Features

- Full Power at Wide Output Current Range (Constant Power)
- Adjustable Output Current (AOC) with Programmability
- Isolated 1-5V/1-10V/10V PWM/3-Timer-Modes Dimmable
- Output Lumen Compensation
- Input Surge Protection: DM 4kV, CM 6kV
- All-Around Protection: OVP, SCP, OTP
- IP66/IP67 and UL Dry/Damp/Wet Location
  Only IP66 and UL Dry/Damp Location (DF models)
- Class 2 & SELV Output
- TYPE HL, for use in a Class I, Division 2 Hazardous (Classified) Location
- Suitable for Luminaires with Protection Class I
- 5 Years Warranty

Description

The EUM-050SxxxDx series is a 50W, constant-current, programmable and IP66/IP67 rated LED driver that operates from 90-305Vac input with excellent power factor. It is created for many lighting applications including low bay, tunnel and street, etc. The high efficiency of these drivers and compact metal case enables them to run cooler, significantly improving reliability and extending product life. To ensure trouble-free operation, protection is provided against input surge, output over voltage, short circuit, and over temperature.

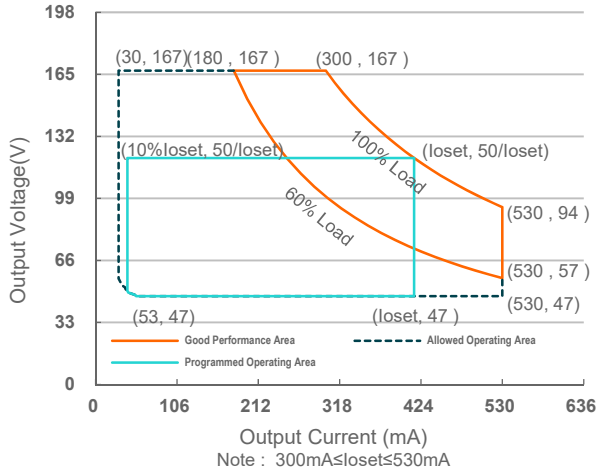
Models

Adjustable 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	
30-530	300-530	530	47-167	50	90.5%	0.99	0.96	EUM-050S053Dx(5)
55-900	550-900	700	28-91	50	89.0%	0.99	0.96	EUM-050S090Dx(6)
92-1500	920-1500	1050	17-54	50	88.0%	0.99	0.96	EUM-050S150Dx(7)

Notes: (1) Output current range with constant power at 50W
(2) Measured at 100% load and 220Vac input (see below “General Specifications” for details).
(3) Certified input voltage range: UL, FCC 100-277Vac; otherwise 100-240Vac.
(4) x = G are UL Recognized, ENEC and CCC, etc. models; x = T are UL Class P models; x = B are BIS models; x = F are UL Class P models with flying leads. See below "Mechanical Outline" for details.
(5) Only available with x = G, and only with ENEC, CE, CB and CCC certificates.
(6) SELV output.
(7) Class 2 & SELV output.

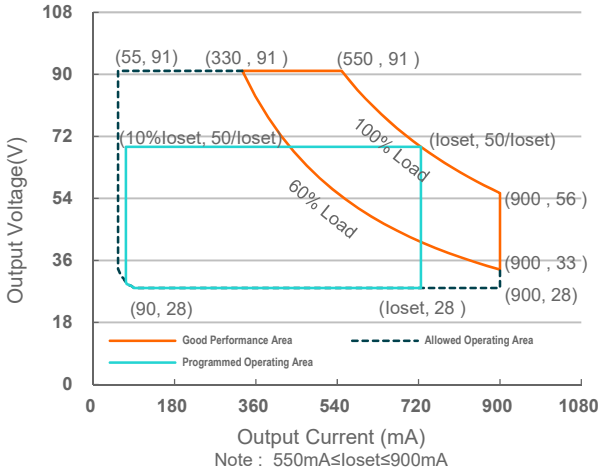
I-V Operation Area

EUM-050S053Dx



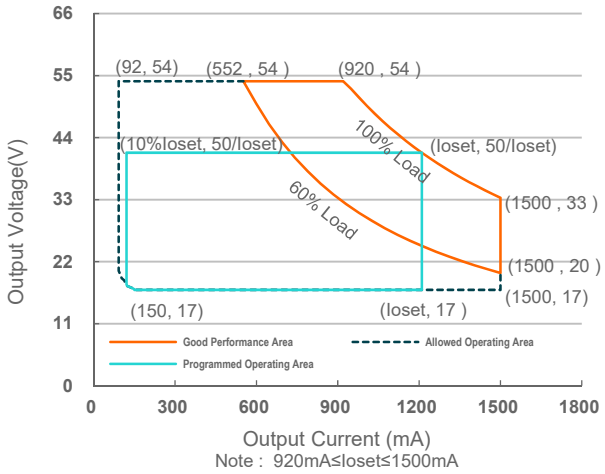
Note : 300mA≤Ioset≤530mA

EUM-050S090Dx



Note : 550mA≤Ioset≤900mA

EUM-050S150Dx



Note : 920mA≤Ioset≤1500mA

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	-	-	0.55 A	Measured at 100% load and 120 Vac input.
	-	-	0.30 A	Measured at 100% load and 220 Vac input.

