The AT DX 220/200-480/1A/N NFC L P00 Driver with DALI-2 and D4i series is a 220W, constant-current, NFC programmable LED driver that operates from 180-528 Vac input with excellent power factor. Created for horticulture lighting application, The high efficiency of this driver and slim metal case enables it 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.



Features

- No Afterglow
- Ultra-High Efficiency (Up to 97%)
- Full Power at Wide Output Current Range (Constant Power)
- Adjustable Output Current (AOC) with NFC
- DALI-2 and D4i Certified
- Dim-to-Off with Standby Power≤0.5W @230Vac
- Always-on Auxiliary Power: 24Vdc, 125mA,3W(Transient Peak Power up to 10W)
- Integrated 16Vdc Bus Power Supply based on DALI-2
- Constant Lumen
- Input Surge Protection: DM 4kV, CM 6kV
- All-Around Protection: OVP, SCP, OTP, IUVP, IOVP
- 5 Years Warranty

Application

- IP20 and UL Dry & Damp Location
- Suitable for Luminaires with Protection Class I
- Suitable for Built-in Use
- Horticulture

Models

Adjustable Output Current Range (mA)	Full Power Current Range (mA)(1)	Default Output Current (mA)	Nominal Output Voltage Range (Vdc)	Maximum Output Power (W)	Typical Efficiency(2)	Power Factor λ		Product Name(3)
						208Vac	400Vac	
200-1000	595-1000	700	140-370	220	97.0%	0.99	0.98	AT DX 220/200-480/1A/N NFC L P00

Notes: (1) Output current range with constant power at 220W
(2) Measured at 100% load and 400Vac input (see below “General Specifications” for details).
(3) Certified input voltage range: 200-480Vac.

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage AC	180 Vac	-	528 Vac	
Input Voltage DC	255 Vdc	-	500 Vdc	Derating 80% for the Whole Range
Mains Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	0.75 MIU	UL 8750; 480Vac/60Hz
			0.70 mA	IEC 60598-1; 480Vac/ 60Hz, grounding effectively
Nominal Input Current	-	-	1.25 A	Measured at 100% load and 200 Vac input.
			0.56 A	Measured at 100% load and 480 Vac input.

Input Specifications (Continued)

Parameter	Min.	Typ.	Max.	Notes
Suitable for Fixtures with Protection Class		Class I		
Power Factor λ	0.85	-	-	At 200-480Vac, 50-60Hz, 60%-100% Load (132 - 220W)
Total Harmonic Distortion	-	-	20%	
Total Harmonic Distortion Extended Range	-	-	10%	At 220-240Vac, 50-60Hz, 75%-100% Load (165 - 220W)

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Number of Channels		1		
Programmable Output Current	200 mA	-	1000 mA	
Output Current Setting Range with Constant Power	595 mA	-	1000 mA	
Nominal Output Voltage	140 V	-	370 V	
Output Current Tolerance	-5%	-	+5%	At 100% load condition
Total Output Current Ripple (pk-pk).	-	-	10%Iomax	At 100% load condition, 20 MHz BW.
Output Current Ripple at < 200 Hz (pk-pk)	-	10%Iomax		At 100% load condition. Only this component of ripple is associated with visible flicker.
Startup Overshoot Current	-	-	10%Iomax	At 100% load condition
$P_{st}LM$	-	-	1.0	
SVM	-	-	0.4	
U_{out}	-	-	550 V	
Line Regulation	-	-	±3%	Measured at 100% load
Load Regulation	-	-	±5%	
Turn-on Delay Time	-	-	1 s	Measured at DALI-2 dimming mode, and 200-480Vac input, 60%-100% load
Temperature Coefficient	-	0.06%/°C	-	Case temperature = 0°C ~Tc max
Auxiliary Output Voltage	21.6 V	24 V	26.4 V	
Auxiliary Output Source Current	0 mA	-	125 mA	Return terminal is “DA−“
Auxiliary Output Transient Peak Current @6W	-	-	250 mA	250mA peak for a maximum duration of 2.2ms in a 6.0ms period during which time the average should not exceed 125mA.
Auxiliary Output Transient Peak Current@10W	-	-	425 mA	425mA peak for a maximum duration of 1.3ms in a 5.2ms period during which time the average should not exceed 125mA.
Integrated DALI-2 Bus Power Supply Voltage	12 Vdc	16 Vdc	20 Vdc	Voltage is depending on loading.
Integrated DALI-2 Bus Power Maximum Supply Current		62 mA		
Integrated DALI-2 Bus Power Guaranteed Supply Current		53 mA		DALI-2 bus power supply voltage ⩾12V

