time			0.5S	230Vac, Full load
Line Regulation	-1%		+1%	Full load
Load Regulation	-1%		+1%	
Temperature Coefficient	-0.03%/°C		+0.03%/°C	Tc:0°C~90°C
OTP	92°C	95°C	100°C	> Tc Typ., Current derating < Tc Min., Current recovery
Short Circuit Protection				Driver will not be damaged, CC mode

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O/P Characteristics(SS-110PA-245F):

Parameter	Min.	Typ.	Max.	Remark
O/P Voltage Range	81V		245V	Power derated @52-105V
Rated O/P Voltage	157V		245V	$P_o = V_o \cdot I_o = 110W$, Full load
Rated O/P Current	0.45A		0.7A	0.7A for 157V, 0.45A for 245V
Adj. O/P Current (AOC) Range	0.2A		0.7A	Output current can be adjusted through NFC programming
No Load Voltage			270V	
Efficiency @230Vac	90.0%	93.0%		O/P 245V/0.45A
O/P Current Tolerance	-5%		+5%	
O/P Current Ripple(PK-AV)		5%	10%	Full load
Output P_{stLM}			1	Full load
Output SVM			0.4	Full load
Start-up Current Overshoot			10%	Full load
Start-up Time			0.5S	230Vac, Full load
Line Regulation	-1%		+1%	Full load
Load Regulation	-1%		+1%	
Temperature Coefficient	-0.03%/°C		+0.03%/°C	Tc:0°C~90°C
OTP	92°C	95°C	100°C	> Tc Typ., Current derating < Tc Min., Current recovery
Short Circuit Protection				Driver will not be damaged, CC mode

SS-110PA NFC Programming & DALI-2 & D4i Control Power

Dimming Characteristics:

Parameter		Min.	Typ.	Max.	Remark
DALI-2	DA+, DA- High Level	9.5V	16V	22.5V	
	DA+, DA- Low Level	-6.5V	0V	6.5V	
	DA+, DA- Current	0mA		2mA	
AC Dim	Start Input Voltage	180Vac		264Vac	Default is 200Vac
	Start Output Level	30%		100%	Default is 100%
	Stop Input Voltage	160Vac		244Vac	Default is 160Vac
	Stop Output Level	30%		100%	Default is 30%
	Gap between Start and Stop Input Voltage	20Vac			
Dimming Output Range	SS-110PA-245F	10%Ioset		Ioset	$450\text{mA} \leq \text{Ioset} \leq 700\text{mA}$
	SS-110PA-160F				$700\text{mA} \leq \text{Ioset} \leq 1050\text{mA}$
	SS-110PA-105F				$1050\text{mA} \leq \text{Ioset} \leq 1500\text{mA}$
	SS-110PA-245F	45mA	Ioset	$45\text{mA} \leq \text{Ioset} \leq 450\text{mA}$	
	SS-110PA-160F	70mA		$70\text{mA} \leq \text{Ioset} \leq 700\text{mA}$	
	SS-110PA-105F	105mA		$105\text{mA} \leq \text{Ioset} \leq 1050\text{mA}$	

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Other Characteristics:

Parameter		Min.	Typ.	Max.	Remark
Aux Power	Rated O/P Voltage	21.6V	24V	26.4V	The reference ground is "DA-"
	No Load O/P Voltage			30V	The reference ground is "DA-"
	Rated O/P Current	0		125mA	The reference ground is "DA-"
	Peak O/P Current	0		250mA	The reference ground is "DA-". During a 6ms period, maximum duration of 250mA peak output current 2.2ms, and the average value cannot exceed 125mA.
Integrated DALI-2 Bus Power Supply Voltage		12V	16V	20V	
Integrated DALI-2 Bus Power Supply Current		50mA		60mA	
Life Time(Tc≤80°C)		≥100,000 hours			80% load
MTBF		250,000 hours			230Vac, Full load, Ta=25°C (MIL-HDBK-217F)
IP Grade		IP20			
Tc		90°C			
Warranty		8 years			Tc: 80°C
Net Weight		835g			
Dimension		150mm*90mm*37mm			L x W x H

- NOTE: 1, All the parameters above are tested Ta 25°C and LED load, unless specified.
2. The DALI-2 bus power is enabled by default and can be turned off through the programming interface.

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Environmental Requirements

Parameter	Min.	Typ.	Max.	Remark
Operating Temperature(Tcase)	-40°C	25°C	+90°C	
Storage Temperature	-40°C	25°C	+90°C	
Operation Humidity	10%RH		90%RH	
Storage Humidity	5%RH		95%RH	
Altitude	-65m		4000m	

Safety and EMI/EMS Standards

Certification	Standard	Status	Remark
ENEC	EN 61347-1:2015 EN 61347-2-13:2014 EN 61347-2-13:2014/A1:2017 EN 62384:2006 EN 62384:2006/A1:2009	✓	
UKCA	EN 61347-1:2015+A1:2021 EN 61347-2-13:2014+A1:2017 EN 62493:2015 BS EN 61347-1:2015+A1:2021 BS EN 61347-2-13:2014+A1:2017 BS EN 62493:2015	✓	
EAC	EN 61347-2-13:2014 EN61347-1:2008+A1:2011+A2:2013 TP TC 004/2011 TP TC 020/2011	✓	
CE	EN 61347-2-13:2014 EN61347-1:2008+A1:2011+A2:2013	✓	