Input Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Inrush Current(I^2t)	-	-	0.48 A^2s	At 220Vac input, 25°C cold start, duration=292 μs, 10%Ipk-10%Ipk.
PF	0.9	-	-	At 100-277Vac, 50-60Hz, 60%-100% Load (30-50W)
THD	-	-	20%	
THD	-	-	10%	At 220-240Vac, 50-60Hz, 60%-100% Load (30-50W)

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Tolerance	-5%Ioset	-	5%Ioset	At 100% load condition
Output Current Setting(Ioset) Range EUM-050S053Dx EUM-050S090Dx EUM-050S150Dx	 30 mA 55 mA 92 mA	 - - -	 530 mA 900 mA 1500 mA	
Output Current Setting Range with Constant Power EUM-050S053Dx EUM-050S090Dx EUM-050S150Dx	 300 mA 550 mA 920 mA	 - - -	 530 mA 900 mA 1500 mA	
Total Output Current Ripple (pk-pk)	-	5%Iomax	10%Iomax	At 100% load condition. 20 MHz BW
Output Current Ripple at < 200 Hz (pk-pk)	-	2%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 EUM-050S053Dx EUM-050S090Dx EUM-050S150Dx	 - - -	 - - -	 200 V 120 V 60 V	
Line Regulation	-	-	±1%	Measured at 100% load
Load Regulation	-	-	±5%	
Turn-on Delay Time	-	-	0.5 s	Measured at 120-277Vac input, 60%-100% Load
Temperature Coefficient of Ioset	-	0.06%/°C	-	Case temperature = 0°C ~Tc max

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 120 Vac input: EUM-050S053Dx Io= 300 mA Io= 530 mA EUM-050S090Dx Io= 550 mA Io= 900 mA EUM-050S150Dx Io= 920 mA Io=1500 mA	 85.0% 86.0% 84.0% 85.0% 83.0% 83.5%	 87.0% 88.0% 86.0% 87.0% 85.0% 85.5%	 - - - - - -	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: EUM-050S053Dx Io= 300 mA Io= 530 mA EUM-050S090Dx Io= 550 mA Io= 900 mA EUM-050S150Dx Io= 920 mA Io=1500 mA	 87.5% 88.5% 86.5% 87.0% 85.0% 86.0%	 89.5% 90.5% 88.5% 89.0% 87.0% 88.0%	 - - - - - -	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: EUM-050S053Dx Io= 300 mA Io= 530 mA EUM-050S090Dx Io= 550 mA Io= 900 mA EUM-050S150Dx Io= 920 mA Io=1500 mA	 88.0% 89.0% 87.0% 87.5% 86.0% 86.0%	 90.0% 91.0% 89.0% 89.5% 88.0% 88.0%	 - - - - - -	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	-	548,000 Hours	-	Measured at 220Vac input, 80%Load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime	-	103,000 Hours	-	Measured at 220Vac input, 80%Load and 70°C case temperature; See lifetime vs. Tc curve for the details
Operating Case Temperature for Safety Tc_s	-40°C	-	+90°C	
Operating Case Temperature for Warranty Tc_w	-40°C	-	+80°C	Case temperature for 5 years warrant Humidity: 10% RH to 95% RH
Storage Temperature	-40°C	-	+85°C	Humidity: 5%RH to 95%RH
Dimensions Inches (L × W × H) Millimeters (L × W × H)	3.75 × 2.52 × 1.44 95 × 64 × 36.5			With mounting ear 4.41 × 2.52 × 1.44 112 × 64 × 36.5
Net Weight	-	490 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 uA	300 uA	450 uA	Vdim(+) = 0 V

Dimming Specifications (Continued)

Parameter		Min.	Typ.	Max.	Notes
Dimming Output Range	EUM-050S053Dx EUM-050S090Dx EUM-050S150Dx	10%Ioset	-	Ioset	300 mA ⩽ Ioset ⩽ 530 mA 550 mA ⩽ Ioset ⩽ 900 mA 920 mA ⩽ Ioset ⩽ 1500 mA
	EUM-050S053Dx EUM-050S090Dx EUM-050S150Dx	30 mA 55 mA 92 mA	-	Ioset	30 mA ⩽ Ioset < 300 mA 55 mA ⩽ Ioset < 550 mA 92 mA ⩽ Ioset < 920 mA
Recommended Dimming Range for 1-5V		0.25 V	-	4.75 V	Dimming mode set to 1-5V in PC interface.
Recommended Dimming Range for 1-10V		1 V	-	9 V	Default 1-10V dimming mode with positive logic.
PWM_in High Level		-	10V	-	
PWM_in Low Level		-	0V	-	
PWM_in Frequency Range		200 Hz	-	2 KHz	
PWM_in Duty Cycle		0%	-	100%	

Safety &EMC Compliance

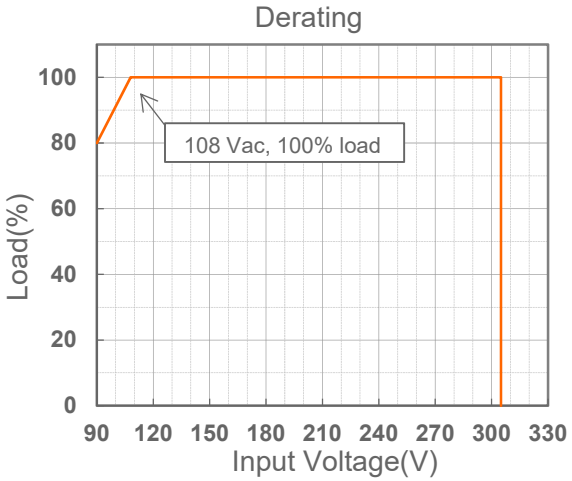
Safety Category	Standard
UL/CUL	UL 8750,CAN/CSA-C22.2 No. 250.13
ENEC & CE	EN 61347-1, EN 61347-2-13
CB	IEC 61347-1, IEC 61347-2-13
CCC	GB 19510.1, GB 19510.14
PSE	J 61347-1, J 61347-2-13
KS	KS C 7655
BIS	IS 15885(Part2/Sec13)
EAC	TP TC 004, TP TC 020
Performance	**Standard**
ENEC	EN IEC 62384
EMI Standards	**Notes**
EN IEC 55015/GB/T 17743/KS C 9815(1)	Conducted emission Test &Radiated emission Test
EN IEC 61000-3-2/GB 17625.1	Harmonic current emissions
EN 61000-3-3	Voltage fluctuations & flicker

Safety &EMC Compliance (Continued)

