

Features

- Adjustable Output Current (AOC) with NFC
- Full Power at Wide Output Current Range (Constant Power)
- Flicker-Free
- Isolated 1-10V Dimming Control (DT models)
Non-dimming Control (ST models)
- Minimum Dimming Level with 5% or 10% Settable (DT models)
- Input Surge Protection: DM 6kV, CM 6kV
- IP54 and UL Dry & Damp Location
- Class 2 & SELV output
- UL Class P Type
- Suitable for Class I Luminaires
- 5 Years Warranty



Description

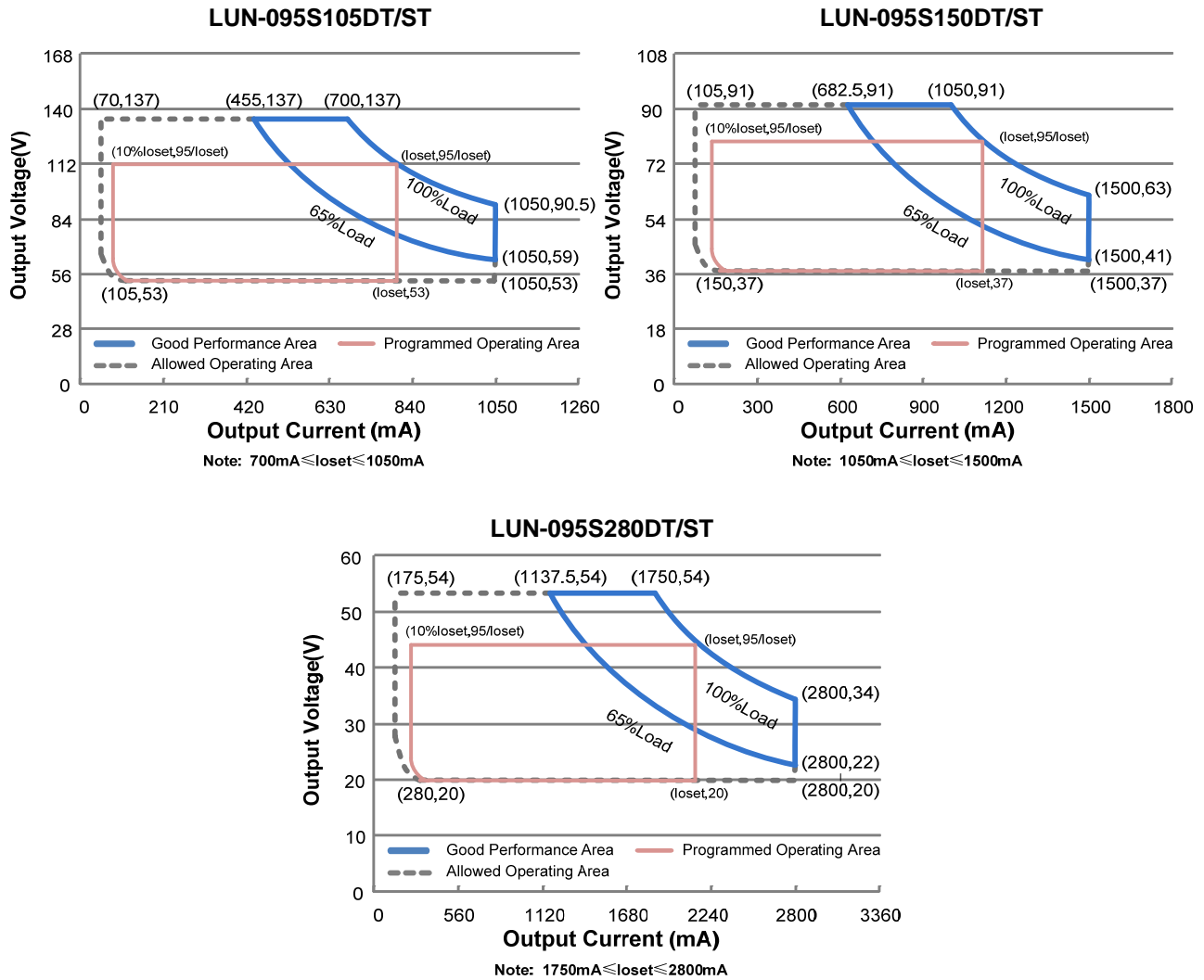
The LUN-095SxxxDT(ST) series is a 95W, constant-power, programmable LED driver that operates from 90-305Vac input with excellent power factor. It is created for many lighting applications including roadway, parking garage, high bay, etc. it provides good dimming accuracy at low dimming level down to 5%, the high efficiency and better thermal design enable them to run cooler, significantly improving reliability and extending product life. To ensure trouble-free operation, protection is provided against over voltage, short circuit, and over temperature.