EMI/EMS	Criterion	Remark
Conduction Emission	EN55015:2013+A1:2015	Class B
Radiation Emission	EN55015:2013+A1:2015	Class B
Harmonic Current Emissions	IEC/EN 61000-3-2	Class C
Surge	IEC/EN61000-4-5	DM: 6kV,CM: 8kV,Criterion B
	EN61547	DM: 6kV,CM: 10kV,Criterion B
Ring Wave	IEC/EN 61000-4-12	DM: 6kV,CM: 6kV,Criterion B

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Safety Test Items:

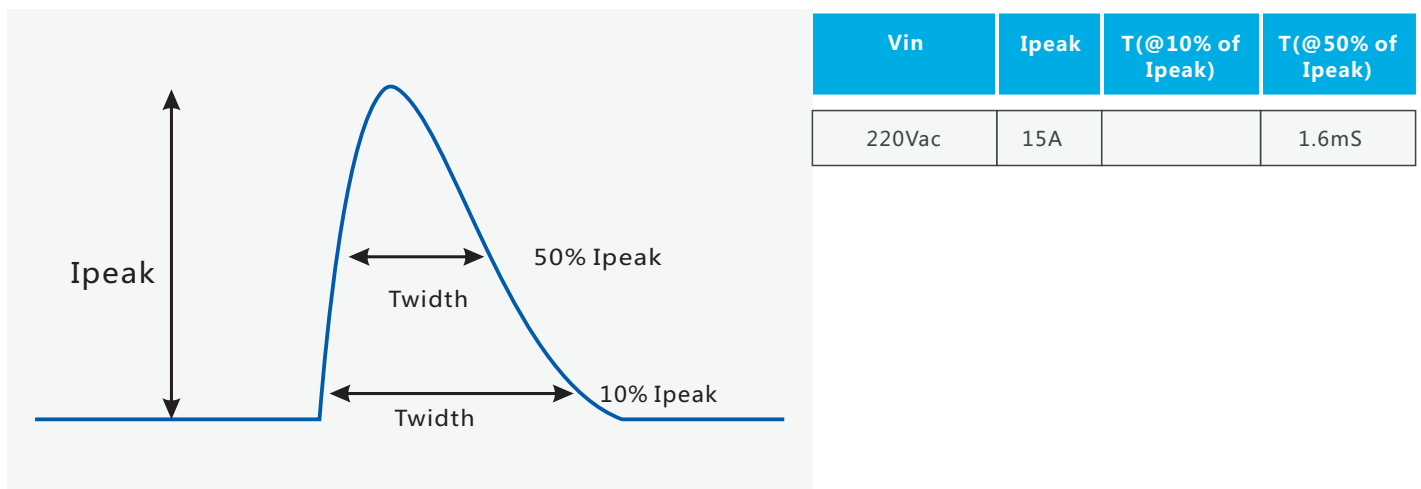
Safety Test Items	Technical Indicators	Remark
Insulation Requirements	ENEC Insulation Requirements	
Input-Output	3000Vac	Reinforced insulation
Input-Case	3000Vac	Reinforced insulation
Input-Dim	3000Vac	Reinforced insulation
Output-Dim	1500Vac	Basic insulation
Output-Case	1500Vac	Basic insulation
Dim-Case	500Vac	Basic insulation
Insulation Resistance	$\geq 10M\Omega$	Input-Output, Test voltage: 500Vdc
Leakage Current	$\leq 0.7mA_{pk}$	240Vac

NOTE:

1. SOSEN warrants the LED Driver itself complies with EMC standard. However, LED Driver's EMC should be re-checked when integrated into lighting systems due to unexpected interference of components.
2. Please short (ACL and ACN), (V+ and V-), (Dim+ and Dim - and Vaux+ and Vaux- and STB) when Hi-pot test.

Performance Curves:

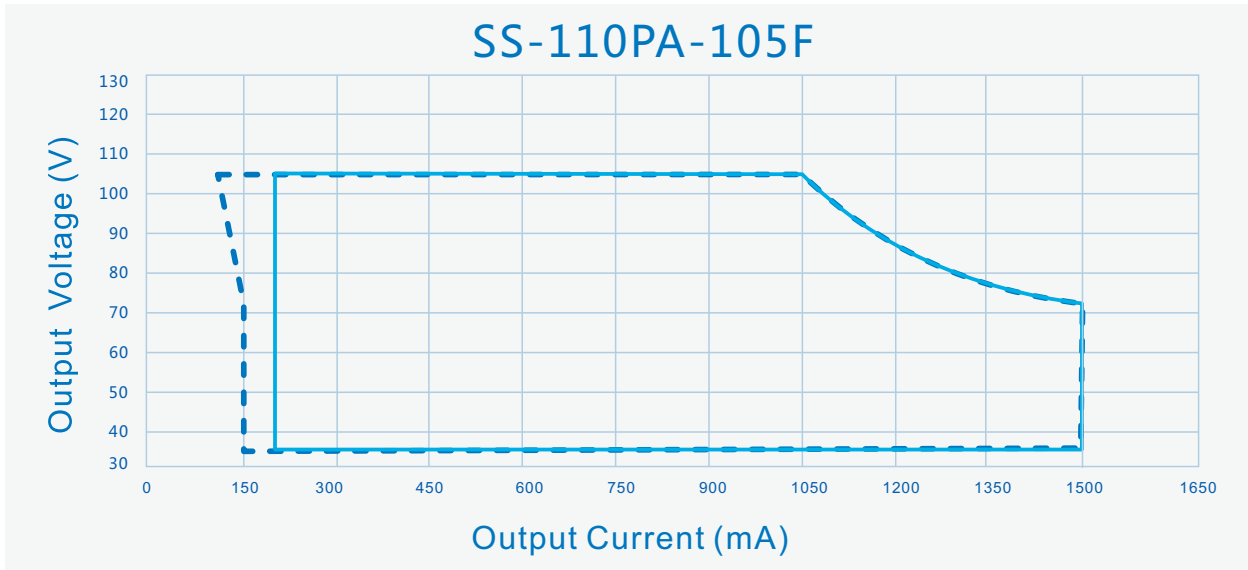
Input Inrush Current



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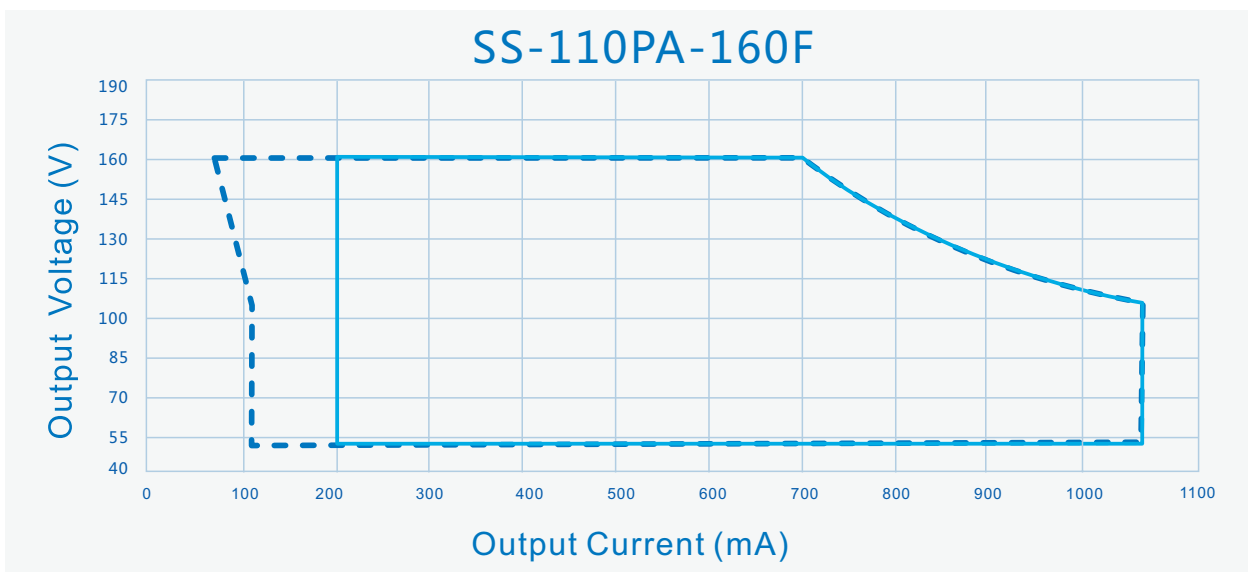
Performance Curves:

O/P Voltage Vs. O/P Current(Dim/AOC Window)



----- Dimming Window ————— AOC Window

O/P Voltage Vs. O/P Current(Dim/AOC Window)