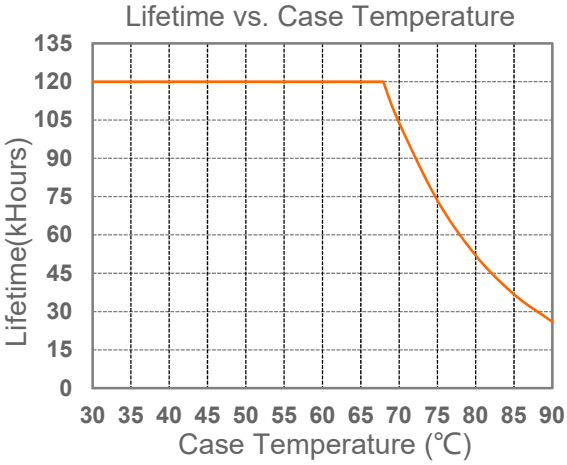
EMI Standards	Notes
FCC Part 15(1)	ANSI C63.4 Class B
	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: [1] this device may not cause harmful interference, and [2] this device must accept any interference received, including interference that may 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 4 kV, Common Mode 6 kV
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-8	Power Frequency Magnetic Field Test
EN 61000-4-11	Voltage Dips
EN 61547/KS C 9547	Electromagnetic Immunity Requirements Applies To Lighting Equipment

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.

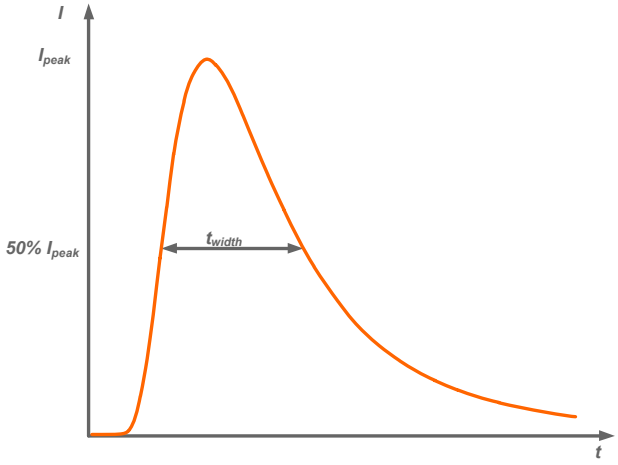
Derating



Lifetime vs. Case Temperature



Inrush Current Waveform

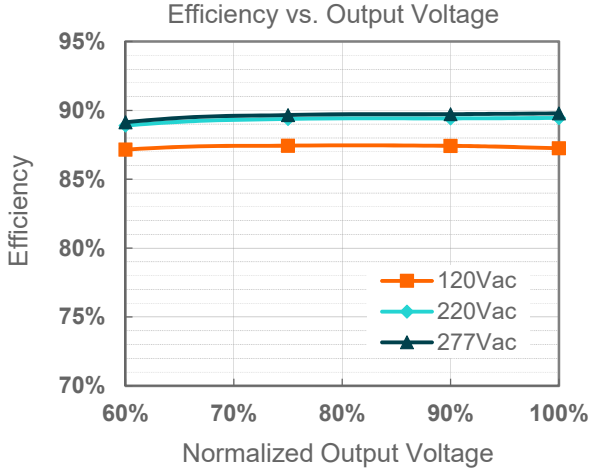


Input AC Voltage	I_{peak}	t_{width} (@ 50% Ipeak)
120Vac	21.4A	176μs
220Vac	40.4A	172μs
277Vac	69.0A	124μs

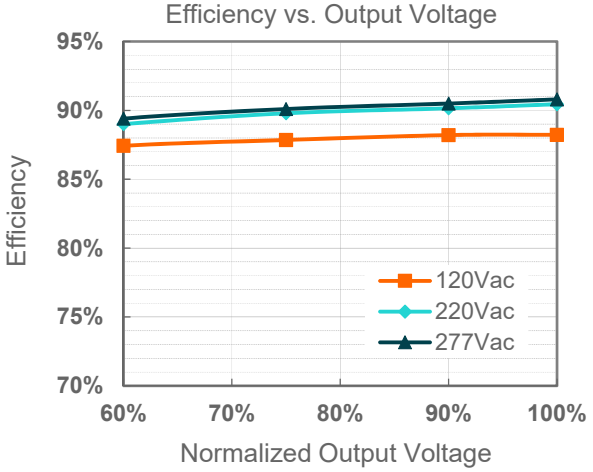
MCB	Tripping Curves	B	B	B	B	C	C	C	C
	Rated Current	10A	16A	20A	25A	10A	16A	20A	25A
The Number of LED Driver can be Configured	120Vac	12	19	24	31	14	23	29	36
	220Vac	12	19	24	30	20	32	40	51
	277Vac	9	15	19	24	16	26	32	40

Efficiency vs. Load

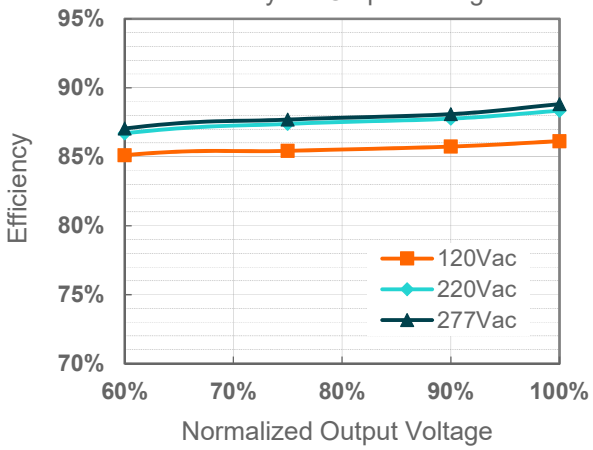
EUM-050S053Dx(Io=300mA)



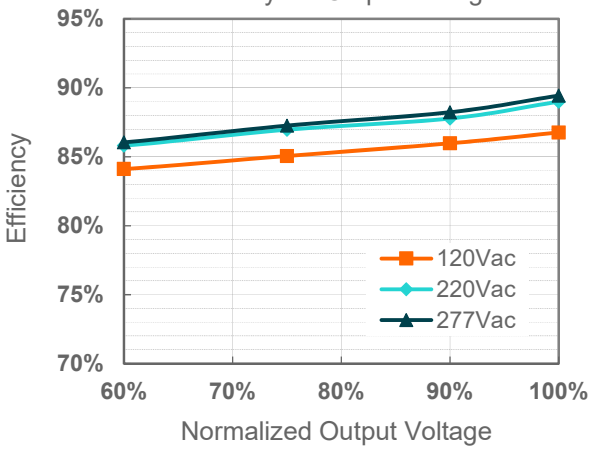
EUM-050S053Dx(Io=530mA)



