Features

- Dim-to-off with Standby Power ≤ 0.5 W
- Always-On Auxiliary Power: 12Vdc, 200mA
- Thermal Sensing and Protection for LED Module
- Full Power at 70-100% Max Current (Constant Power)
- Flicker-Free
- Push Dimming / DALI Dimmable
- Low Dimming Level to 5%
- Class II, Class 2 & SELV
- Suitable for Built-in Use
- Class P, UL Listed Versions Available (See Note 4)
- 5 Years Warranty

Description

The *LUD-060SxxxBS2* series is a 60W, constant-current, programmable IP20 LED driver with DALI that operates from 90-305Vac input with excellent power factor. Created for dimmable panel lights and linear lights, it provides good dimming accuracy down to 5% output, plus a dim-to-off mode with low standby power. The high efficiency of these drivers and slim metal case enable them to run cooler, significantly improving reliability and extending product life. To ensure trouble-free operation, protection is provided against output over voltage, short circuit, and over temperature of both the driver and the external LED array.

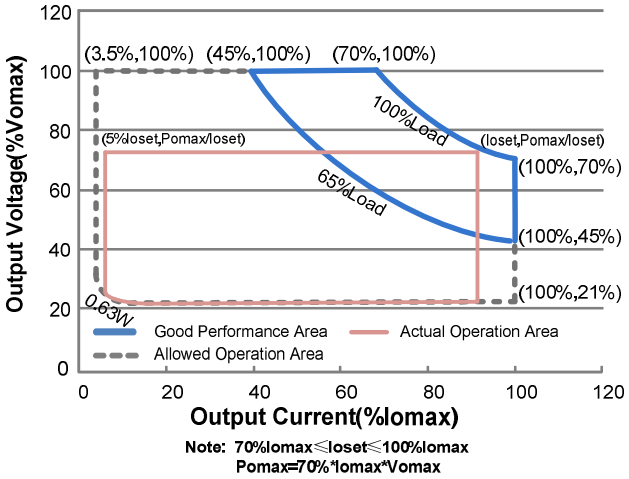
Models

Output Current Range(mA)	Full-Power Current Range (mA)(1)	Default Output Current (mA)	Output Voltage Range(Vdc)	Max. Output Power(W)	Typical Efficiency (2)	Typical Power Factor		Model Number(3)(4)
						120Vac	220Vac	
19.3-550	385-550	530	31-156	60	90%	0.99	0.96	LUD-060S055BS2
27.3-780	546-780	700	22-110	60	90%	0.99	0.96	LUD-060S078BS2(5)
38.5-1100	770-1100	1050	16-78	60	90%	0.99	0.96	LUD-060S110BS2(5)
52.5-1500	1050-1500	1400	12-57	60	89%	0.99	0.96	LUD-060S150BS2(6)
73.5-2100	1470-2100	2100	8-40	60	89%	0.99	0.96	LUD-060S210BS2(6)

Notes: (1) Output current range with constant power at 60W.
(2) Measured at a 220Vac input with 70% maximum output current and 100% maximum output voltage.
(3) Certified input voltage range: UL, FCC 100-277Vac or 127-300Vdc; otherwise 100-240Vac or 127-250Vdc (except KS).
(4) For UL Listed Class P models add suffix -00C0 (certified input voltage range: 120-277Vac or 127-250Vdc).
(5) SELV output.
(6) Class 2 & SELV output.

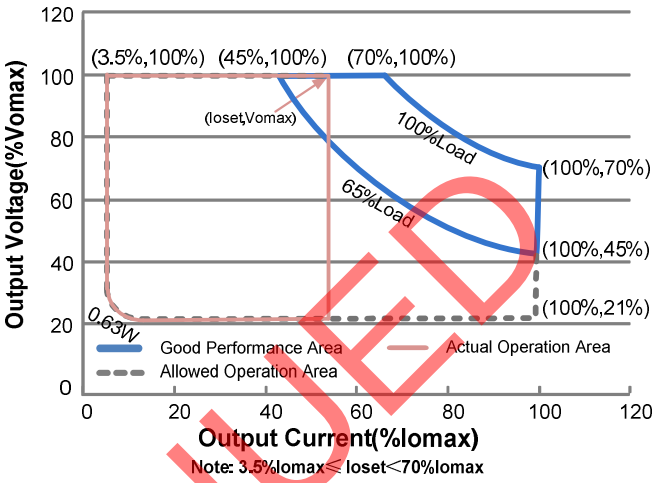
I-V Operating Curve

Power-Limited



Note: 70%Iomax≤Ioset≤100%Iomax
Pomax=70%*Iomax*Vomax

Voltage-Limited



Note: 3.5%Iomax≤ Ioset<70%Iomax

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input AC Voltage	90 Vac	-	305 Vac	
Input DC Voltage	127 Vdc	-	300 Vdc	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75 MIU	UL 8750; 277Vac/ 60Hz
	-	-	0.70 mA	IEC 60598-1; 240Vac/ 60Hz
Input AC Current	-	-	0.8 A	Measured at 100% load and 100 Vac input.
	-	-	0.36 A	Measured at 100% load and 220 Vac input.
Inrush Current(I^2t)	-	-	0.94 A^2s	At 220Vac input, 25°C Cold Start, Duration =0.56 ms, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details.
PF	0.90	-	-	At 100-277Vac, 65%-100%load(39-60W)
THD	-	-	20%	