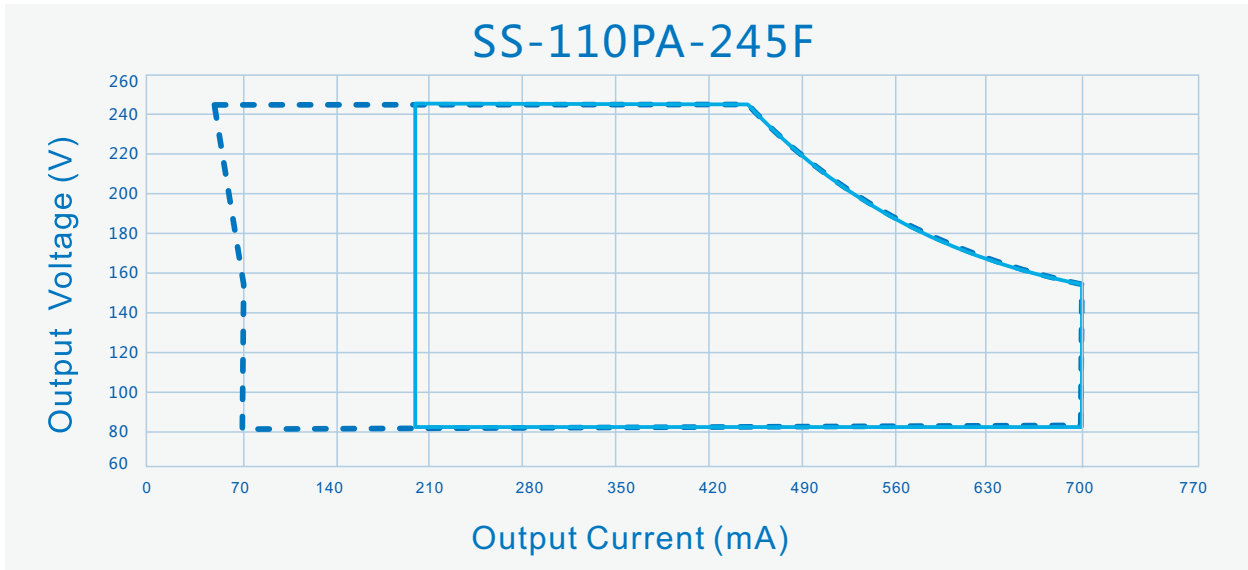


----- Dimming Window ————— AOC Window

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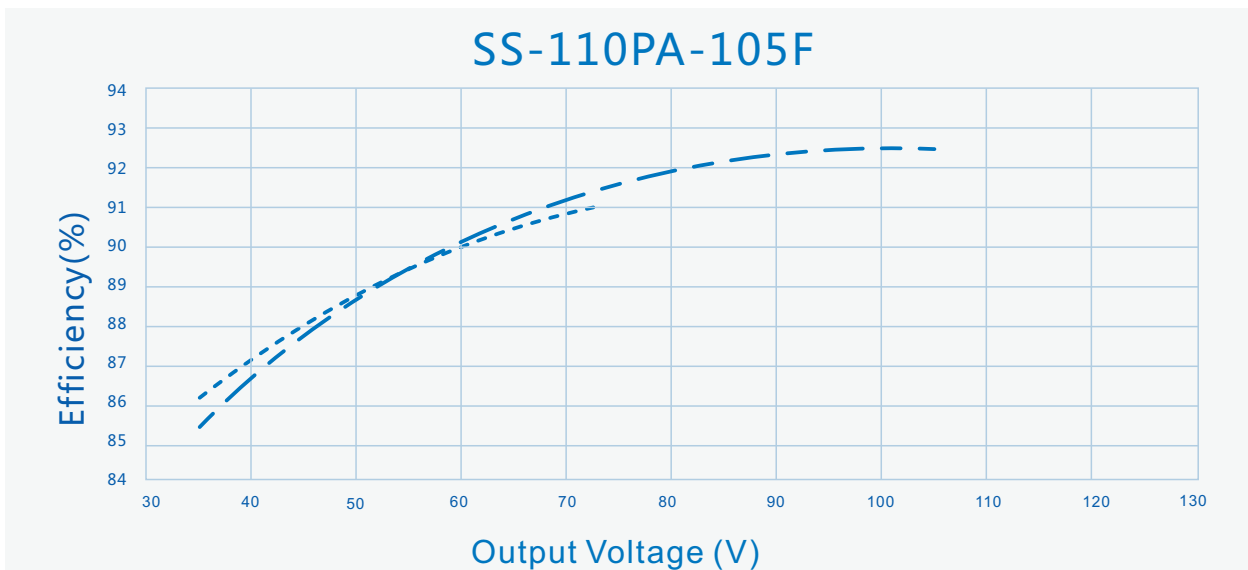
Performance Curves:

O/P Voltage Vs. O/P Current(Dim/AOC Window)



----- Dimming Window ————— AOC Window

Efficiency Vs. O/P Voltage ($V_{in}=230V_{ac}$)