Models

Adjustable Output Current Range	Full-Power Current Range(1)	Default Output Current	Input Voltage Range(2)	Output Voltage Range	Max. Output Power	Typical Efficiency (3)	Power Factor		Model Number
							120Vac	220Vac	
210-1050 mA	700-1050mA	700 mA	90~305 Vac 127~250 Vdc	53~137Vdc	95 W	93.0%	0.99	0.96	LUN-095S105DT(ST)
315-1500 mA	1050-1500mA	1050 mA	90~305 Vac 127~250 Vdc	37~91 Vdc	95 W	92.0%	0.99	0.96	LUN-095S150DT(ST) ⁽⁴⁾
525-2800mA	1750-2800mA	2300 mA	90~305 Vac 127~250 Vdc	20~54 Vdc	95 W	91.5%	0.99	0.96	LUN-095S280DT(ST) ⁽⁵⁾

- Notes:** (1) Output current range with constant power at 95W.
 (2) Certified input voltage range: UL, FCC 100-277 Vac; otherwise: 100-240 Vac.
 (3) Measured at 100% load and 220Vac input (see below "General Specifications" for details).
 (4) SELV Output.
 (5) Class 2 & SELV output.

I-V Operating Area



Note: The I-V Operating Area shows 10% - 100% dimming.

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 Vac	-	305 Vac	127~250 Vdc
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75 MIU	UL8750; 277Vac/ 60Hz
	-	-	0.70 mA	IEC60598-1; 240Vac/ 60Hz
Input AC Current	-	-	0.98 A	Measured at 100% load and 120 Vac input.
	-	-	0.52 A	Measured at 100% load and 220 Vac input.
Inrush Current(I^2t)	-	-	1.30 A ² s	At 220Vac input, 25°C cold start, duration=596 μs, 10%Ipk-10%Ipk. See Inrush Current Waveform for the details.

Input Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
PF	0.9	-	-	At 100-277Vac, 50-60Hz, 65%-100%load (62-95W)
THD	-	-	20%	
THD	-	-	10%	At 220-240Vac, 50-60Hz, 70%-100%load (66.5-95W)

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%loset	-	5%loset	At 100% load condition
Output Current Setting(loset) Range				
LUN-095S105DT(ST)	210 mA	-	1050 mA	
LUN-095S150DT(ST)	315 mA	-	1500 mA	
LUN-095S280DT(ST)	525 mA	-	2800 mA	
Output Current Setting Range with Constant Power				
LUN-095S105DT(ST)	700 mA	-	1050 mA	
LUN-095S150DT(ST)	1050 mA	-	1500 mA	
LUN-095S280DT(ST)	1750 mA	-	2800 mA	
Total Output Current Ripple (pk-pk)	-	5%lomax	10%lomax	At 100% load condition. 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%lomax	-	At 100% load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%lomax	At 100% load condition
No Load Output Voltage				
LUN-095S105DT(ST)	-	-	160 V	
LUN-095S150DT(ST)	-	-	110 V	
LUN-095S280DT(ST)	-	-	60 V	
Line Regulation	-	-	±0.5%	Measured at 100% load
Load Regulation	-	-	±1.5%	
Turn-on Delay Time	-	-	0.5 s	Measured at 120-277Vac input, 65%-100%load
Temperature Coefficient of loset	-	0.06%/°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	-	20 mA	Return terminal is "Dim-"