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%Ioset	-	5%Ioset	At 100% load condition
Output Current Setting (Ioset) Range	7%Iomax	-	100%Iomax	
Output Current Setting Range with Constant Power	70%Iomax	-	100%Iomax	
Total Output Current Ripple (pk-pk)	-	5%Iomax	10%Iomax	At 100% load condition,20 MHz BW

Output Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Output Current Ripple at < 200 Hz (pk-pk)	-	1%Iomax	5%Iomax	At 100% load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%Iomax	At 100% load condition
No Load Output Voltage LUD-060S055BS2 LUD-060S078BS2 LUD-060S110BS2 LUD-060S150BS2 LUD-060S210BS2	 - - - - -	 - - - - -	 180 V 120 V 90 V 59.5 V 50 V	
Line Regulation	-	-	±0.5%	Measured at 100% load
Load Regulation	-	-	±1.5%	
Turn-on Delay Time	-	0.5 s	1.0 s	Measured at 120Vac input, 65%-100%load
	-	0.3 s	0.5 s	Measured at 220Vac input, 65%-100%load
Temperature Coefficient of Ioset	-	-	0.02%/°C	Case temperature = 0°C ~Tc max
12V Auxiliary Output Voltage	10.8 V	12 V	13.2 V	
12V Auxiliary Output Source Current	0 mA	-	200 mA	Return terminal is “Return−“

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input: LUD-060S055BS2 Io=385 mA Io=550 mA LUD-060S078BS2 Io=546 mA Io=780 mA LUD-060S110BS2 Io=770 mA Io=1100 mA LUD-060S150BS2 Io=1050 mA Io=1500 mA LUD-060S210BS2 Io=1470 mA Io=2100 mA	 86.0% 85.0% 86.0% 85.0% 86.0% 84.0% 85.0% 84.0% 85.0% 83.0%	 88.0% 87.0% 88.0% 87.0% 88.0% 86.0% 87.0% 86.0% 87.0% 85.0%	 - - - - - - - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)

General Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 220 Vac input: LUD-060S055BS2 Io=385 mA Io=550 mA LUD-060S078BS2 Io=546 mA Io=780 mA LUD-060S110BS2 Io=770 mA Io=1100 mA LUD-060S150BS2 Io=1050 mA Io=1500 mA LUD-060S210BS2 Io=1470 mA Io=2100 mA	 88.0% 87.0% 88.0% 87.0% 88.0% 86.0% 87.0% 86.0% 87.0% 85.0%	 90.0% 89.0% 90.0% 89.0% 90.0% 88.0% 89.0% 88.0% 89.0% 87.0%	 - - - - - - - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Efficiency at 277 Vac input: LUD-060S055BS2 Io=385 mA Io=550 mA LUD-060S078BS2 Io=546 mA Io=780 mA LUD-060S110BS2 Io=770 mA Io=1100 mA LUD-060S150BS2 Io=1050 mA Io=1500 mA LUD-060S210BS2 Io=1470 mA Io=2100 mA	 88.0% 87.0% 88.0% 87.0% 88.0% 86.0% 87.0% 86.0% 87.0% 85.0%	 90.0% 88.5% 90.0% 89.0% 90.0% 88.0% 89.0% 88.0% 89.0% 87.0%	 - - - - - - - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
Standby Power	-	-	0.5 W	Measured at 230Vac/50Hz; Dimming off
MTBF	-	220,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-
Lifetime	-	107,000 Hours	-	Measured at 120Vac input, 80%Load and 60°C case temperature; See lifetime vs. Tc curve for the details
Operating Case Temperature for Safety Tc_s	-30°C	-	+85°C	
Operating Case Temperature for Warranty Tc_w	-30°C	-	+70°C	Case temperature for 5 years warranty. Humidity: 10% RH to 90% RH. No condensation
Storage Temperature	-30°C	-	+85°C	Humidity: 5% RH to 90% RH. No condensation
Dimensions Inches (L × W × H) Millimeters (L × W × H)	 14.88 × 1.18 × 0.83 378 × 30 × 21			
Net Weight	-	370 g	-	

Dimming Specifications

Parameter	Min.	Typ.	Max.	Notes
DA/P, DA/P High Level	9.5V	16V	22.5V	
DA/P, DA/P Low Level	-6.5V	0V	6.5V	
DA/P, DA/P Current	0mA	-	2mA	
Dimming Output Range	5%Ioset	-	Ioset	70%Iomax ≤ Ioset ≤ 100%Iomax
	3.5%Iomax	-	Ioset	3.5%Iomax ≤ Ioset < 70%Iomax

