

Model Number:	EUCO-1K2200GCA
Unit Weight:	~5.4kg
Dimensions (L × W × H):	500x152x77 mm

EUCO ARENA SPORT

Highlights & Features

- 2 independent programmable output channels
- Configurable channel address mode (1*DT6 / 1*DMX or 2*DT6 / 2*DMX)
- Max. output power 1200W (2×600W/channel)
- Input voltage range: 187~528VAC
- High Efficiency up to 97%
- Programmable output current range 700-2000 mA
- Output voltage range 150-550Vdc per channel
- Built-in 2 in 1: DALI-2 & D4i and RDM/DMX communication protocols
- Wide dimming range 0.1%-100%
- Low current ripple (typ.1%) suitable for HDTV broadcasting
- Strobe effects up to 33 fps
- After-glow effect free
- Common output design(V1+=V2+)
- Constant Lumen Output (CLO)
- Smart Timer Dimming (STD)
- High-accuracy integrated power metering
- Max remote distance up to 300 meters
- Input surge protection: DM 10kV / CM 10kV

General Description

The EUCO-1K2200GCA series is a constant current IP66 LED driver with 2 independent programmable channels, that operates with an input voltage range of 187~528Vac. It is specially designed for Sports Lighting applications but also for many other lighting applications, including industrial, high mast, and horticulture, etc. The dimming control supports two-way communication via DALI-2 & D4i, and it also incorporates RDM/DMX dimming function. This driver was specifically conceived and intended to offer remarkably high efficiency to achieve substantial energy savings. Additionally, a wide dimming range, advanced control, and smart timer dimming (STD) ensure adaptability for dynamic atmospheres and seamless scenes adjustments. The EUCO-1K2200GCA driver offers a remote-control function, allowing the driver to be installed up to 300 meters from the luminaire, which provides greater flexibility in installation, operation, and easy maintenance.

Model Information

Model Number	Input Voltage Range	Rated Output Power	Output Channel ¹	Control Interface ²
EUCO-1K2200GCA	208~480Vac (nominal) 187~528Vac (range)	1200W	2	DALI-2 & D4i, and RDM/DMX

The driver has been configured for single address mode by default, the user can also switch to other channel address modes through the GUI and programming tools.
 The split DALI and DMX interface terminals are mounted in the junction box.

Model Numbering

EU	С	0	-	1K2		G	С	А	
Market Code	Constant Current	Outdoor	/	Output power 1K2:1200W	Max. Output Current 200:2000mA	Programming	Function C: DALI-2 & D4i, and RDM/DMX	Variable: A - Standard	Mode series: 0~9, A~Z or blank.