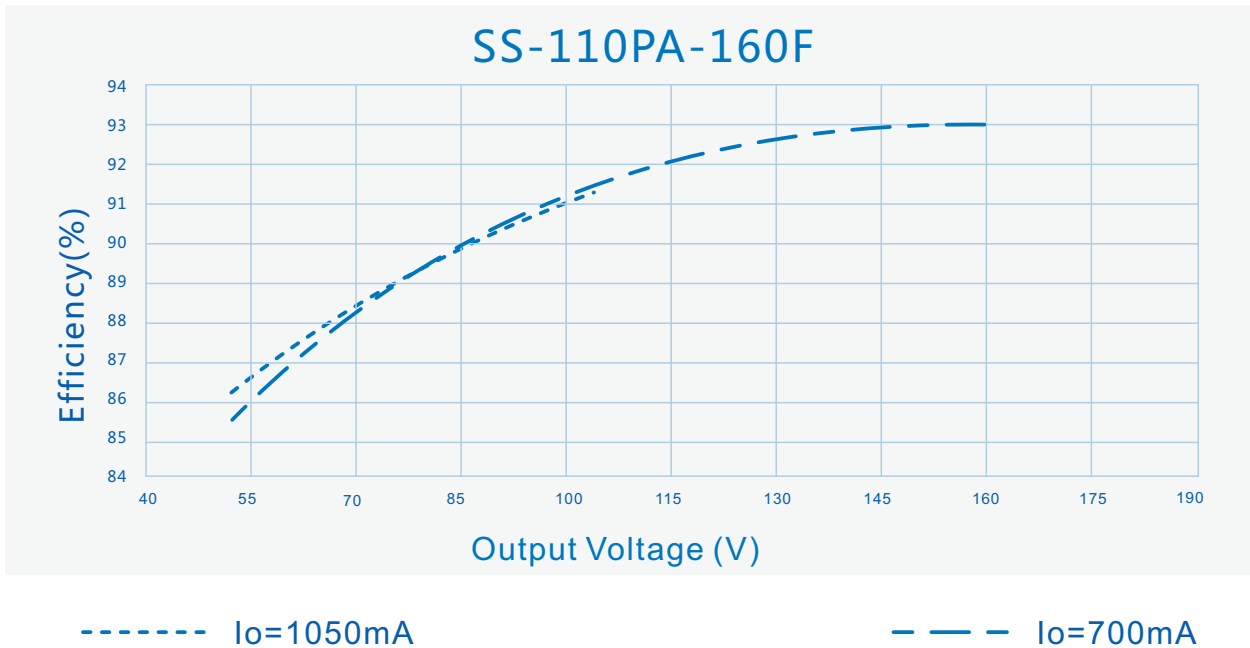


----- $I_o=1500mA$ - . - . - $I_o=1050mA$

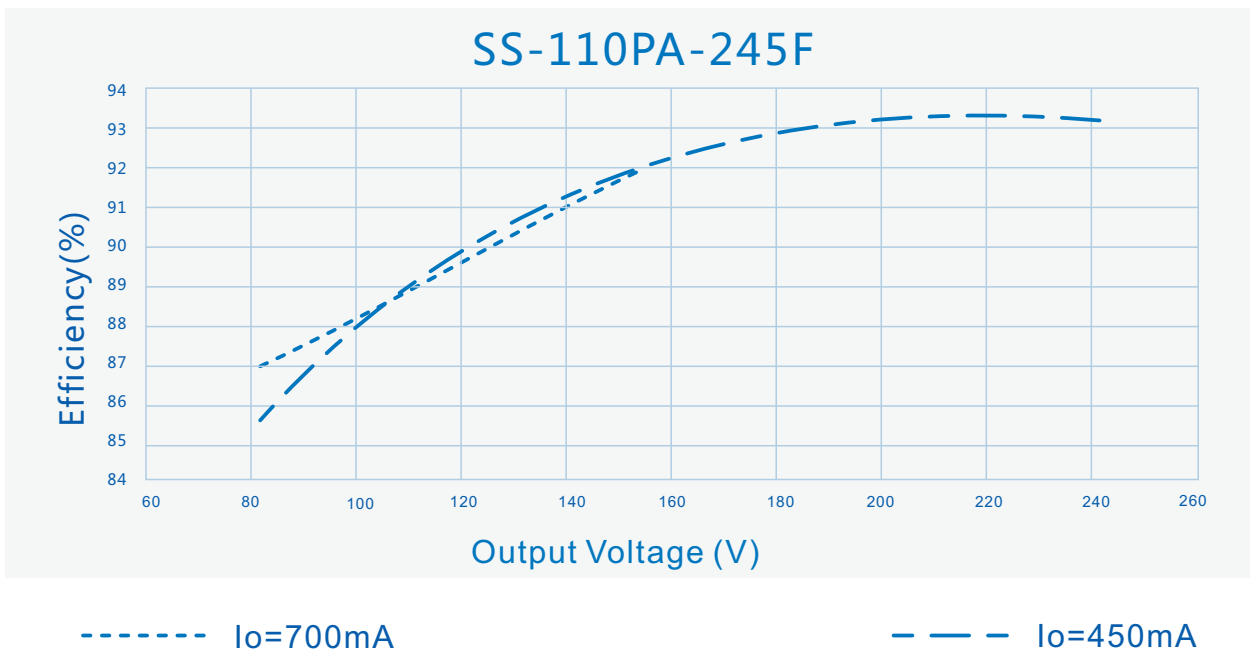
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Performance Curves:

Efficiency Vs. O/P Voltage ($V_{in}=230V_{ac}$)



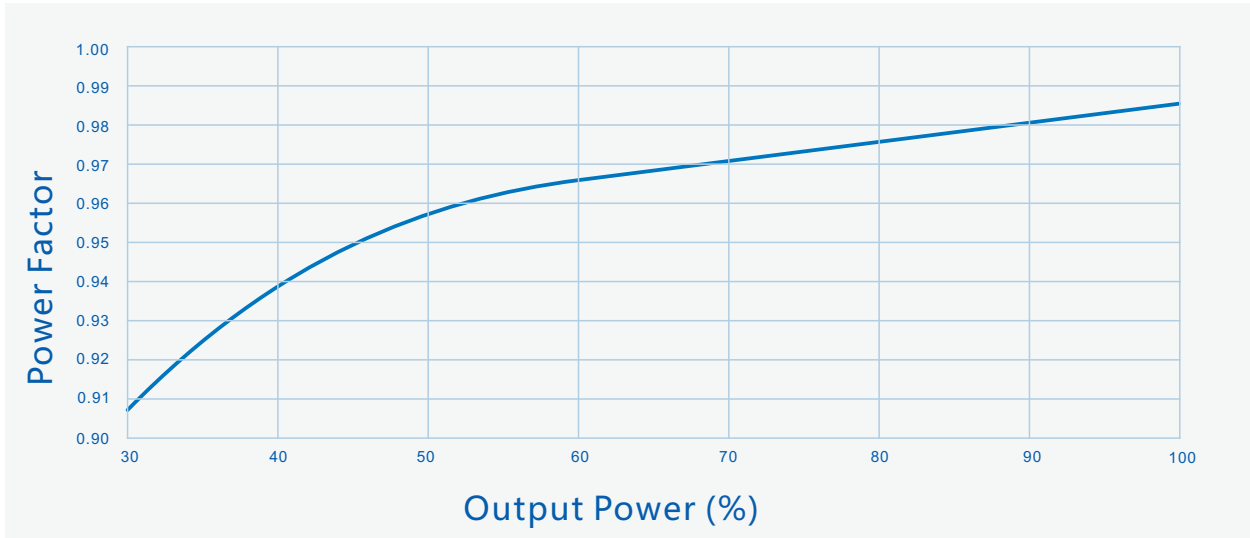
Efficiency Vs. O/P Voltage ($V_{in}=230V_{ac}$)