Safety & EMC Compliance

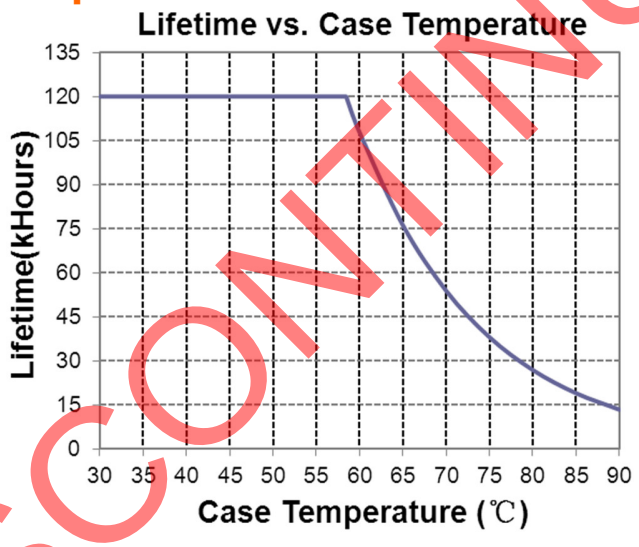
Safety Category	Standard
UL/CUL	UL 8750,UL1310,CAN/CSA-C22.2 No. 250.13,CAN/CSA-C22.2 No. 223-M91
ENEC & CE	EN 61347-1(1), EN 61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
KS	KS C 7655
Performance	**Standard**
ENEC	EN IEC 62384
EMI Standards	**Notes**
EN IEC 55015(2)	Conducted emission Test &Radiated emission Test
EN IEC 61000-3-2	Harmonic current emissions Class C
EN IEC 61000-3-3	Voltage Fluctuations & Flicker
FCC Part 15(2)	ANSI C63.4 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
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-4	Electrical Fast Transient/Burst-EFT
EN 61000-4-5	Surge Immunity Test: AC Power Line: line to line 1 kV
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-8	Power Frequency Magnetic Field Test

Safety & EMC Compliance (Continued)

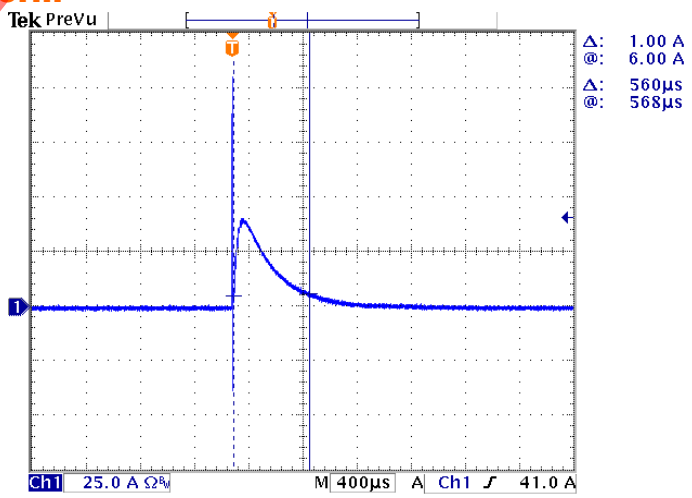
EMS Standards	Notes
EN 61000-4-11	Voltage Dips
EN 61547	Electromagnetic Immunity Requirements Applies to Lighting Equipment
DALI Standards	**Notes**
DALI	IEC62386-101,102 & part of 207(3)

Notes: (1) This product meets all requirements for EN 61347-1, Annex O (Double insulation). When the driver is energized, the allowed leakage current is perceptible but harmless.
(2) 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.
(3) Optional Commands Implemented: 242 (query short circuit), 243 (query open circuit).