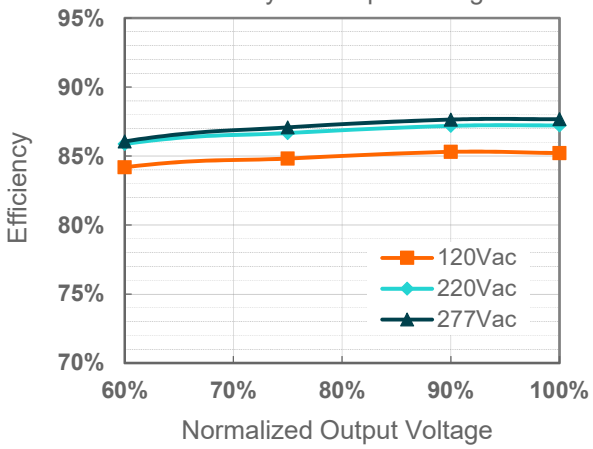
EUM-050S090Dx(Io=550mA)



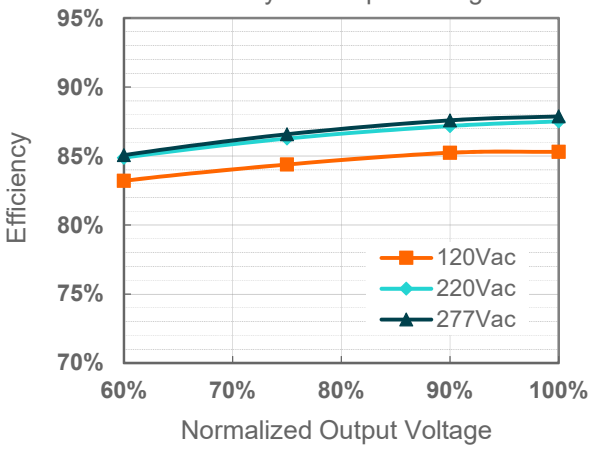
EUM-050S090Dx(Io=900mA)



EUM-050S150Dx(Io=920mA)



EUM-050S150Dx(Io=1500mA)



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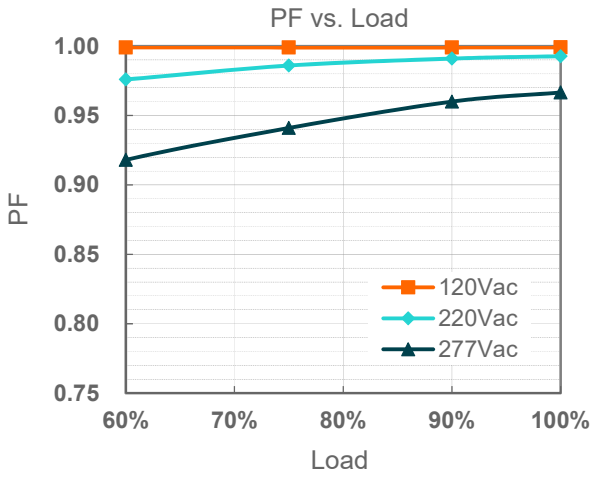
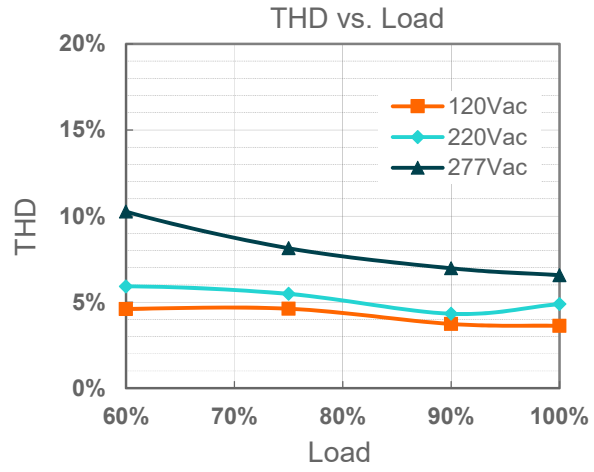
Power Factor



Total Harmonic Distortion



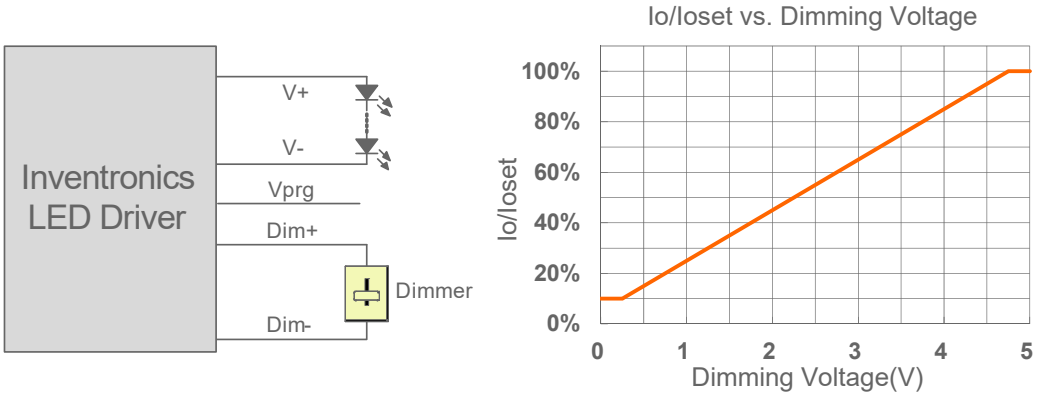
Protection Functions

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.