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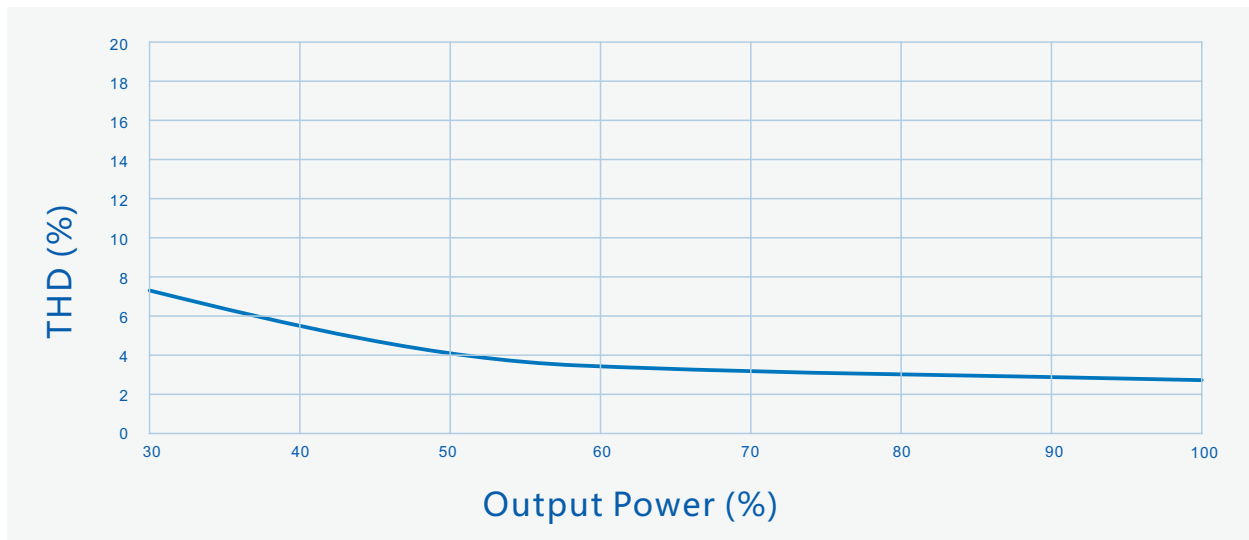
Performance Curves:

Power Factor Vs. O/P Power



— Vin=230Vac

THD Vs. O/P Power

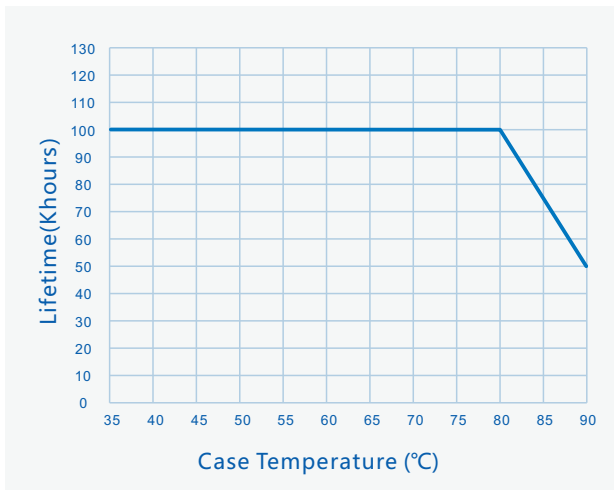


— Vin=230Vac

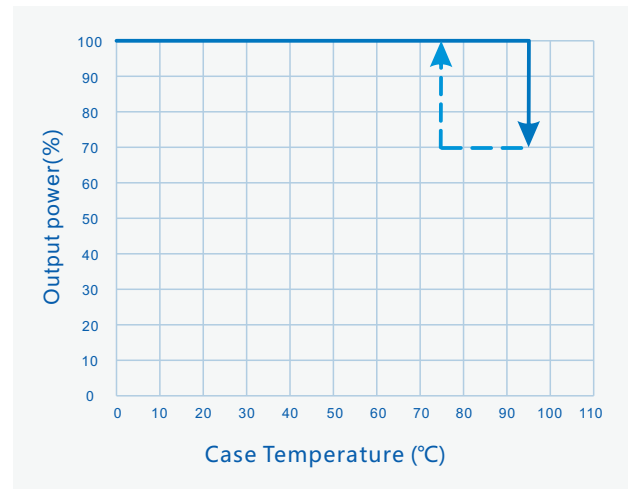
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Performance Curves:

Lifetime Vs. Case Temperature



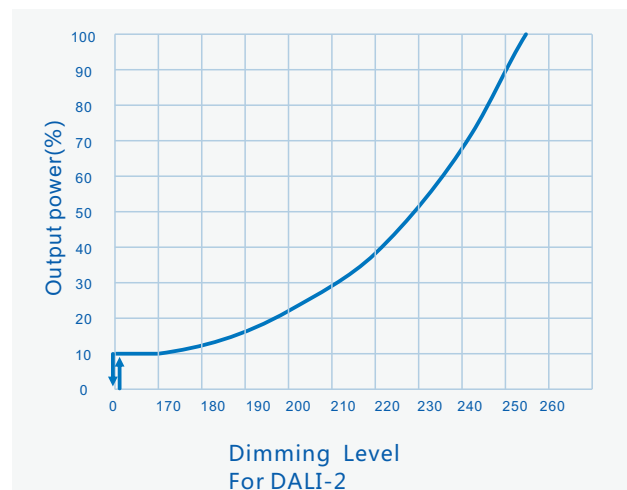
O/P power Vs. Case Temperature



O/P Power Vs. Dimming



O/P Power Vs. Dimming



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NTC Functions :

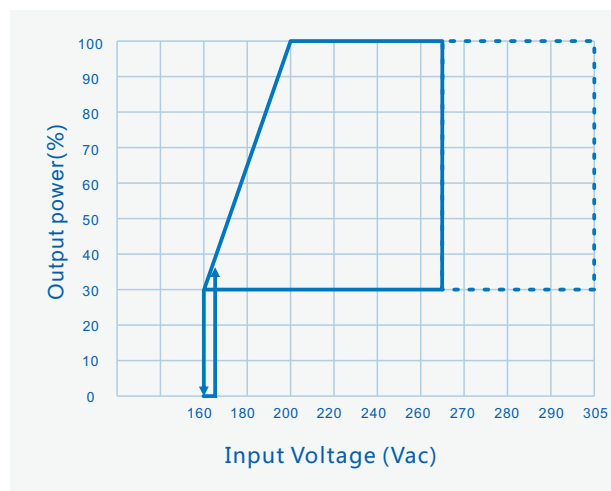
Parameter	Min.	Typ.	Max.	Remark
External Thermal Protection (NTC)	T1 (Start derating)		60°C	The default value can be set through software, When the temperature of the LED module is \geq T1, the output current gradually decreases
	T2 (Stop derating)		70°C	The default value can be set through software, when the temperature of the LED module is \geq T2, the output current remains unchanged
	T3 (off)		90°C	The default value can be set through software, When the temperature of the LED module is \geq T3, the power is turned off
	Protection Current Setting Range	0%Ioset	20%Ioset	100%Ioset

Note: The recommended NTC is 10K-3950B/3435B

AC Dimming :

The default range of AC Dim is 160-264Vac. The range can be adjusted via the programming interface. Also, the Start Input Voltage, Start Output Level, Stop Input Voltage and Stop Output Level can be set. There needs to be a minimum of 20V difference between Start and Stop Input Voltage settings when programming the driver.

There must be a minimum voltage difference of 5V from the Start Input Voltage before the driver starts dimming.



Notes:

1. In the solid line, the driver will operate normally.
2. In the dashed line, the driver will operate safely but not fulfill requirements.

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Timer Dimming :

Traditional Timer Dimming, Self-Adapt-Midnight Timer, Self-Adapt-Percentage Timer.
Time-controlled dimming settings can be made by setting 6 curves.

Traditional Timer Dimming: After the LED driver is powered on, it works according to the set dimming curve (adding a gradient time can slowly change between different dimming levels to prevent sudden changes in brightness and cause glare).

Self-Adapt-Midnight Timer: The 4th segment of the adaptive midnight timer curve acts as the midnight point. The LED driver automatically saves the effective power-on time and automatically calculates the adaptive cycle time through the effective calculation time of 4 times.

Self-Adapt-Percentage Timer: The adaptive percentage runs according to the automatically calculated adaptive cycle time according to the initially set dimming curve.

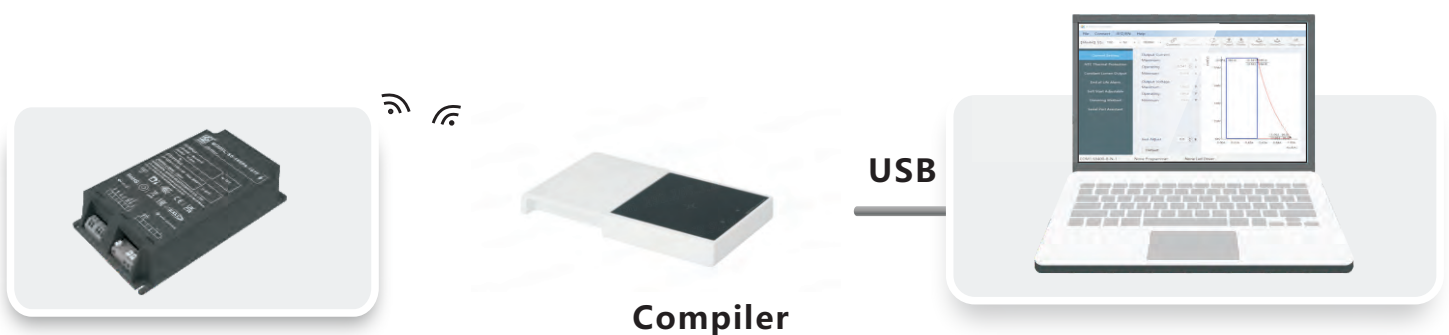
Constant Lumen Output :

Light decay compensation function, according to the LED lamp light decay curve, in the life cycle of the lamp, by gradually increasing the output current, to achieve a constant output of LED luminous flux, the overall luminous effect remains unchanged.