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input: LUN-095S105DT(ST) I _o =700 mA I _o =1050 mA LUN-095S150DT(ST) I _o =1050 mA I _o =1500 mA LUN-095S280DT(ST) I _o =1750 mA I _o =2800 mA	88.0% 88.0% 87.0% 87.0% 87.0% 87.5%	90.0% 90.0% 89.0% 89.0% 89.0% 89.5%	- - - - - -	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 220 Vac input: LUN-095S105DT(ST) I _o =700 mA I _o =1050 mA LUN-095S150DT(ST) I _o =1050 mA I _o =1500 mA LUN-095S280DT(ST) I _o =1750 mA I _o =2800 mA	91.0% 90.5% 90.0% 90.0% 89.5% 89.5%	93.0% 92.5% 92.0% 92.0% 91.5% 91.5%	- - - - - -	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: LUN-095S105DT(ST) I _o =700 mA I _o =1050 mA LUN-095S150DT(ST) I _o =1050 mA I _o =1500 mA LUN-095S280DT(ST) I _o =1750 mA I _o =2800 mA	91.0% 91.0% 90.0% 90.0% 90.0% 90.0%	93.0% 93.0% 92.0% 92.0% 92.0% 92.0%	- - - - - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2.0% lower if measured immediately after startup.)
MTBF	-	326,000 hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	107,000 hours	-	Measured at 120Vac input, 80%Load and 75°C case temperature; See lifetime vs. T _c curve for the details
Operating Case Temperature for Safety T _{c_s}	-40 °C	-	+85 °C	
Operating Case Temperature for Warranty T _{c_w}	-40 °C	-	+80°C	Case temperature for 5 years warranty. Humidity: 10% RH to 90% RH; No Condensation
Storage Temperature	-40 °C	-	+85 °C	Humidity: 5% RH to 95% RH; No Condensation
Audible Noise	-	-	24 dB	Class A
Dimensions Inches (L × W × H) Millimeters (L × W ×H)	8.37 × 1.71 × 1.26 212.6 × 43.5 × 32			With mounting ear 9.45 × 1.71 × 1.26 240 × 43.5 × 32
Net Weight	-	520 g	-	

Dimming Specifications

Parameter		Min.	Typ.	Max.	Notes	
Absolute Maximum Voltage on the Vdim (+) Pin		-20 V	-	20 V		
Source Current on Vdim (+)Pin		200 μ A	300 μ A	450 μ A	Vdim(+) = 0 V	
Dimming Output Range with 10%-100% (Default)	LUN-095S105DT	10%loset	-	loset	700 mA \leq loiset \leq 1050 mA	
	LUN-095S150DT				1050 mA \leq loiset \leq 1500 mA	
	LUN-095S280DT				1750 mA \leq loiset \leq 2800 mA	
Dimming Output Range with 5%-100% (Settable)	LUN-095S105DT	5%loset	-	loset	210 mA \leq loiset < 700 mA	
	LUN-095S150DT				315 mA \leq loiset < 1050 mA	
	LUN-095S280DT				525 mA \leq loiset < 1750 mA	
Dimming Output Range with 5%-100% (Settable)	LUN-095S105DT	35 mA	-	loset	210 mA \leq loiset < 700 mA	
	LUN-095S150DT				53 mA	315 mA \leq loiset < 1050 mA
	LUN-095S280DT				88 mA	525 mA \leq loiset < 1750 mA

Standard Compliance

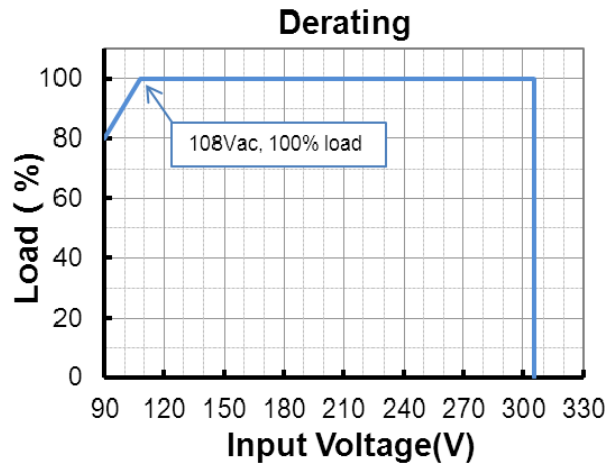
Safety Category	Standard
UL/CUL	UL 8750,UL1310,CAN/CSA-C22.2 No. 250.13,CAN/CSA-C22.2 No. 223-M91
ENEC & CE	EN61347-1, EN61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
KS	KS C 7655
NOM	NOM-024-SCFI , NOM-058-SCFI
EMI Standards	Notes
EN 55015 ⁽¹⁾	Conducted emission Test &Radiated emission Test
EN 61000-3-2	Harmonic current emissions
EN 61000-3-3	Voltage Fluctuations & Flicker
FCC Part 15 ⁽¹⁾	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: Differential Mode 6 kV, Common Mode 6 kV
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS

Standard Compliance (Continued)

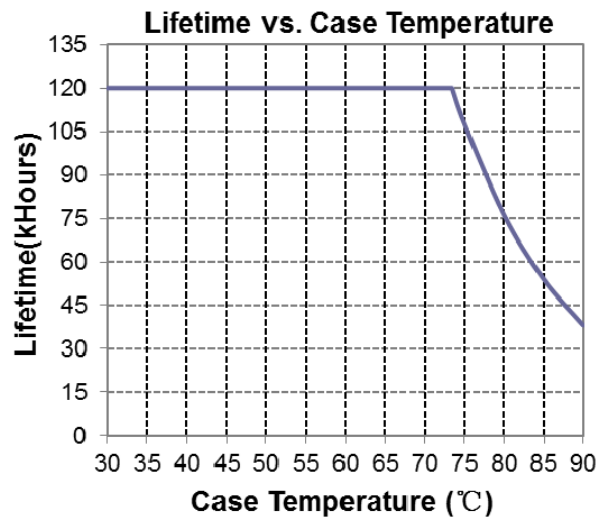
EMS Standards	Notes
EN 61000-4-8	Power Frequency Magnetic Field Test
EN 61000-4-11	Voltage Dips
EN 61547	Electromagnetic Immunity Requirements Applies to Lighting Equipment
ANSI Standards	Notes
ANSI C82.77-5	6kV combi-wave surge rating to comply with ANSI C82.77-5 CAT low

Note: (1) 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.