Lifetime vs. Case Temperature

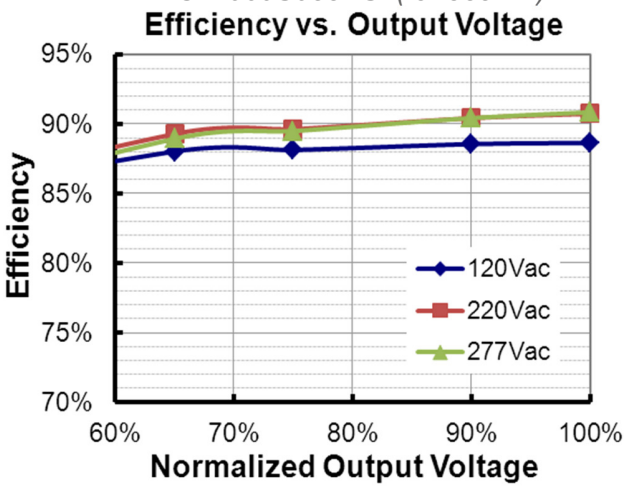


Inrush Current Waveform

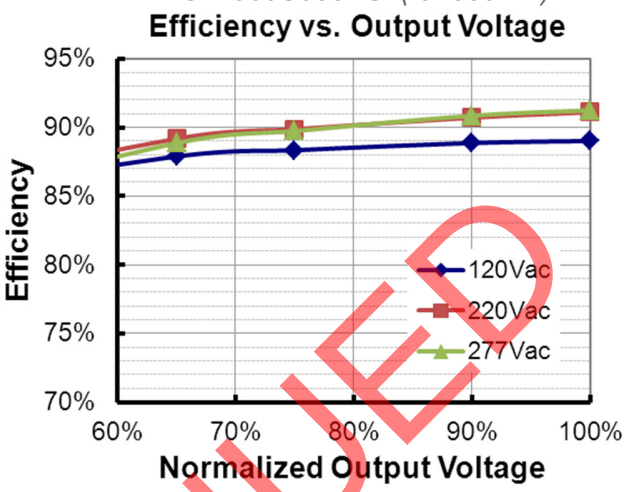


Efficiency vs. Load

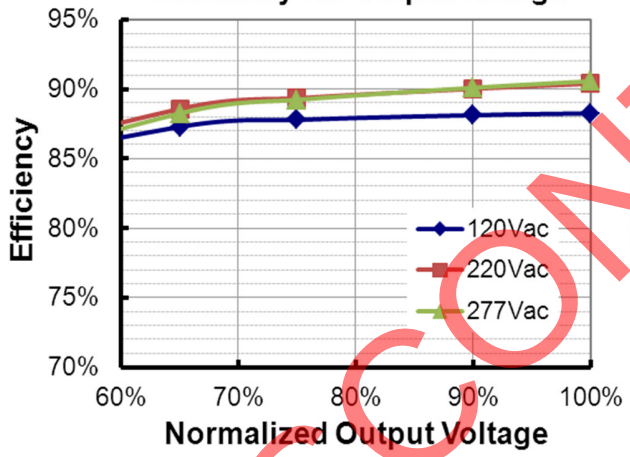
LUD-060S055BS2(Io=385mA)



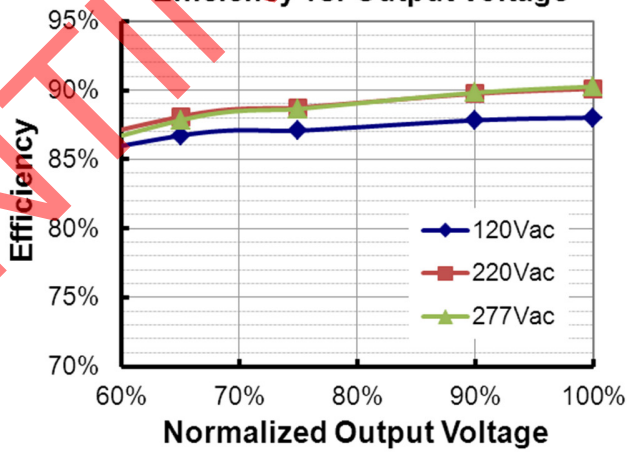
LUD-060S055BS2(Io=550mA)



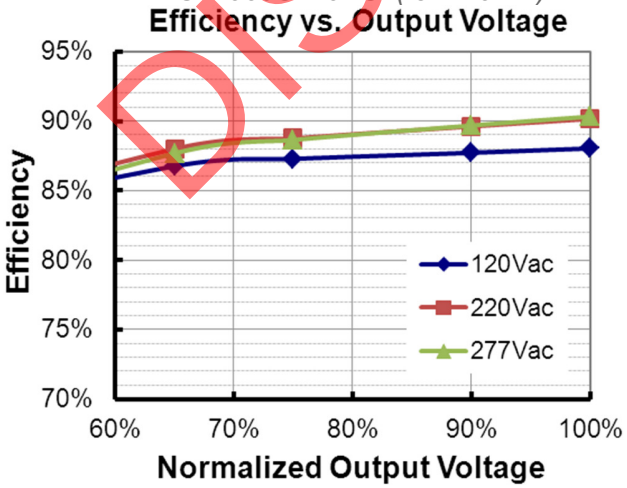
LUD-060S078BS2(Io=546mA)



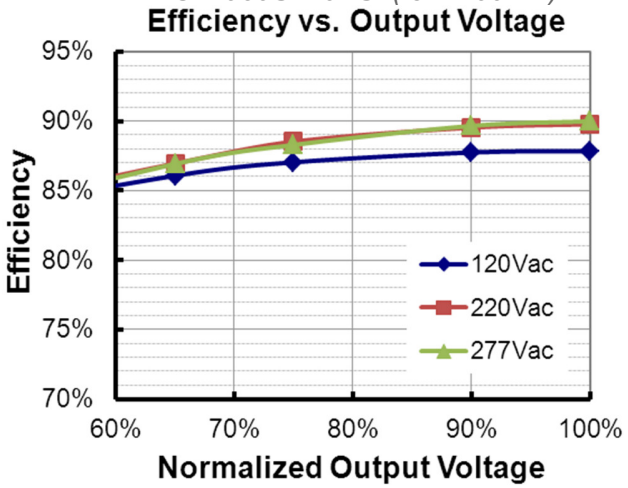
LUD-060S078BS2(Io=780mA)