Specifications

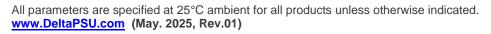
Input Ratings / Characteristics

Specification	Min.	Тур.	Max.	Test Conditions / Notes
Nominal Input Voltage	208Vac	-	480Vac	
Input Voltage Range	187Vac	-	528Vac	
Nominal Input Frequency	-	50/60Hz	-	
Input Frequency Range	47Hz	-	63Hz	
	-	5.7A	-	At 220Vac, 25°C, 500V/1.2A @ Pout=1200W
Nominal Input Current	-	4.5A	-	At 277Vac, 25°C, 500V/1.2A @ Pout=1200W
Nominal input Current	-	3.1A	-	At 400Vac, 25°C, 500V/1.2A @ Pout=1200W
	-	2.6A	-	At 480Vac, 25°C, 500V/1.2A @ Pout=1200W
	-	96.3%		At 220Vac, 25°C, 500V/1.2A @ Pout=1200W
Efficiency ³	-	96.6%		At 277Vac, 25°C, 500V/1.2A @ Pout=1200W
	-	97%		At 400Vac, 25°C, 500V/1.2A @ Pout=1200W
	-	97%		At 480Vac, 25°C, 500V/1.2A @ Pout=1200W
Standby Power Consumption	-	-	0.5W	At 230Vac/50Hz, Output and DALI bus power supply are in OFF status, in compliance with Erp(EU) 2019/2020
	-	0.99	-	At 220Vac/50Hz, 25°C, 1200W output
Power Factor	-	0.99	-	At 277Vac/60Hz, 25°C, 1200W output
FOWER FACION	-	0.98	-	At 400Vac/50Hz, 25°C, 1200W output
	-	0.97	-	At 480Vac/60Hz, 25°C, 1200W output
	-	7.5%		At 220Vac/50Hz, 25°C, @ Pout=12200W
Total Harmonic Distortion	-	7.5%	-	At 277Vac/60Hz, 25°C, @ Pout=1200W
Total Harmonic Distortion	-	10.5%	-	At 400Vac/50Hz, 25°C, @ Pout=1200W
	-	12.5%	-	At 480Vac/60Hz, 25°C, @ Pout=12200W
	-	8A	-	At 220Vac, 50%Apk to 50%Apk time: 2ms
Inruch Current	-	9A	-	At 277Vac, 50%Apk to 50%Apk time: 2ms
Inrush Current	-	12A	-	At 400Vac, 50%Apk to 50%Apk time: 2ms
	-	14A	-	At 480Vac, 50%Apk to 50%Apk time: 2ms
Power metering accuracy	-	±1%	±2%	At 208Vac~480Vac, Voltage, current, PF, frequency, active power, apparent power, etc. on the AC side, Full load

3. 100% Load and tested after 30 minutes warming up.

Output Ratings / Characteristics

Specification	Min.	Тур.	Max.	Test Conditions / Notes
Output Channels	-	2	-	2 independent and individually controllable output channels, and single address for all channels by default.
Total Output Power	-	-	1200W	All channels
Output Power Range	-	-	600W	Per Output Channel
Default Output Current	-	1200mA	-	
Programmable Output Current Range	700mA	-	2000mA	Operation range refer to Appendix 1
Output Current Tolerance	-	-	±3%	Range from 700 to 2000mA





Output Voltage Range		150V	-	550V	All operating conditions shall not exceed this voltage range
Output Current Ripple		-	1%	2%	(ripple = (pk-pk)/avg), at low frequency(<8kHz)
	Kippie	-	5%	20%	(ripple = (pk-pk)/avg), at high frequency(>15kHz)
Strobe Effects ⁴		-	-	33 fps	Supports a continuous sequence as fast as 30ms-ON and 30ms- OFF (fps means frame per second)
Output Remote Distance		-	-	300m	The distance is related to the actual application conditions, but the voltage in the driver side shall not exceed 550V.
	DALI version	-	0.7s	1s	Clause 9.13 of IEC 62386-102:2014, 10%~100% load.
Turn on Delay Time	RDM/DMX	-	0.7s	1s	Clause 3.5 of ANSI E1.37-1:2012, connecting to the controller correctly, 10%~100% load.
version	version	1.25s	-	-	Clause 3.5 of ANSI E1.37-1:2012, No controller or incorrect connection to the controller, 10%~100% load.

In the Strobe mode, the OFF period should be within 5s in general, otherwise please refer to "LNA/EUCO Series Programming Tool User Manual" for more details to make a requisite configuration.

Auxiliary Power Supply Ratings / Characteristics

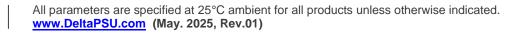
Specification	Min.	Тур.	Max.	Test Conditions / Notes			
Integrated 24V Auxiliary Power Supply							
Operating Voltage	21.6V	24.0V	26.4V	0.1W~6.0W, the ground is "DA-".			
High frequency ripple of operating voltage	-	-	1.0 V _{pp}	21.6V~26.4V, fripple > 10kHz			
Voltage in no-load condition	-	-	30.0V	Output power < 0.1W			
Average output power capability	-	3.0W	-	CC mode load: 4.0mA~125mA (0.1W~3W).			
Pulsed output power capability	-	6.0W	-	Dynamic CC mode load: peak load = 250mA/2.2ms and avg load = 4.0mA~125mA/3.8ms.			
Start-up time	-	-	0.6s	From AC power on to Vaux increases and reaches 21.6 V, Mains applied at any phase angle.			
Integrated DALI Bus Power Sup	oply						
DALI Bus voltage	12V	16V-	22.5V	CC load: 0~50mA, integrated bus power supply is pre-configured to a disabled state, and it can be activated via GUI or DALI controller.			
Over Current Protection	50mA	-	62.5mA	Auto recovery and no component damaged. Limits output current to 50~62.5mA when output is short-circuited.			