Notes: (1) DALI-2 bus power supply is enabled by default and can be disabled via programming interface.
(2) DALI-2 bus power supply supports automatic shut-down and restart after short-circuit.

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Efficiency at 208 Vac input: Io=595 mA Io=1000 mA	 94.0% 93.5%	 96.0% 95.5%	 - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2% lower if measured immediately after startup.)
Efficiency at 277 Vac input: Io=595 mA Io=1000 mA	 95.0% 94.5%	 97.0% 96.5%	 - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2% lower if measured immediately after startup.)
Efficiency at 400 Vac input: Io=595 mA Io=1000 mA	 95.0% 94.5%	 97.0% 96.5%	 - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2% lower if measured immediately after startup.)
Efficiency at 480 Vac input: Io=595 mA Io=1000 mA	 94.0% 94.0%	 96.0% 96.0%	 - -	Measured at 100% load and steady-state temperature in 25°C ambient; (Efficiency will be about 2% lower if measured immediately after startup.)
Networked Standby Power	-	-	0.5 W	Measured at 230Vac/50Hz; DALI-2 bus power supply off.
MTBF	-	244,000Hours	-	Measured at 480Vac input, 80%load and 25°C ambient temperature (MIL-HDBK-217F)
Lifetime@Tc_w	-	108,000 Hours		Measured at 480Vac input, 80%Load; See lifetime vs. Tc curve for the details.
Lifetime	-	105,000 Hours	-	Measured at 220Vac input,100%Load and 40°C ambient temperature
Operating Case Temperature for Safety Tc_s	-20°C	-	+75°C	
Operating Case Temperature for Warranty Tc_w	-20°C	-	+65°C	Case temperature for 5 years warranty. Humidity: 10% RH to 85% RH, No Condensation
Storage Temperature	-20°C	-	+85°C	Humidity: 5% RH to 85% RH, No Condensation
Mains Switching Cycles	100,000	-	-	
IP Rating	IP20			
Dimensions (L × W × H)	13.78 x 1.70 x 1.44 Inches 350 x 43.2 x 36.7 mm			
Net Weight	-	530 g	-	

Inrush Current Waveform

Input AC Voltage	Inrush Current I_{peak}	Inrush Current Width t_{width}(@ 50% I_{peak})	The Number of LED Driver can be Configured (MCB)							
			B10A	B16A	B20A	B25A	C10A	C16A	C20A	C25A
208Vac	47.5A	118μs	5	9	11	14	6	10	13	16
277Vac	62.0A	138μs	7	11	14	18	8	13	16	21
400Vac	95.0A	144μs	5+5+5	9+9+9	11+11+11	14+14+14	7+7+7	11+11+11	14+14+14	17+17+17

Notes: The maximum number of units per circuit breaker is an indicative value.

Dimming Specifications

Parameter		Min.	Typ.	Max.	Notes
DALI-2	DA+, DA- High Level	9.5 V	16 V	22.5V	
	DA+, DA- Low Level	-6.5 V	0 V	6.5 V	
	DA+, DA- Current	0 mA	-	2 mA	
Dimming Output		10% Ioset	-	Ioset	595 mA ⩽ Ioset ⩽ 1000 mA
		60 mA	-	Ioset	60 mA ⩽ Ioset＜ 595 mA