End Life Alarm :

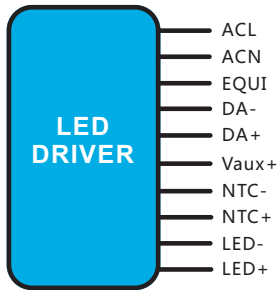
By presetting an LED driver life time, such as 50KH life, when the luminaire use time accumulates more than 50KH, the lamp will flash 5 times every time the lamp is turned on, reminding the user to replace the LED driver.

NFC Programming connection diagram :



SS-110PA NFC Programming & DALI-2 & D4i Control Power

Mechanical Characteristics



AC Input Cable:

0.2-1.5mm², 16-24AWG, WAGO250(3.5mm), Solid/Stranded Wire
Strip length 8.5-9.5mm

DC O/P Cable:

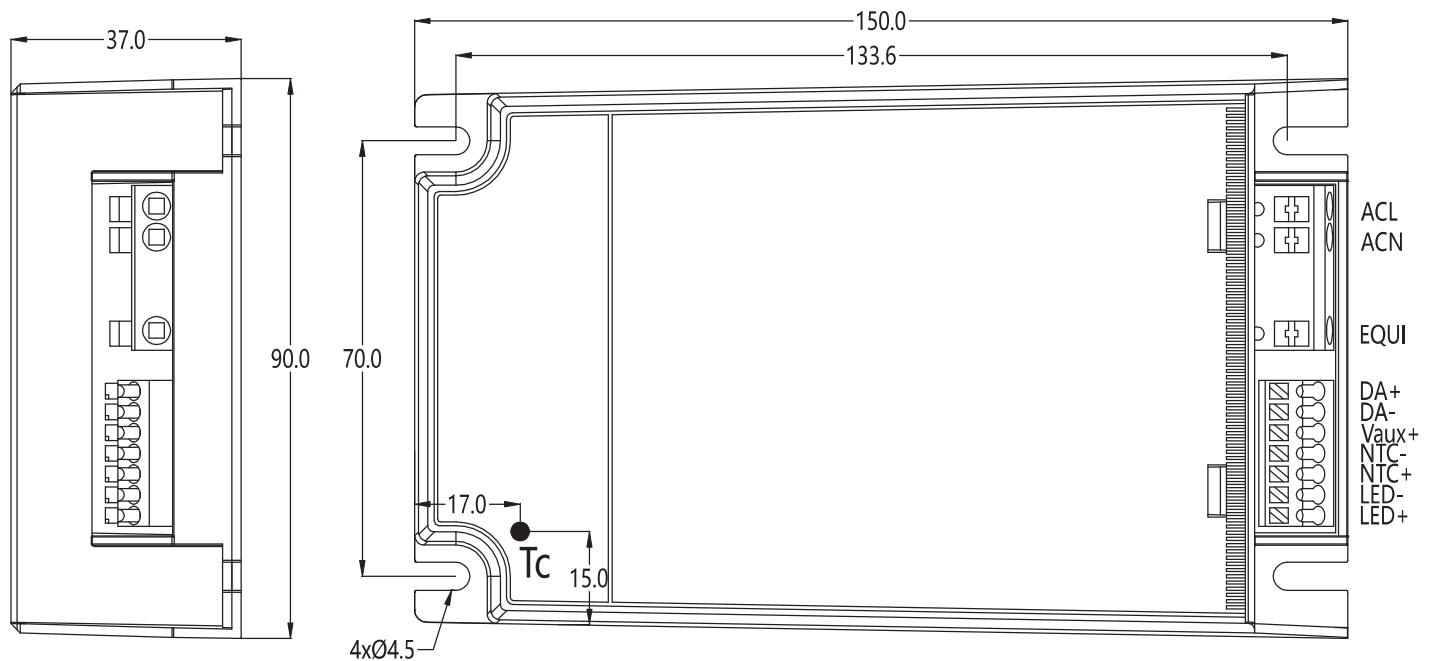
0.2-1.5mm², 16-24AWG, WAGO250(3.5mm), Solid/Stranded Wire
Strip length 8.5-9.5mm

DIM Cable:

0.2-1.5mm², 16-24AWG, WAGO250(3.5mm), Solid/Stranded Wire
Strip length 8.5-9.5mm

Note :

1, Please follow the "LED Driver User Manual" obtained from SOSEN's official website for assembly.



SS-110PA NFC Programming & DALI-2 & D4i Control Power



Package

- Outside carton dimension: L×W×H =435mm×285mm×155mm;
- 12PCS/Carton;
- Net weight/Piece: 0.835kg;Gross weight/Carton: 11.5kg;
- Please refer to the product name, model number, manufacturer identification, QC PASS, manufacturing date on the package.

Transportation

Packaging is designed suitable for transportation by trucks, vessels and flights. The products should be avoided direct sunlight and rain, loaded/unloaded with caution.

Storage

The product storage meets the standard of the GB 3873 - 83.
Products should be rechecked if stored for over 1 year before assembly.

RoHS

Products comply with RoHS Directive (2011/65/EU) and amendment 2015/863/EU.

Revision History

Version	Description of Update	Updated Date	Remark
V00	Original release	2023/05/30	