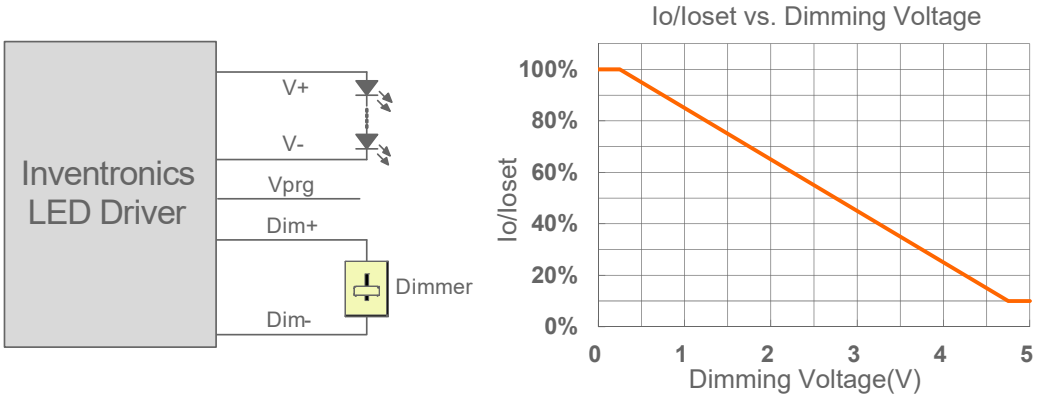
Dimming

● 1-5V Dimming

The recommended implementation of the dimming control is provided below.



Implementation 1: Positive logic



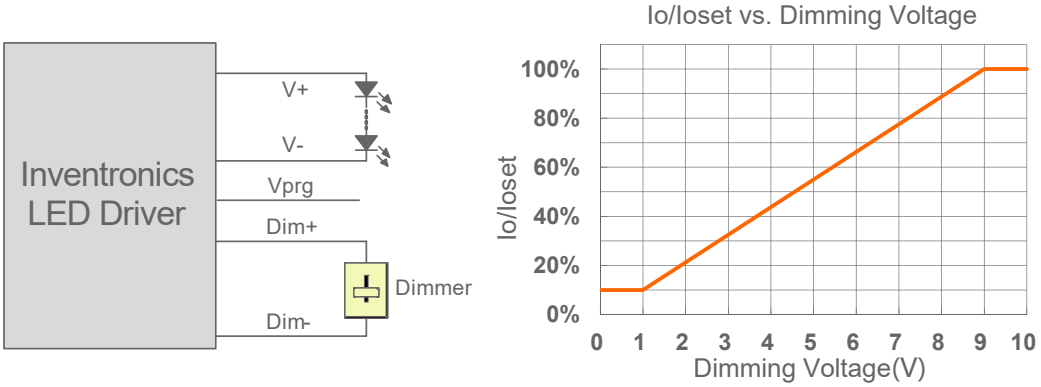
Implementation 2: Negative logic

Notes:

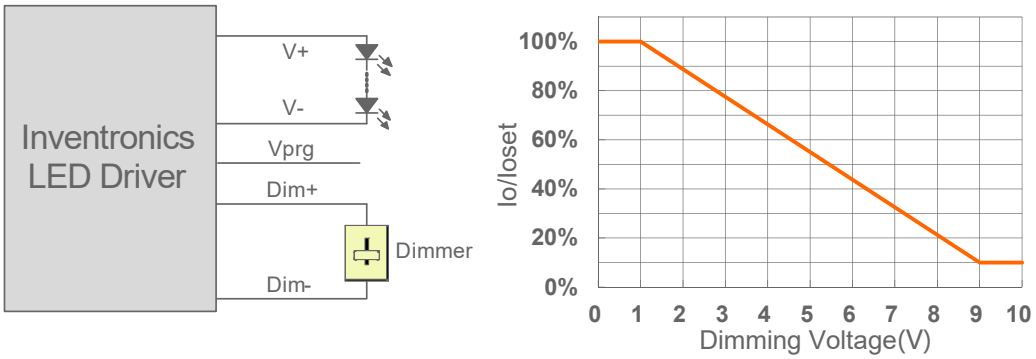
1. Do NOT connect Dim− to the output V− or V+, otherwise the driver will not work properly.
2. The dimmer can also be replaced by an active 1-5V voltage source signal or passive components like zener.
3. When 1-5V negative logic dimming mode and Dim+ is open, the driver will output maximum current.

● 1-10V Dimming

The recommended implementation of the dimming control is provided below.



Implementation 3: Positive logic



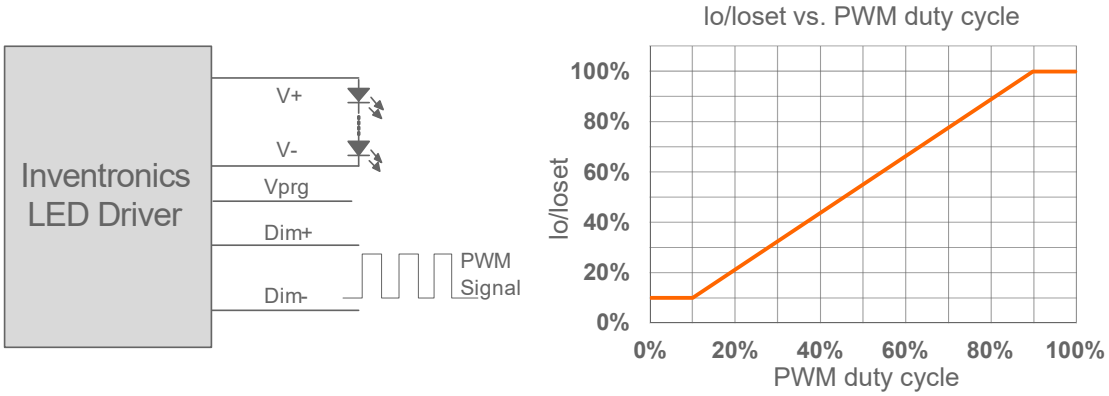
Implementation 4: Negative logic

Notes:

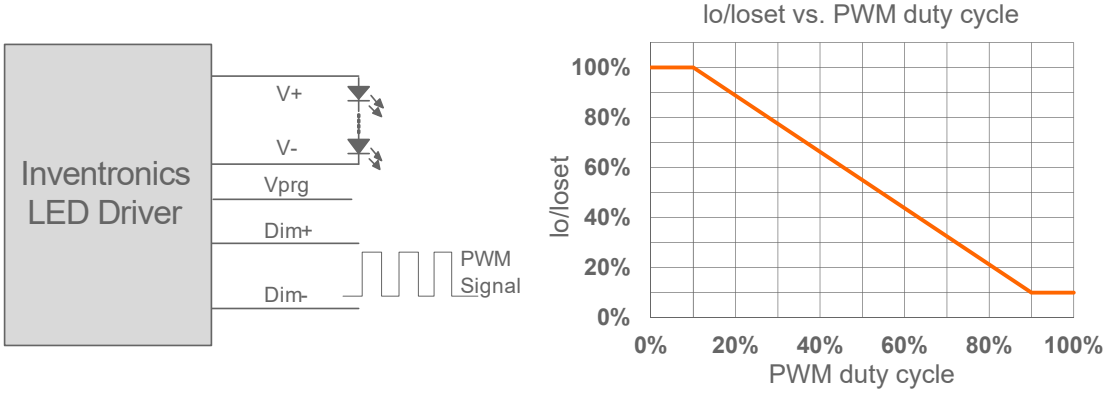
1. Do NOT connect Dim− to the output V− or V+, otherwise the driver will not work properly.
2. The dimmer can also be replaced by an active 1-10V voltage source signal or passive components like zener.
3. When 1-10V negative logic dimming mode and Dim+ is open, the driver will output minimum current.

● 10V PWM Dimming

The recommended implementation of the dimming control is provided below.



Implementation 5: Positive logic



Implementation 6: Negative logic

Notes:
1. Do NOT connect Dim− to the output V− or V+, otherwise the driver will not work properly.
2. When 10V PWM negative logic dimming mode and Dim+ is open, the driver will output minimum current.

Time Dimming

Time dimming control includes 3 kinds of modes, they are Self Adapting-Midnight, Self Adapting-Percentage and Traditional Timer.

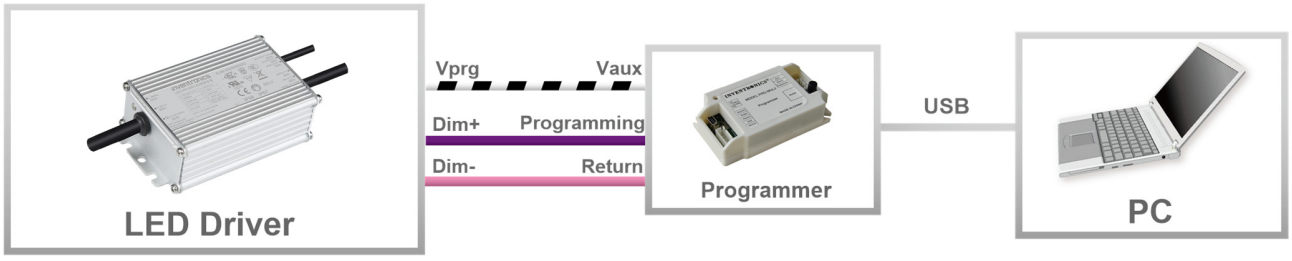
- **Self Adapting-Midnight**: Automatically adjusts the dimming curve based on the on-time of past two days (if difference <15 minutes), assuming that the center point of the dimming curve is midnight local time.
- **Self Adapting-Percentage**: Automatically adjusts the on-time of each step by a constant percentage = (actual on-time for the past 2 days if difference <15 min) / (programmed on-time from the dimming curve).
- **Traditional Timer**: Follows the programmed timing curve after power on with no changes.

Output Lumen Compensation

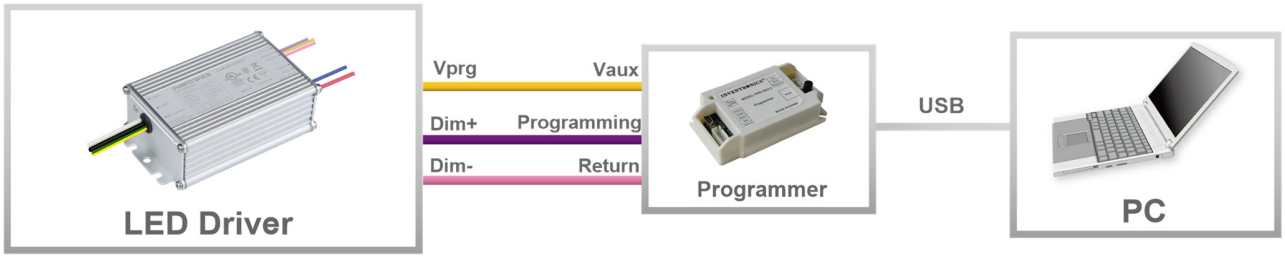
Output Lumen Compensation (OLC) may be used to maintain constant light output over the life of the LEDs by driving them at a reduced current when new, then gradually increasing the drive current over time to counteract LED lumen degradation.