Certificates & Standards

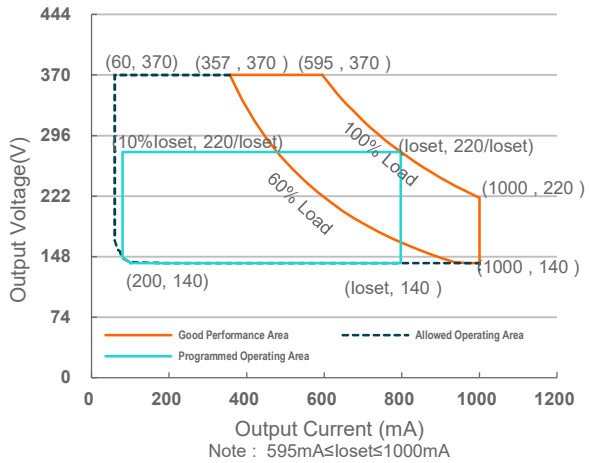
Safety Category	Standard
UL/CUL	UL 8750,CAN/CSA-C22.2 No. 250.13
FCC Part 15	ANSI C63.4 Class A
	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: [1] this device may not cause harmful interference, and [2] this device must accept any interference received, including interference that may cause undesired Operation.
CE	EN 61347-1, EN 61347-2-13, EN 301 489-1, EN 301 489-3, EN 300 330, EN 62479/EN 50663/EN 50665/EN 50364, EN IEC 55015, EN 61547, EN IEC 61000-3-2, EN 61000-3-3
CB	IEC 61347-1, IEC 61347-2-13
DALI-2	IEC 62386-101, 102 & 207

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.
(2) DALI Parts: 101, 102, 150, 151, 152, 207, 250, 251, 252, 253.

Isolation Levels

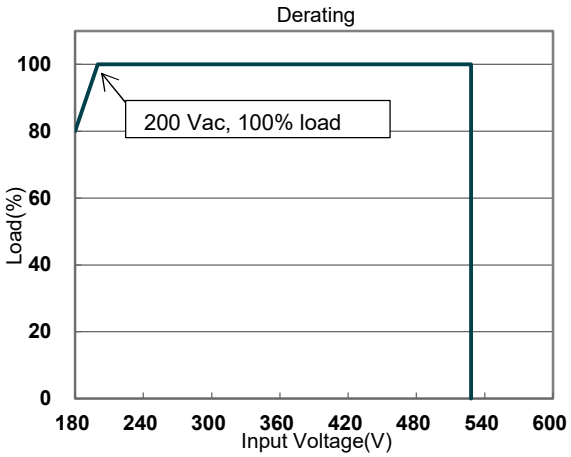
	Input	Output	Dimming	Aux
Input	N/A	Non	Reinforced	Reinforced
Output	Non	N/A	Reinforced	Reinforced
Dimming	Reinforced	Reinforced	N/A	Non
Aux	Reinforced	Reinforced	Non	N/A