Dimming Control

Specif	ication	Test Conditi	ions / Notes			
Control interface		DALI-2 & D4i	RDM/DMX			
Dimming range	Logarithmic	0.1%-100% (2mA-2000mA, DALI default dimming mode)				
Dimming range	Linear	0.4%-100% (8mA-2000mA, DMX default dimming mode)				

Control Interface Standards

Specification	Standards					
	DALI-2 & D4i IEC 62386-101 Ed 2.0					
	IEC 62386-102 Ed 2.0					
DALI Control interface standards	IEC 62386-207 Ed 2.0					
	IEC 62386 part 150: Integrated 24Vdc auxiliary power supply					
	IEC 62386 part 250: Integrated bus power supply for sensor and radios					





	IEC 62386 part 251: Memory bank 1 extension (luminaire data) IEC 62386 part 252: Energy report IEC 62386 part 253: Diagnostics and maintenance
RDM/DMX Control interface standards	DMX & RDM ANSI E1.11 DMX512A ANSI E1.20 RDM – Remote Device Management ANSI E1.37-1 Additional message sets for dimmer

Additional Dimming Features

Specification	Description
Smart Timer Dimming (STD)	3 different configurable autonomous dimming profiles (fixed timer, midnight centric timer, and ratio rescale timer) over the night are available for users to select and set in GUI. This function is not activated by default. For more details, please refer to "LNA/EUCO Series Programming Tool User Manual".
Constant Lumen Output (CLO)	CLO is a function to make the brightness consistent by compensating the ageing of the light source over the lifetime. It's available in GUI to set starting dimming level (for example 90%) and end of life of the product (for example 50khrs), so that the driver by counting its functioning hours can do a linear interpolation in between starting dimming level at t=0hrs, and go to 100% at t=end of life. This function is not activated by default. For more details, please refer to "LNA/EUCO Series Programming Tool User Manual".

Mechanical Characteristics

Speci	fication	Test Conditions / Notes			
Housing		Aluminum case, dark gray, compliance with C5 environment (ISO 9223)			
Dimensions (L >	(W x H)	500x152x77 mm			
Unit Weight		-5.4 kg			
Cooling System		Natural Convection			
Input		L1, L2, PE			
Output ⁵ LED Load		PE, NTC, V2+, V2-, V1+, V1-			
DALI		DA+, DA-, +24V ("DA-" is the ground of "+24V")			
Control RDM/DMX		D1+, D1-, COM			

5. This is a common "Output +" design which shares equal connections between V1+ and V2+.

Environment & Package

Specification		Test Conditions / Notes		
Ambient Temperature	Operating	-40 ~+50°C		
Ambient Temperature	Storage	-40°C to +85°C		
Maximum Case Temp	erature	+85°C		
Lifetime Case Temperature		+80°C		
Deletive Humidity	Operating	10% to 95% RH (Non-Condensing)		
Relative Humidity Storag		5% to 95% RH (Non-Condensing)		
Audible Noise (30cm	distance)	Sound Pressure Level (SPL) < 24dBA		
Ingress Protection classification		IP66 (EN 60529)		
Impact Protection classification		IK08 (EN 62262)		



Drop Test (Non-Operating)	According to ASTM D-775, 40cm height drop to concrete floor as below drawing, total 10 times.
Vibration (Non-Operating)	IEC 60068-2-6, Random: 5 Hz to 10 Hz (1G); 30 min per axis for all X, Y, Z direction
Packing	1pcs per carton