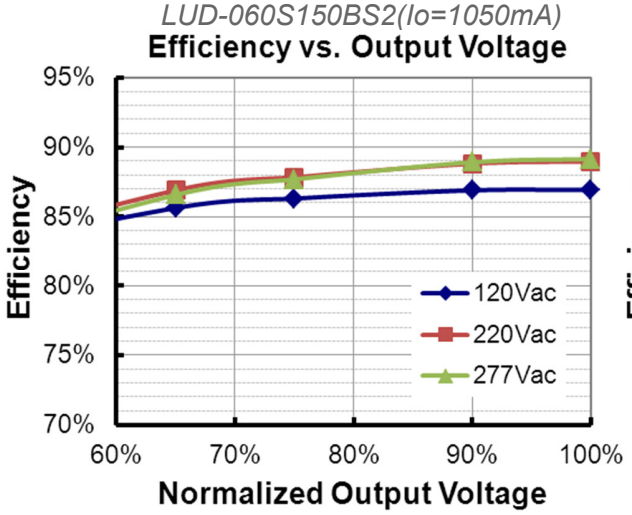
LUD-060S110BS2(Io=770mA)



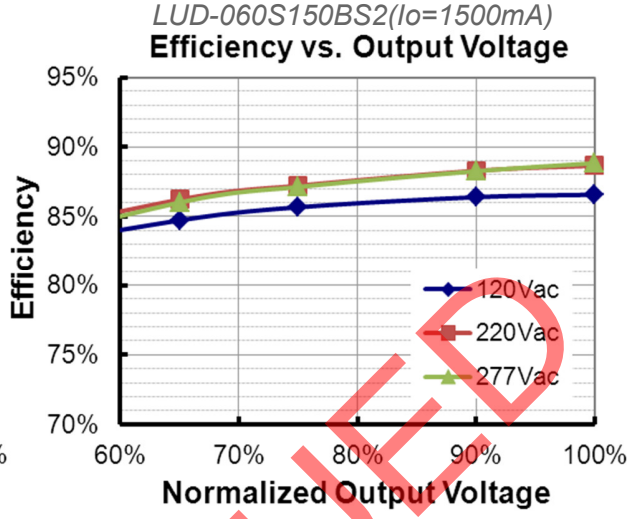
LUD-060S110BS2(Io=1100mA)



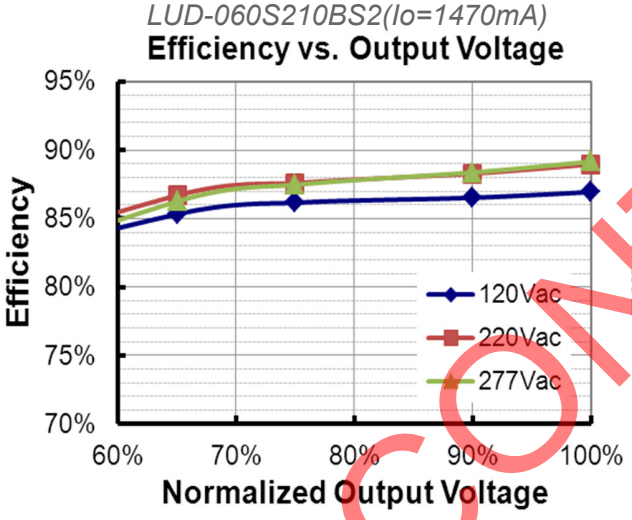
LUD-060S150BS2(Io=1050mA)



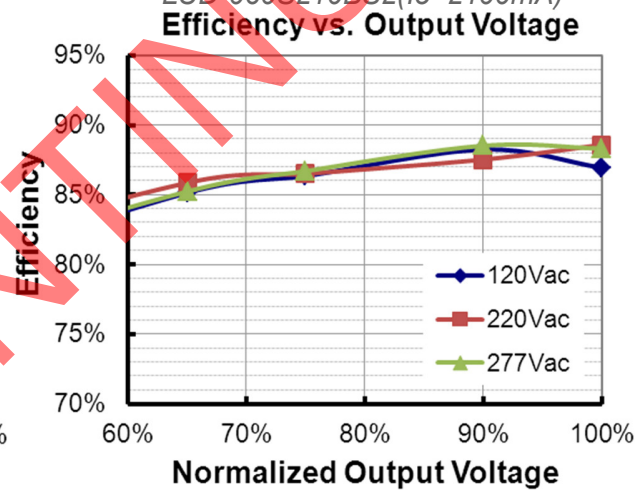
LUD-060S150BS2(Io=1500mA)



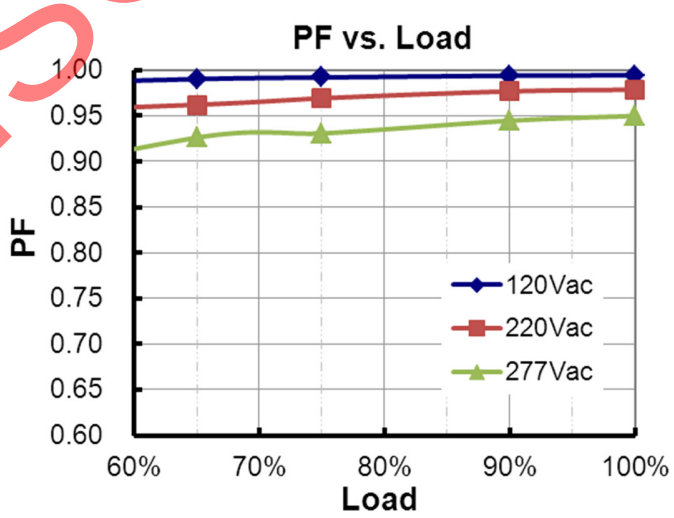
LUD-060S210BS2(Io=1470mA)