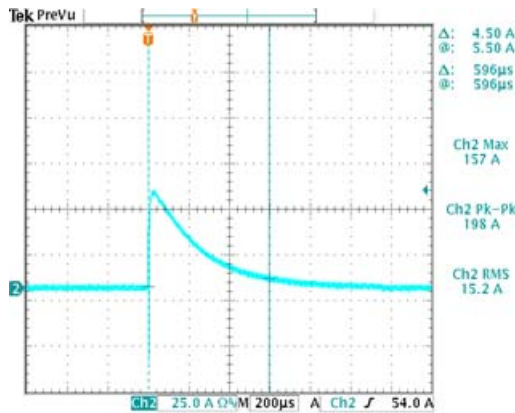
Derating



Lifetime vs. Case Temperature

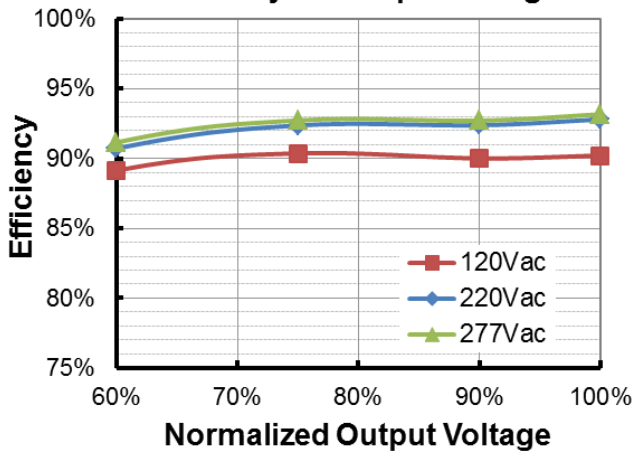


Inrush Current Waveform

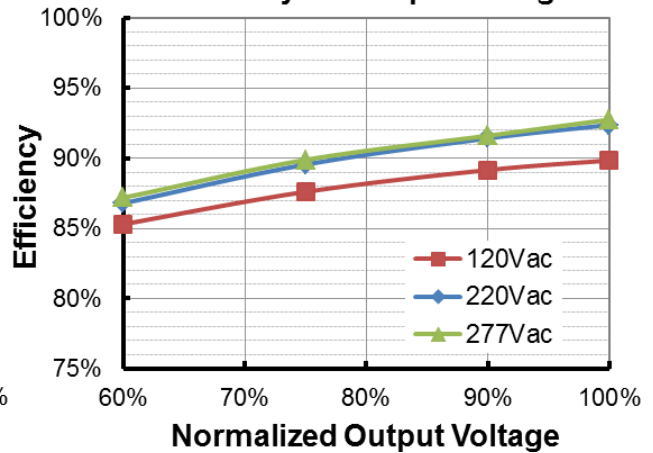


Efficiency vs. Load

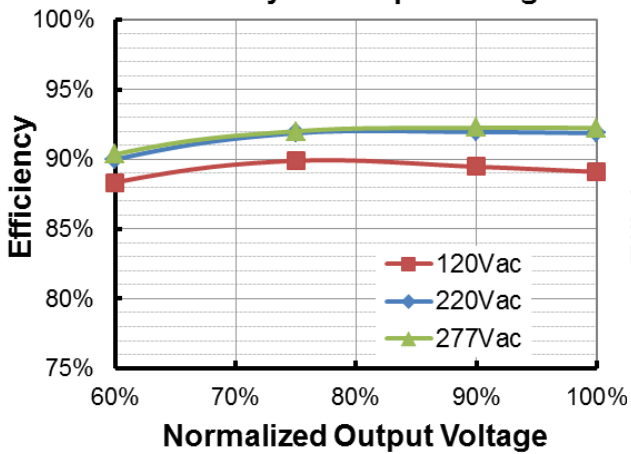
LUN-095S105DT(ST)($I_o=700mA$)
Efficiency vs. Output Voltage



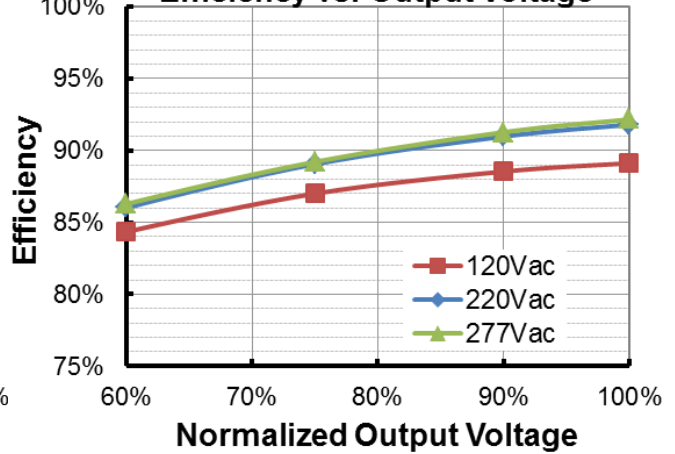
LUN-095S105DT(ST)($I_o=1050mA$)
Efficiency vs. Output Voltage