Protections

Specificati	Specification		Тур.	Max.	Test Conditions / Notes
Input Under Voltage	Protection	165Vac	170 Vac	175 Vac	
Protection(IUVP)	Recovery	175 Vac	180 Vac	185 Vac	Shuts down and then restarts to normal status when the fault
Input Over Voltage	Protection	540 Vac	545 Vac	550 Vac	condition is cleared.
Protection(IOVP)	Recovery	530 Vac	535 Vac	540 Vac	
Open Load / Output Over Voltage Protection Protection		-	-	600Vrms	Hiccup mode. The output voltage shall not exceed 600Vrms under no load, open load or other over voltage conditions.
Constant Power Output Protection		600 W	600 W 610 W 620 W		Output power limited. The driver shall come back to its original programmed current after the fault condition is cleared.
Output Short Circuit Protection		YES			Hiccup mode. Restarts automatically after fault condition is removed.
Internal Over Tempera Protection	YES			Driver OTP, decrease the output current to 20%*lo when Tc \geq 90 \pm 5°C, auto recovery when Tc \leq 80 \pm 5°C	
Programmable Extern Temperature Protectio	YES			Luminaire OTP, output power derating. Refer to <u>Appendix 7</u> "Programmable External Over Temperature Protection" for more details.	

Electro-Magnetic Compatibility (EMC)

Specification	Standards			
EMC-Emission Characteristics				
Radiated Emission EN55015, GB/T17743, FCC Part 15 Subpart B				
Conducted Emission EN55015, GB/T17743, FCC Part 15 Subpart B				
Harmonic Current Emission IEC 61000-3-2, GB 17625.1				
Voltage Fluctuation & Flicker	IEC 61000-3-3			
EMC-Immunity Characteristics				
Electrostatic Discharge (ESD)	IEC 61000-4-2			
Radio Frequency Electro -magnetic Fields	IEC 61000-4-3			



Electrical Fast Transient (EFT)	IEC 61000-4-4	
Surge (AC Mains) ⁶	IEC 61000-4-5	 Common Mode: 10kV (L1 to Earth, L2 to Earth) Differential Mode: 10kV (L1 to L2)
Surge (Output)	IEC 61000-4-5	 Common Mode: 3kV (V1+/V2+ to Earth, V1-/V2- to Earth) Differential Mode: 1kV (V1+ to V1- / V2+ to V2-)
Surge (Dimming)	IEC 61000-4-5	 Common Mode: 3kV (DA+ to Earth, DA- to Earth) Common Mode: 3kV (D1+ to Earth, D1- to Earth, COM to Earth,) Differential Mode: 1kV (DA+ to DA-) Differential Mode: 1kV (D1+ to D1-, D1+ to Com,D1- to Com)
Surge (NTC)	IEC 61000-4-5	 Common Mode: 3kV (NTC to Earth) Differential Mode: 1kV (NTC to V1+/V2+)
Conducted Disturbance	EN61000-4-6	
Voltage Dip & Interruptions	EN 61000-4-11	

6. Level B, the peak of residual common mode voltage pulse from output +/- to Earth is around 2.5kV.

Reliability Data

Specification Test Conditions / Notes		
	50,000 hours applicable for 220Vac to 480Vac(50/60Hz)@100% of load, Ta=45 $^\circ C$ (Tcase=80 $^\circ C$),	
Lifetime	100,000 hours applicable @ 100% of load, Tcase≤70°C.Refer to <u>Appendix 3</u> "Life Time versus Case Temperature Curve" for more details.	
MTBF	475khrs. at Ta=+45°C Telcordia SR-332	
Warranty	5 years, refer to Appendix 9 "Warranty Policy" for more details.	