LUD-060S210BS2(Io=2100mA)

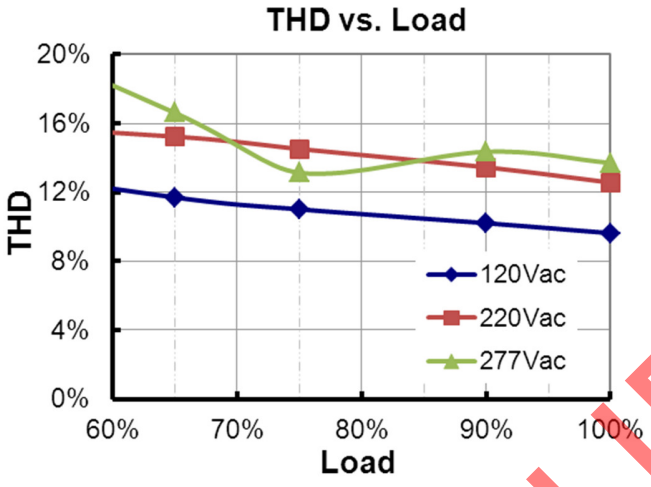


Power Factor



www.inventronics-co.com Tel: 86-571-56565800 Fax: 86-571-86601139 Sales@inventronicsglobal.com

Total Harmonic Distortion



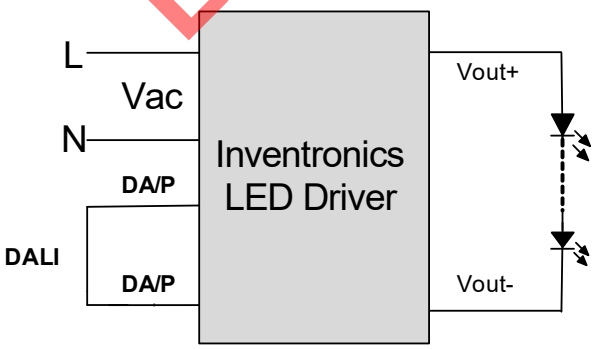
Protection Functions

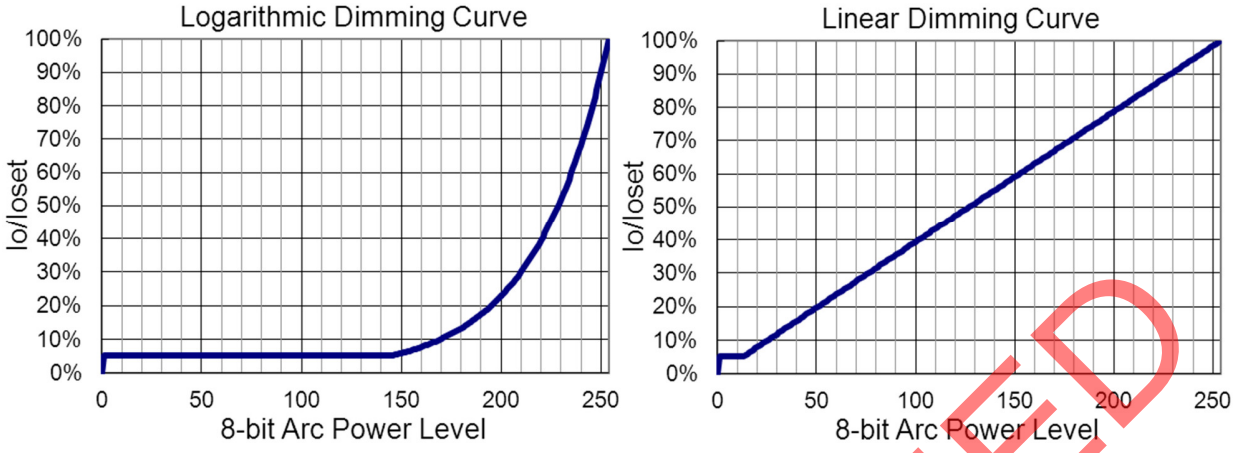
Parameter		Min.	Typ.	Max.	Notes
Over Voltage Protection		Limits output voltage at no load and in case the normal voltage limit fails.			
Short Circuit Protection		Auto Recovery. No damage will occur when any output is short circuited. The output shall return to normal when the fault condition is removed.			
Over Temperature Protection		Decreases output current. Returning to normal after over temperature is removed.			
External Thermal Protection NTC	R1	-	7.81kOhm	-	When R_NTC falls below R1, External Thermal Protection is triggered, reducing output current until R2 is reached.
	R2	-	4.16 kOhm	-	When R_NTC is less than R2, output current is reduced to the programmed "Protection Current Floor."
	Protection Current Floor	10%Ioset	60%Ioset	100%Ioset	10%Ioset > Iomin (default setting is 60%)
		Iomin	60%Ioset	100%Ioset	10%Ioset ≤ Iomin (default setting is 60%)

Dimming

- **DALI Dimming**

The recommended implementation of the dimming control is provided below.