Programming Connection Diagram

EUM-050SxxxDG/EUM-050SxxxDT/EUM-050SxxxDB



EUM-050SxxxDF

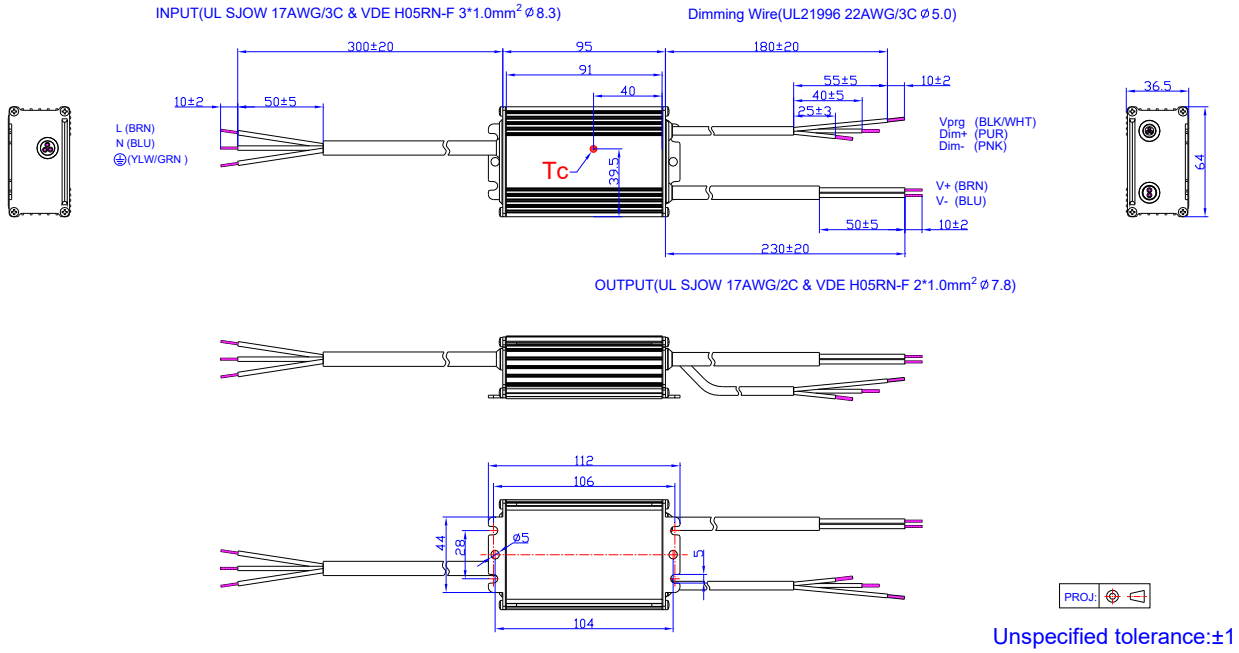


Note: The driver does not need to be powered on during the programming process.

Please refer to PRG-MUL2 (Programmer) datasheet for details.