Safety & Other Approvals 7

Safety Category		Standards
ENEC	MARK	EN 61347-1:2015, EN 61347-1:2015/A1:2021 EN 61347-2-13:2014, EN 61347-2-13/A1:2017 EN IEC 62384:2020
СВ	REPORT	EN 61347-1:2015, EN 61347-1:2015/A1:2021 EN 61347-2-13:2014, EN 61347-2-13/A1:2017
UKCA	MARK	BS EN 61347-2-13: 2014+A1:2017
CE	MARK	CE Declaration of Conformity.
UL	MARK	UL Compliant ANSI / UL8750 2 nd Ed. CSA C22.2 No.250.13, 4 th Ed.
RCM MARK		AS/NZS 61347-1: 2016+A1 AS 61347-2-13: 2018
Isolation		Class I, input to output: non-isolation, RDM/DMX and DALI to input/output reinforced isolation.
RoHS		RoHS 2.0 Directive(EU) 2015/863
REACH		In compliance

7. If you have any requirements for safety approvals, please contact us.

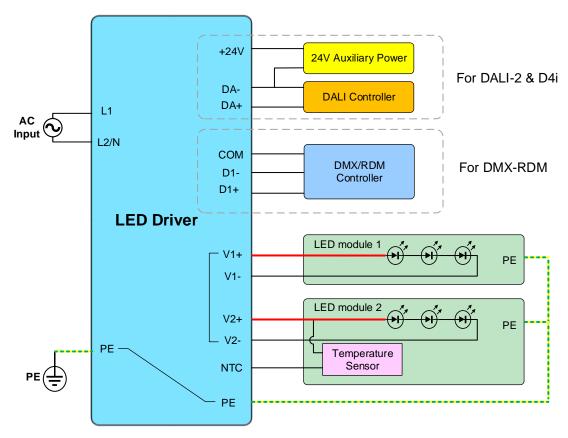


Miniature Circuit Breaker Configuration

The maximum number of LED drivers connectable to a single MCB is recommended in the following table for maximum 1200W and each nominal input voltage. Due to the differences in application conditions and different kinds of miniature circuit breakers available on the market, this table is just for reference.

Input Voltage	МСВ Туре	16A	20A	25A	32A	40A	63A
208 Vac	B/C	2	2	3	4	5	8
220 Vac	B/C	2	2	3	4	5	8
277 Vac	B/C	2	3	4	5	7	11
400 Vac	B/C	4	5	6	8	10	15
480 Vac	B/C	4	6	7	9	12	19

Electrical Connection



Note:

- a) This is a common "OUTPUT +" design that V1+ and V2+ are electrically connected together internally and have exactly equal outputs, but V1- and V2- should not be connected together during installation.
- b) Simply connect the controller to the appropriate terminals to fulfill the control requirements without additional configuration.
- c) The maximum permissible voltage on the control interface terminals should not exceed 60Vrms, otherwise damage may occur and reliability may be compromised.



Programming Configuration

1. LNA/EUCO Series Programming Tool

Common setting functions and implementation methods/conditions are shown in the following table, more functions and details please refer to the LNA/EUCO Series Programming Tool User Manual.

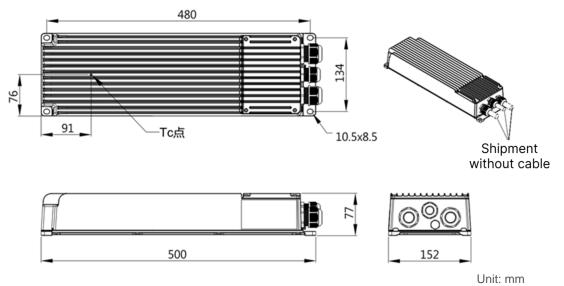
	Item	DALI	DMX	
	Tool Connection	DA+,DA-	D1+,D1-	
Setup	AC power supply	•		
	Load Connection	0	0	
Tool	Delta Programming Tool	SDDV1505UAC (SDDV1	505UAB, SDPTDV05UAB)	
	Max. current programming	\checkmark	\checkmark	
	Default output current	\checkmark	\checkmark	
	Luminaire OTP setting	\checkmark	\checkmark	
Configurable Parameters and Functions	Constant lumen output setting	\checkmark	\checkmark	
Functions	Smart timer dimming	\checkmark	\checkmark	
	Address mode	\checkmark	\checkmark	
	Software update	\checkmark	\checkmark	

Note: **\blacksquare** Required, O Optional, $\sqrt{Available}$.