Operating Window

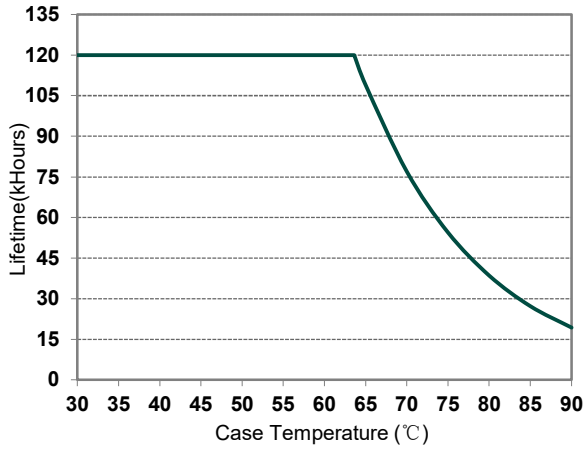


Note： 595mA≤Ioset≤1000mA

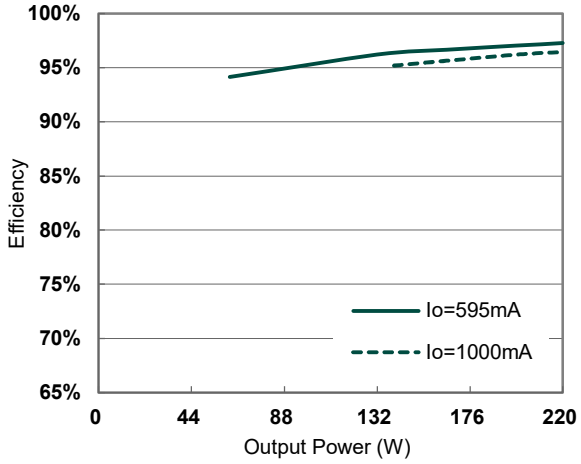
Derating



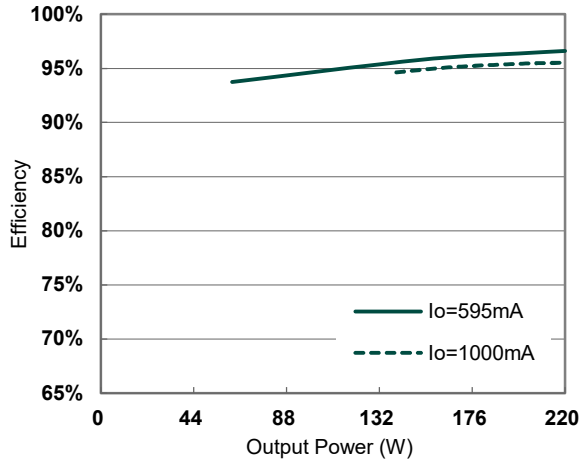
Lifetime vs. Case Temperature



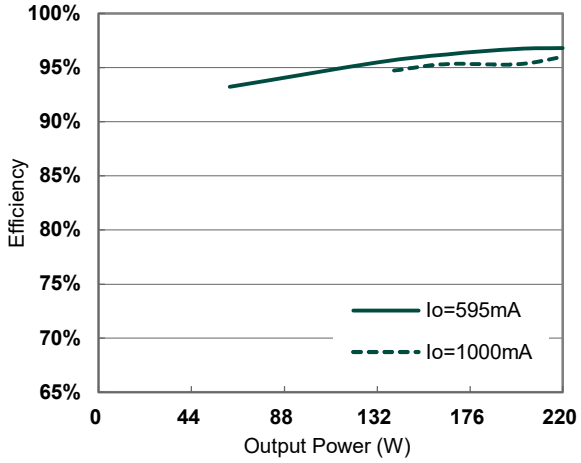
Efficiency vs. Load@400Vac



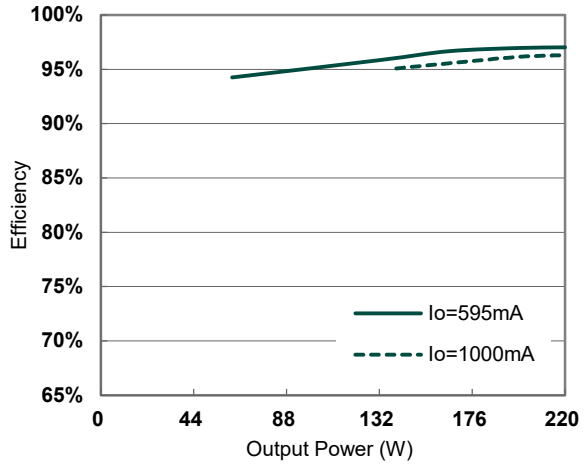
Efficiency vs. Load@208Vac



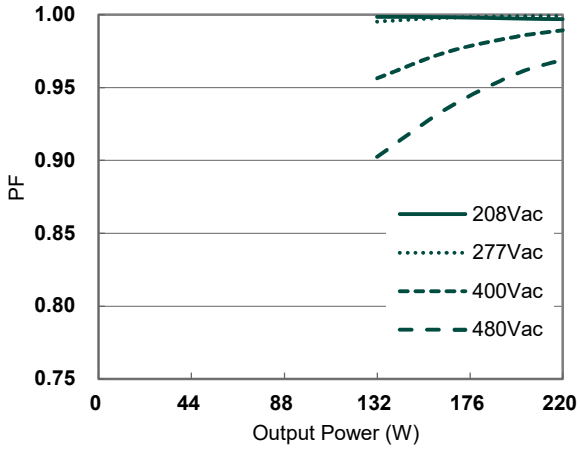
Efficiency vs. Load@480Vac



Efficiency vs. Load@277Vac



Power Factor



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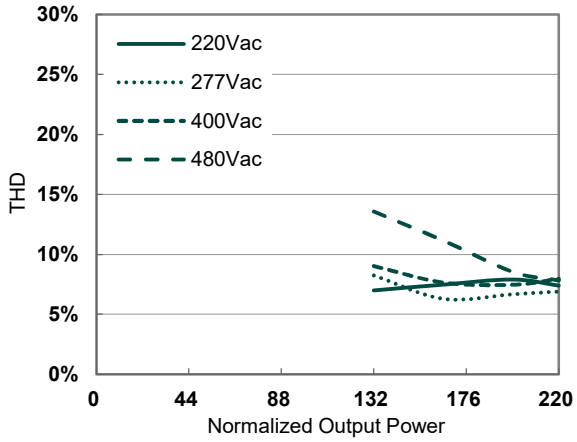
Total Harmonic Distortion



Protection Functions

Over Temperature Protection (OTP)

Protection based on safety: decreases output current if maximum internal temperature is reached, returning to normal value after over temperature is removed.