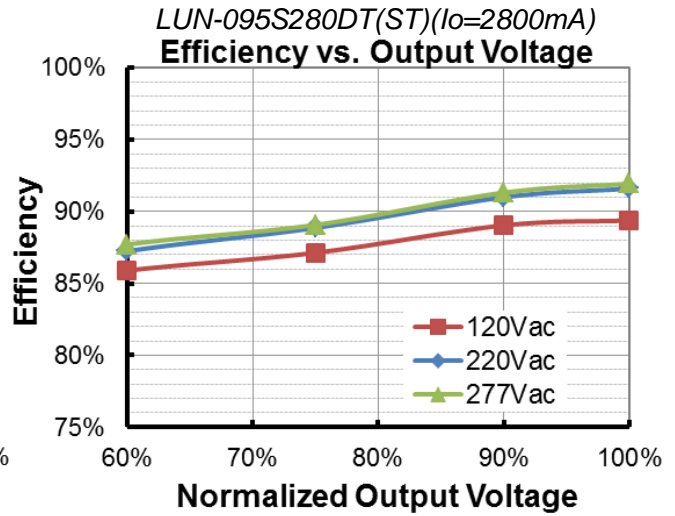
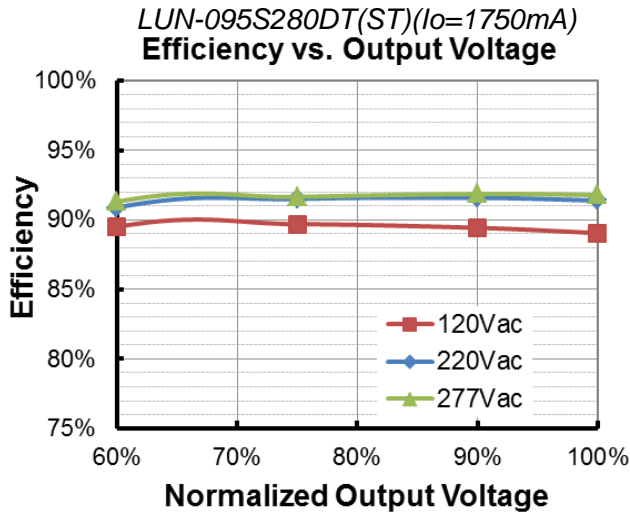