2. DALI & RDM Standard Controller

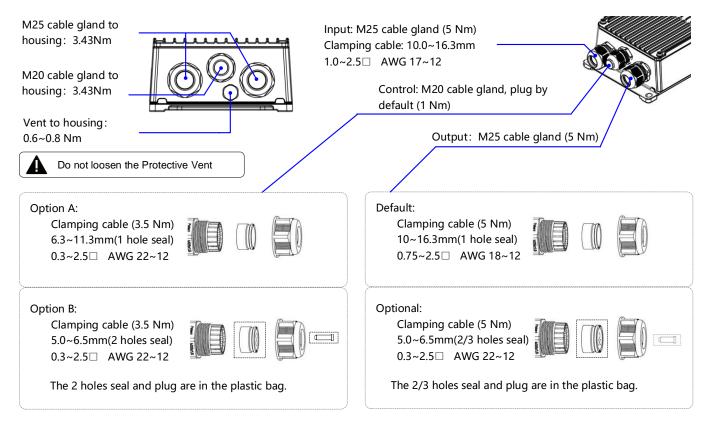
This driver is compatible with D4i and RDM functions, providing a variety of free configuration options and rich monitoring data, such as personalized assignment of addresses, access to output status information. Customers can configure it flexibly according to their own usage requirements. Please refer to the "D4i & RDM Data Management User Manual" for the relevant configuration instructions.

Physical Dimensions



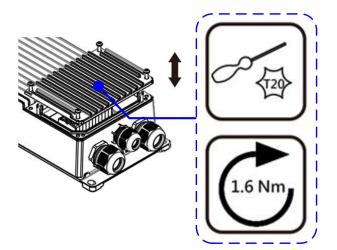


Cable Gland



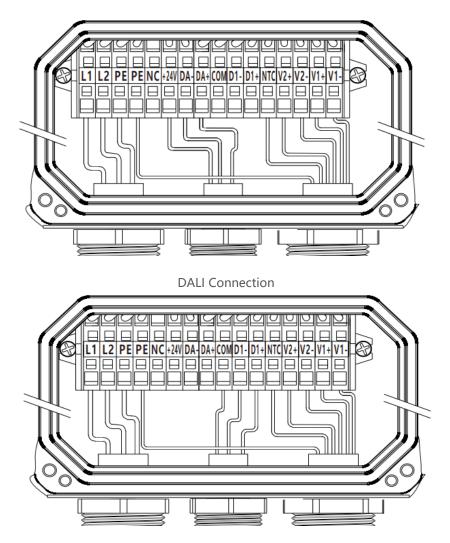
Note: More details about cable selection information, please refer to the Installation User Manual.

Junction Box



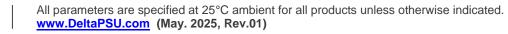
Note: The cap and fastening 4 screws all have the function of anti-falling off.





RDM/DMX Connection

Number	Label	Description		
1	L1	AC input		
2	L2	AC input		
3	PE	Protective Earth		
4	PE	Protective Earth for luminaire		
5	NC	Reserved		
6	+24V	+24V/3W auxiliary power supply, and the ground of "+24V" is "DA-".		
7	DA-	DALI input -, and the ground of "+24V"		
8	DA+	DALI input +		
9	COM	DMX Common port/Shielding		
10	D1-	DMX input -		
11	D1+	DMX input +		
12	NTC	Luminaire Temperature Detection		
13	V2+	Channel 2 output +		