Implementation: DALI Dimming

Push Dimming

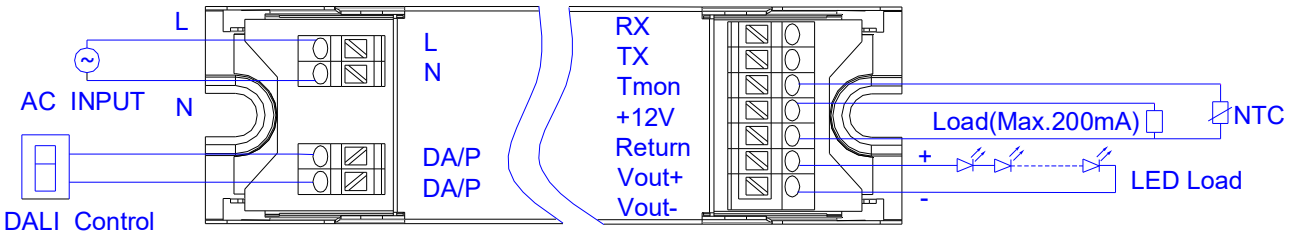
Parameter	Min.	Typ.	Max.	Notes
Operated Input Voltage Range	90 V	-	264 V	
Dimming Output Range	5%Ioset	-	Ioset	70%Iomax ≤ Ioset ≤ 100%Iomax
	3.5%Iomax	-	Ioset	3.5%Iomax ≤ Ioset < 70%Iomax
Short push	0.1 s	-	0.6 s	Switch the device on or off
Long push	0.6 s	-	3.6 s	Dim the device up or down 1% every 32ms(Default)
Long push	0.6 s	-	6.6 s	Dim the device up or down 1% every 64ms
Long push	10 s	-	-	All devices will be synchronized to the same status 100%
Long push	20 s	-	-	Change the fading time between 3s and 6s

Notes:

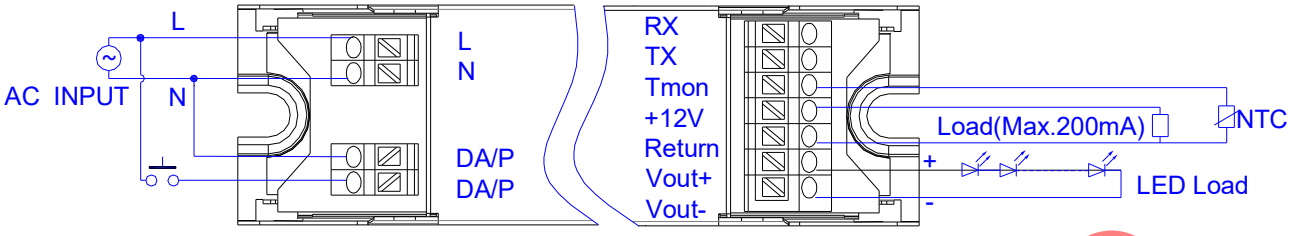
1. Automatically identify DALI mode or push dimming mode, push dimming and DALI function can't be used at the same time.
2. The device has a memory function. This is used, among other things, for storing the last dimming value in the event of interruptions in the power supply. When power returns, the LED is automatically restored to its previous operating state and dimmed to the last value.

Wire Connection Diagram

DALI Dimming

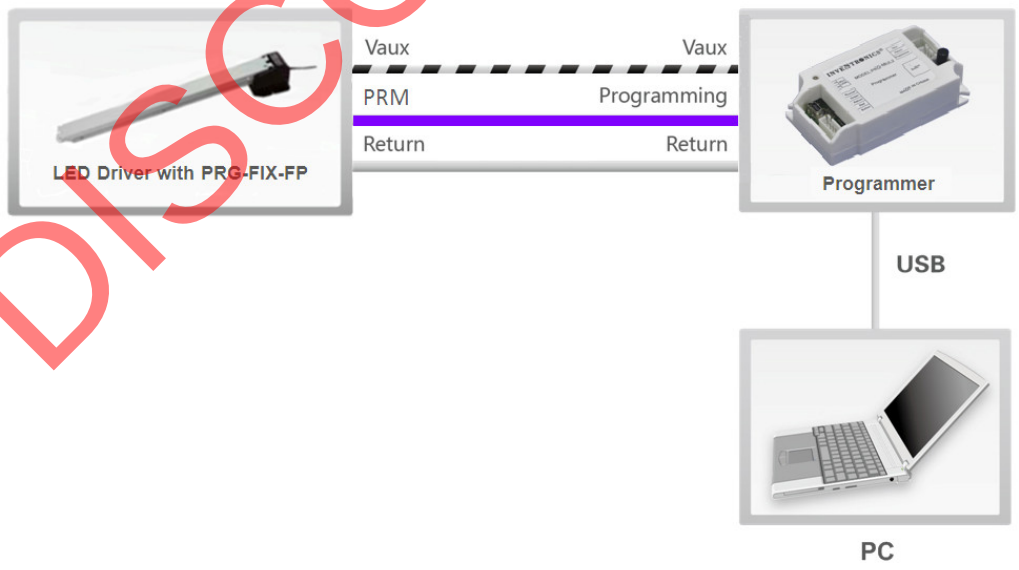


Push Dimming



Programming Connection Diagram

Note: The driver needs to be powered on during the programming process in this way.