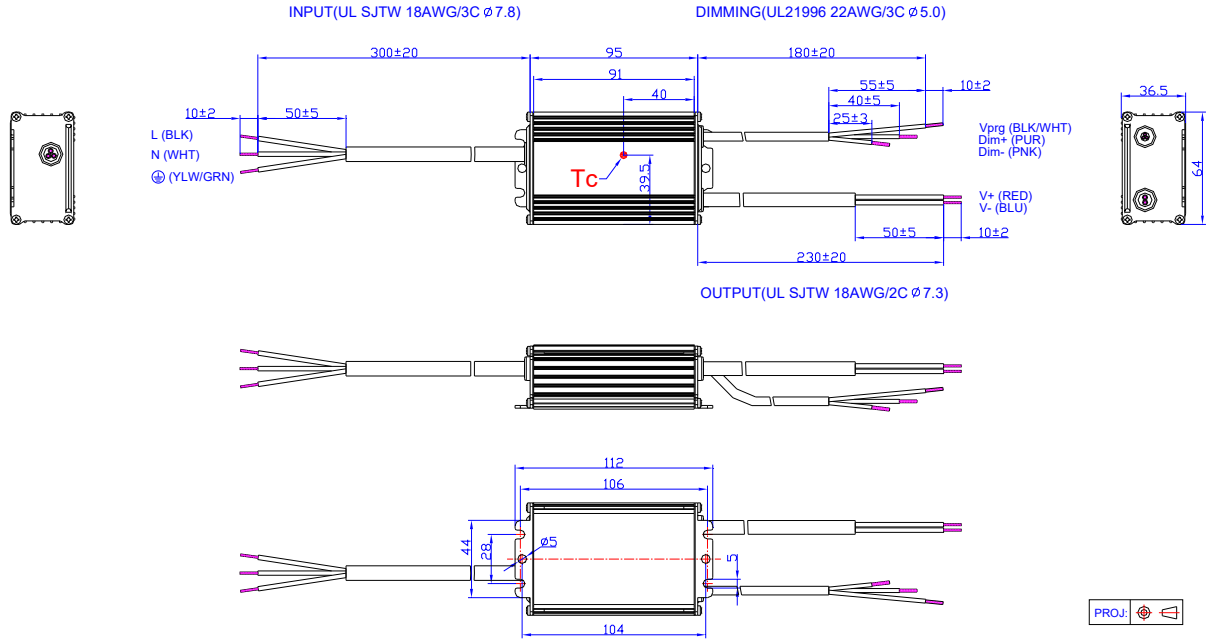
Mechanical Outline

EUM-050SxxxDG



Unspecified tolerance:±1

EUM-050SxxxDT



Unspecified tolerance:±1

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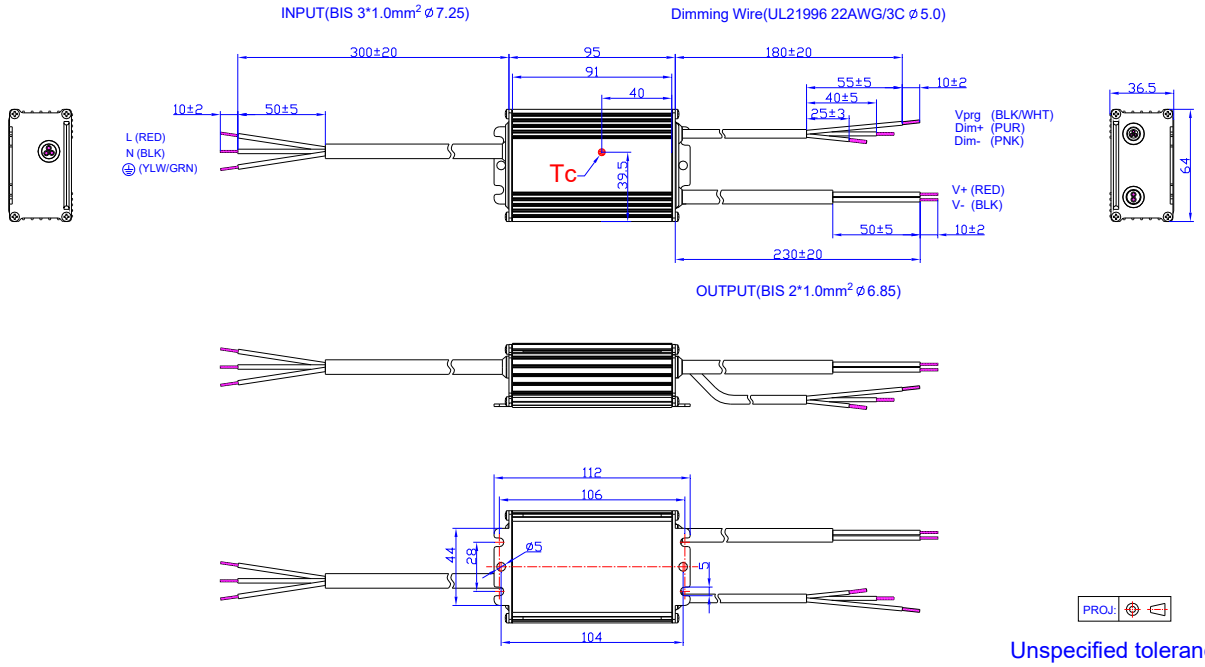
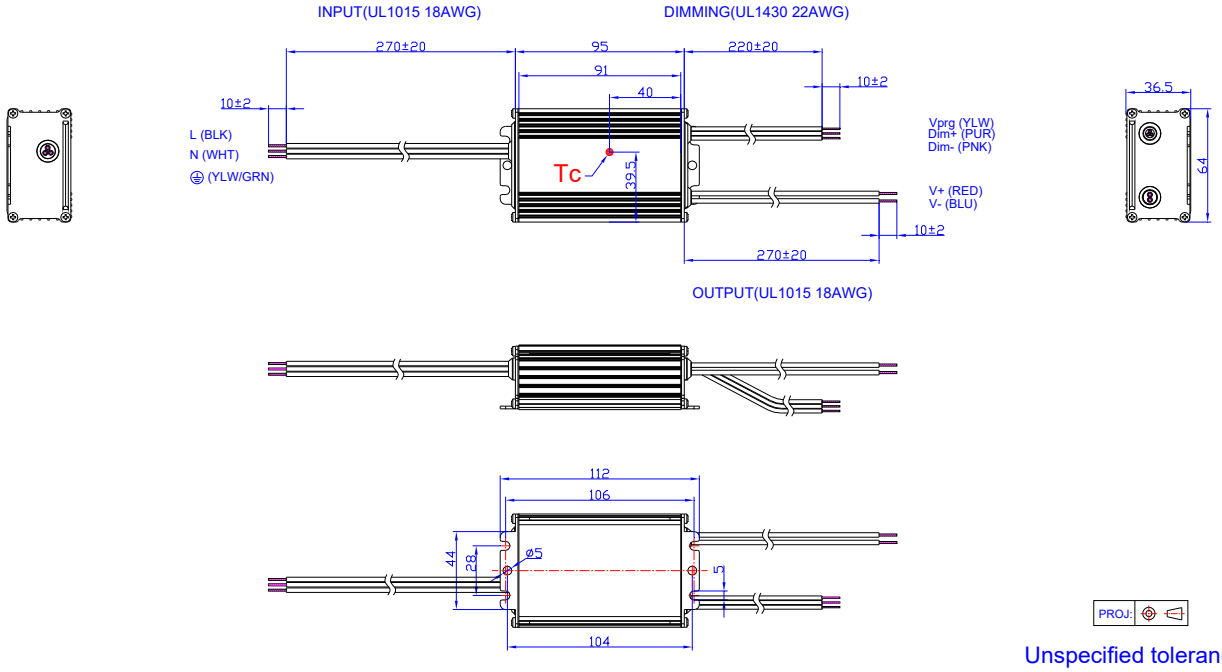
EUM-050SxxxDB



Unspecified tolerance:±1

EUM-050SxxxDF



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
2021-01-21	A	Datasheets Release	/	/
2021-12-24	B	Product photograph	EUM-050SxxxDF	Updated
		UKCA logo	/	Added
		EAC logo	/	Added
		Models	EUM-050S053Dx	Added
		Models	Note (5)	Added
		I-V Operation Area	EUM-050S053Dx	Added
		Output Current Setting(Ioset) Range	EUM-050S053Dx	Added
		Output Current Setting Range with Constant Power	EUM-050S053Dx	Added
		No Load Output Voltage	EUM-050S053Dx	Added
		Efficiency at 120 Vac input	EUM-050S053Dx	Added
		Efficiency at 220 Vac input:	EUM-050S053Dx	Added
		Efficiency at 277 Vac input:	EUM-050S053Dx	Added
		Dimming Output Range	EUM-050S053Dx	Added
		Safety &EMC Compliance	UKCA	Added
		Safety &EMC Compliance	EAC	Added
		Efficiency vs. Load	EUM-050S053Dx	Added
		Dimming	Note	Updated
		Programming Connection Diagram	EUM-050SxxxDT	Updated
		Programming Connection Diagram	EUM-050SxxxDF	Updated
		Mechanical Outline	EUM-050SxxxDT	Updated
		Mechanical Outline	EUM-050SxxxDF	Updated
2023-06-13	C	Product photograph	/	Updated
		Safety &EMC Compliance	/	Updated
		Dimming	/	Updated
		Programming Connection Diagram	/	Updated
		Mechanical Outline	/	Updated

Revision History (Continued)

Change Date	Rev.	Description of Change		
		Item	From	To
2024-07-26	D	Format	/	Updated
		Product Photograph	/	Updated
		UKCA logo	/	Deleted
		Independent logo	/	Added
		Safety &EMC Compliance	/	Updated
		Inrush Current Waveform	/	Updated

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