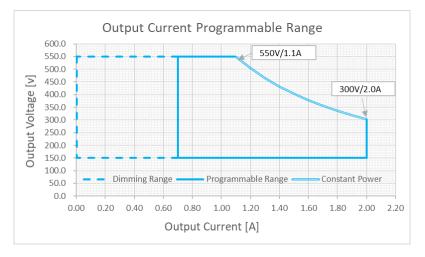


14	V2-	Channel 2 output -	
15	V1+	Channel 1 output +	
16	V1-	Channel 1 output -	



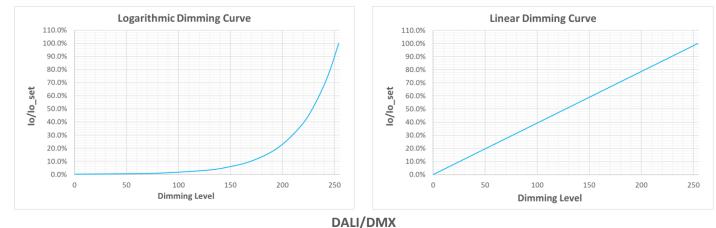
Appendix

1. Operating Range

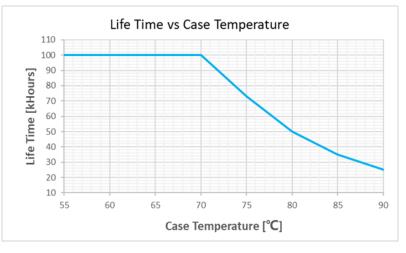


Note: EUCO-1K2200GCA series can be programmed with wide output current through computer and programming tool. For more details, please refer to LNA/EUCO Series Programming Tool User Manual.

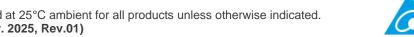
2. **Dimming Curve**





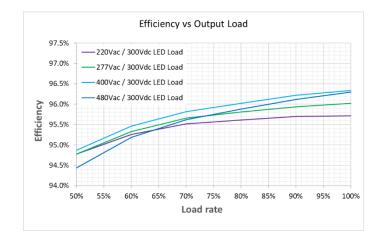


Efficiency versus Load 4.

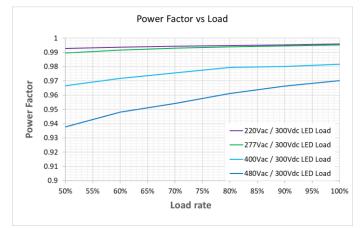




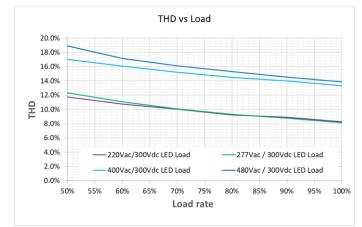
All parameters are specified at 25°C ambient for all products unless otherwise indicated. 12 www.DeltaPSU.com (May. 2025, Rev.01)

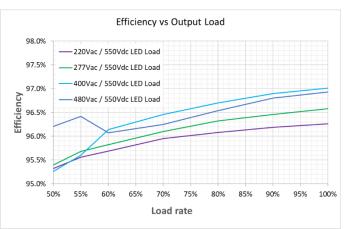


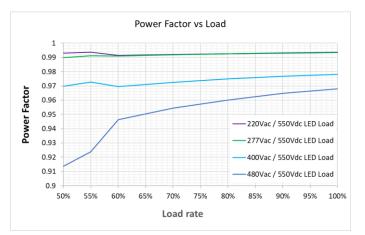


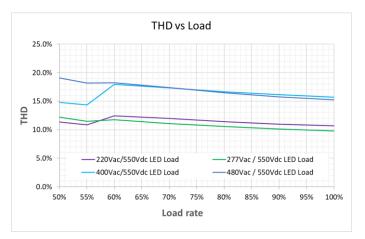


6. THD versus Load





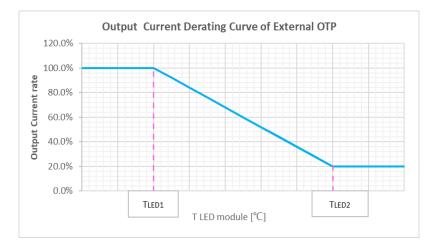




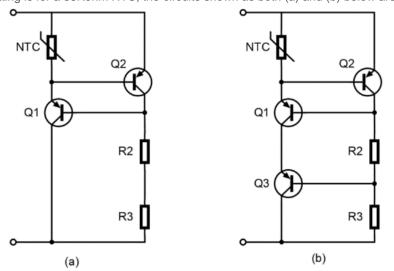


7. Programmable External Over Temperature Protection

This protection is an optional feature and user can ignore it without connecting to NTC connector in the junction box. The driver monitors the temperature of the LED module through NTC terminal. The output current will be reduced smoothly and linearly at OTP status and return to normal when the fault condition is removed.