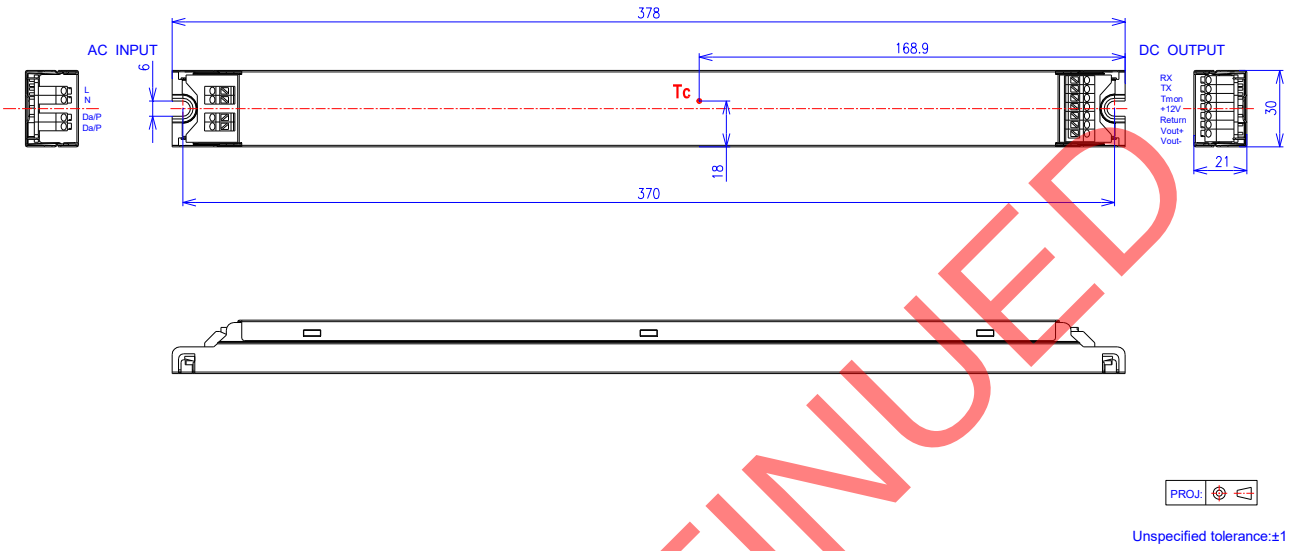


Note: The driver does not need to be powered on but needs a programming fixture during the programming process in this way.

www.inventronics-co.com Tel: 86-571-56565800 Fax: 86-571-86601139 Sales@inventronicsglobal.com

- **Please refer to PRG-FIX-FP (Programming Fixture) and PRG-MUL2 (Programmer) datasheets for details.**

Mechanical Outline



Unspecified tolerance:±1

RoHS Compliance

Our products comply with reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU, calling for the elimination of lead and other hazardous substances from electronic products.

Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2016-05-06	A	Datasheet Release	/	/
2016-10-24	B	Programming Connection Diagram	/	Updated
		Mechanical Outline-Tc	/	Corrected
2019-01-31	C	Safety certification logo	/	Updated
		PSE certificate	/	Added
		Features	DALI Dimming Control and Push Dimming Function	Push Dimming / DALI Dimmable
		Features	Class II, Class 2 & SELV	Updated
		Features	Class P, UL Listed Versions Available (See Note 4)	Added
		Features	5 Years Warranty	Added
		Notes of Models	(2) Certified input voltage range: UL, FCC 100-277Vac or 127-300Vdc; otherwise 100-240Vac or 127-250Vdc.	(2) Certified input voltage range: UL, FCC 100-277Vac or 127-300Vdc; otherwise 100-240Vac or 127-250Vdc (except PSE and KS).
		Notes of Models	(4) For UL Listed Class P models add suffix -00C0 (certified input voltage range: 120-277Vac or 127-250Vdc).	Added
		Note of Operating Case Temperature for Warranty Tc_w	/	Updated
		Note of Storage Temperature	/	Updated
		Standards Compliance	/	Updated
		Link in the datasheet	/	Updated
2024-12-12	D	Format	/	Updated
		Product Photograph	/	Updated
		TUV/PSE logo	/	Deleted
		Input Specifications	/	Updated
		Safety &EMC Compliance	/	Updated
		RoHS Compliance	/	Updated