LUN-095S150DT(ST)($I_o=1050mA$)
Efficiency vs. Output Voltage

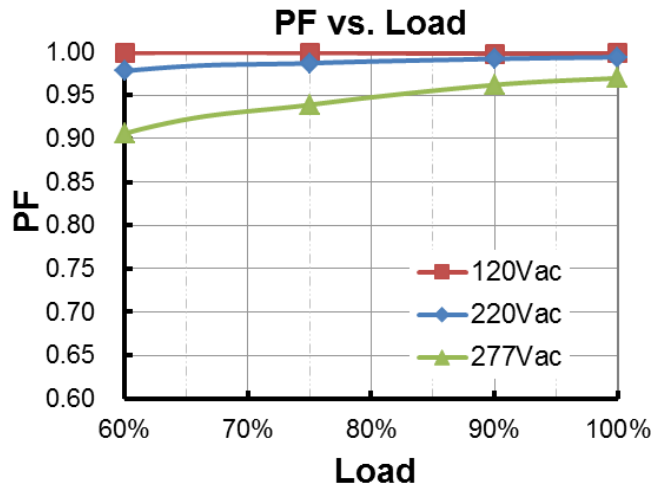


LUN-095S150DT(ST)($I_o=1500mA$)
Efficiency vs. Output Voltage

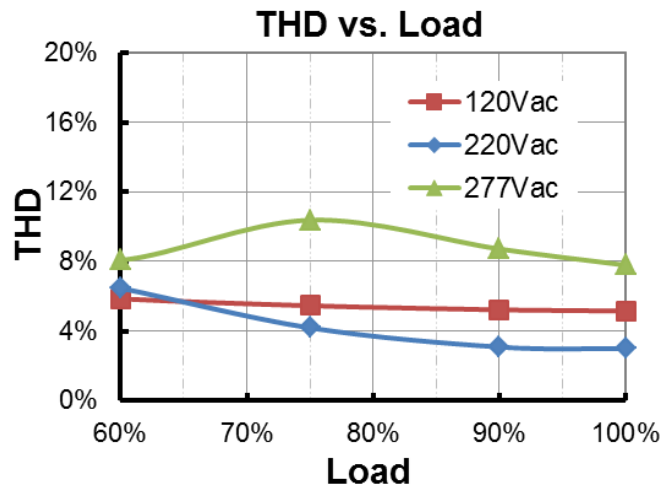




Power Factor



Total Harmonic Distortion



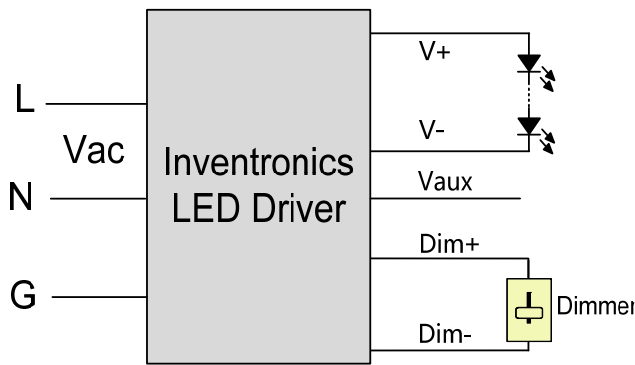
Protection Functions

Parameter	Notes
Over Temperature Protection	Decreases output current, returning to normal after over temperature is removed.
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 Voltage Protection	Limits output voltage at no load and in case the normal voltage limit fails.

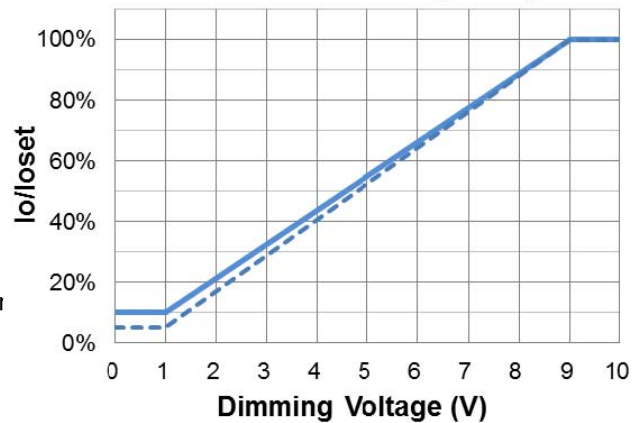
Dimming

● 1-10V Dimming (Only DT models)

The recommended implementation of the dimming control is provided below.



Io/IoSet vs. Dimming Voltage

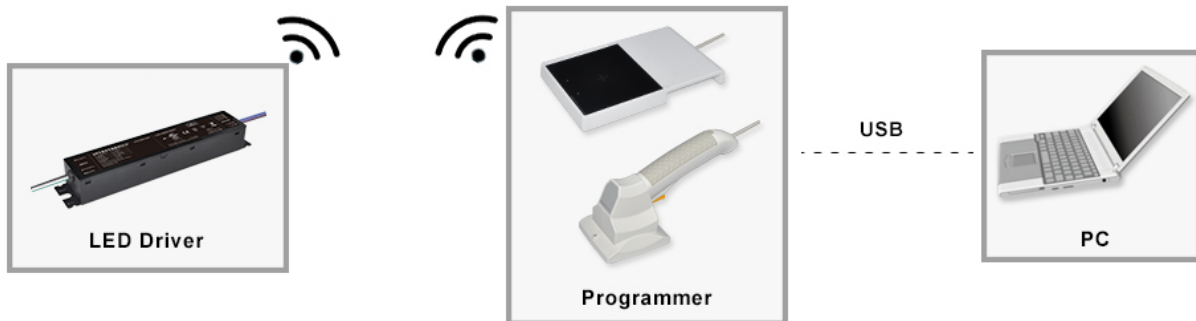


Implementation 1: DC Input

Notes:

1. The dimmer can also be replaced by an active 1-10V voltage source signal or passive components like zener.
2. Do NOT connect Dim- to the output V- or V+, otherwise the driver will not work properly.