The trigger point of this protection can be set easily according to the actual conditions of the LED fixtures, the user can set the trigger point between 80° C and 110° C by the Delta programming tool, and the default value is 110° C. When the temperature exceeds the triggering point, the output current will decrease automatically to bring the temperature of the LED module back to safe value. More details about parameter setting please refer to **LNA/EUCO Series Programming Tool User Manual**. An external temperature sensing circuit is required to achieve the NTC terminal function to prevent the LED fixture from overheating. The default setting is for a 33Kohm NTC, the circuits shown as both (a) and (b) below are acceptable.



The circuits (a) and (b) have same OTP performance by using the same parts listed in the table, and to achieve good accuracy of OTP, Q2 should be placed close to NTC to make them have same temperature.

Parameter	Part	Manufacturer	Description
NTC	TSM1A333F3952RZA	THINKING	RES NTC 33Kohm F 3950K +/-1% SMD 0603 TP
R2 / R3	RC1206FR-07 5M1L	YAGEO	RES SMD 1/4W 5.1Mohm F 1206
Q1 / Q2 / Q3	PBHV9050T	NEXPERIA	500V 150 mA PNP high-voltage low VCEsat transistor

This product is also compatible with the circuitry (b) for a 10Kohm NTC, this version could be selected and activated by "OTP on Fixture" section of GUI (Select "10K" in this section). The circuit and BOM table are shown as below.



Parameter	Part	Manufacturer	Description
NTC	NTCG163JH103JT1	ТDК	RES NTC 10Kohm F 3380K +/-1% SMD 0603
R2/R3	RC1206FR-07 1ML	YAGEO	RES SMD 1/4W 1Mohm F 1206
Q1/Q2/Q3	PBHV9050T	NEXPERIA	500V 150 mA PNP high-voltage low VCEsat transistor

Note:

- The recommended temperature detection circuit should be on the LED module.
- NTC should be placed as close to Q2 as possible.
- Do not make any change to the temperature detection circuit of LED module.
- The specifications of alternative components should be the same as the recommended sources. Especially, the NTC is a key and thermos-sensitive component and DO NOT change to other types, like B value = 4480K.

8. External SPD requirement for extra LED fixture common mode surge protection

The EUCO series driver has been designed with a built-in surge absorber which protects against lightning up to CM/DM 10kV level. The built-in surge absorber activates once a common mode surge intrusion occurring, which offers a protection against any unexpected voltage surge to the LED module of \leq 3kV.

Even though, EUCO Arena driver series do not require the installation of an additional SPD protect the driver and LED module against any unexpected surge voltage, it would allow to further strength the robustness protection capability against surge residual voltage of LED modules which allows the fixtures to be marketed globally by attributing different surge protector device (SPD) to meet differing surge levels.

However, Delta Electronics proposes not to install an external SPD at LED module side because it would be unsafe attributable to when this device would be triggered, a high common mode current will generate through driver and SPD that will cause some unexpected and irreversible damage to the driver.

9. Warranty Policy

Please reach out our <u>Warranty Policy</u> should you require any further clarification.

10. Attention

Delta provides all information in the datasheets on an "AS IS" basis and does not offer any kind of warranty through the information for using the product. In the event of any discrepancy between the information in the catalog and datasheets, the datasheets shall prevail (please refer to <u>http://www.DeltaPSU.com</u> for the latest datasheets information). Delta shall have no liability of indemnification for any claim or action arising from any error for the provided information in the datasheets. Customer shall take its responsibility for evaluation of using the product before placing an order with Delta.

Delta reserves the right to make changes to the information described in the datasheets without notice.