Programming Connection Diagram

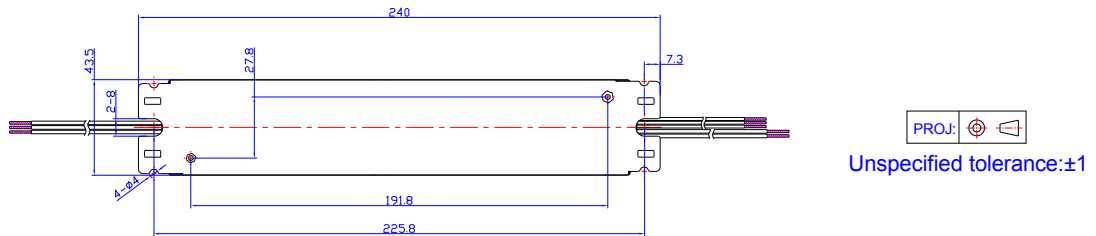
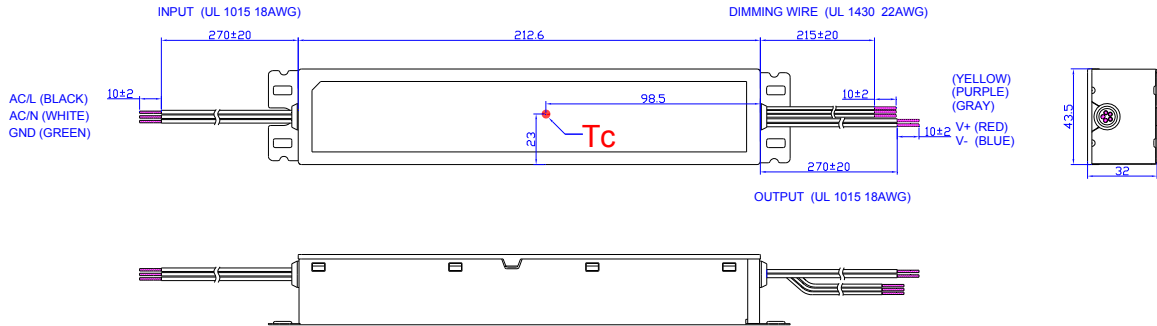


Note: The driver does not need to be powered on during the programming process.

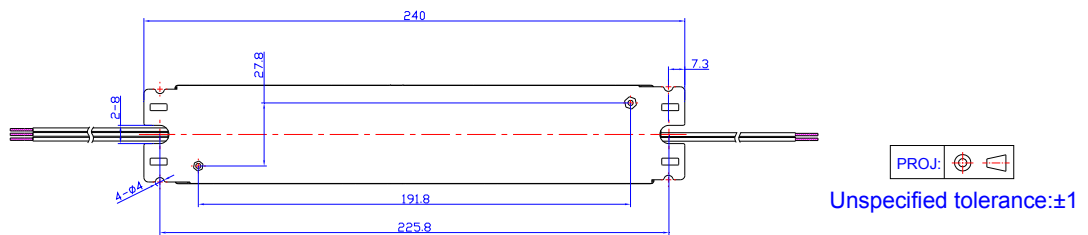
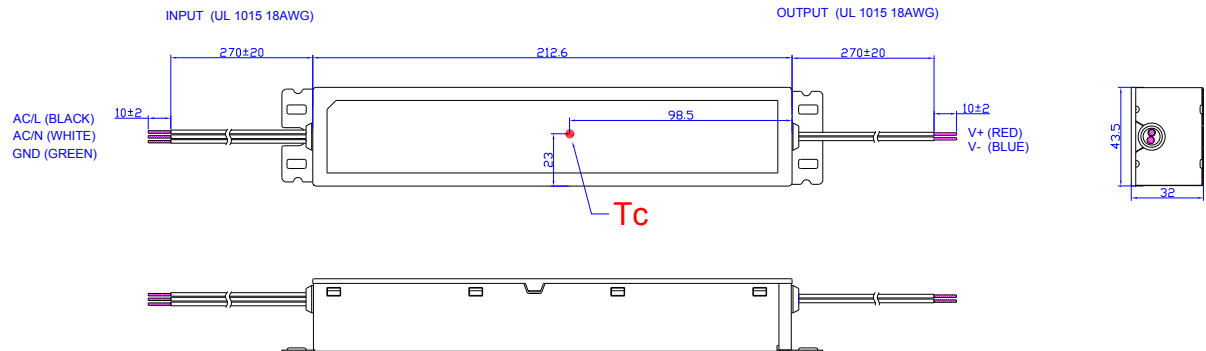
- Please refer to [PRG-NFC-H](#) or [PRG-NFC-D](#) (Programmer) datasheet for details.

Mechanical Outline

LUN-095SxxxDT



LUN-095SxxxST



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
2020-04-09	A	Datasheets Release	/	/