When output current reaches 55%, switch-off until over temperature is removed.

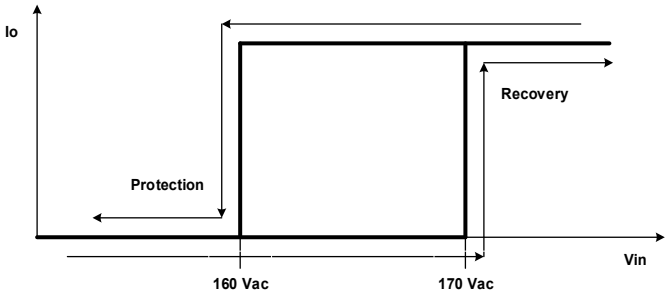
Over Voltage Protection (OVP)

Limits output voltage at no load and in case the normal voltage limit fails.

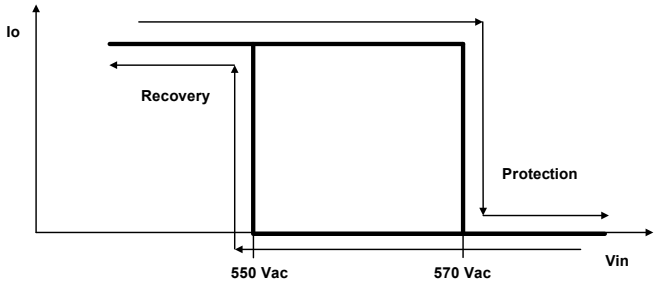
Short Circuit Protection (SCP)

Auto Recovery. No damage will occur when any output is short circuited. The output shall return to normal when the fault condition is removed.

Input Under Voltage Protection (IUVP)



Input Over Voltage Protection (IOVP)



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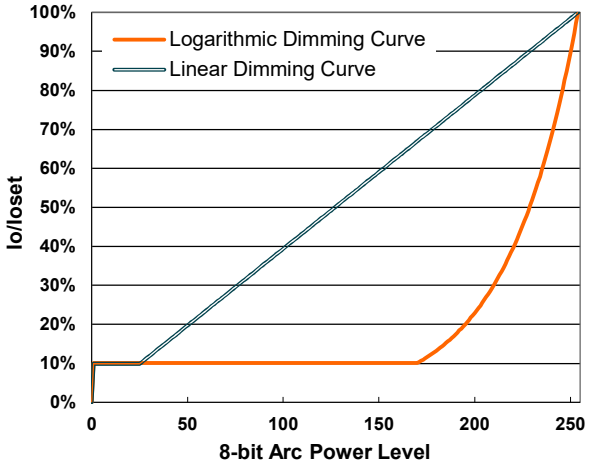
Dimming

DALI-2 Dimming

The recommended implementation of the dimming control is provided below.

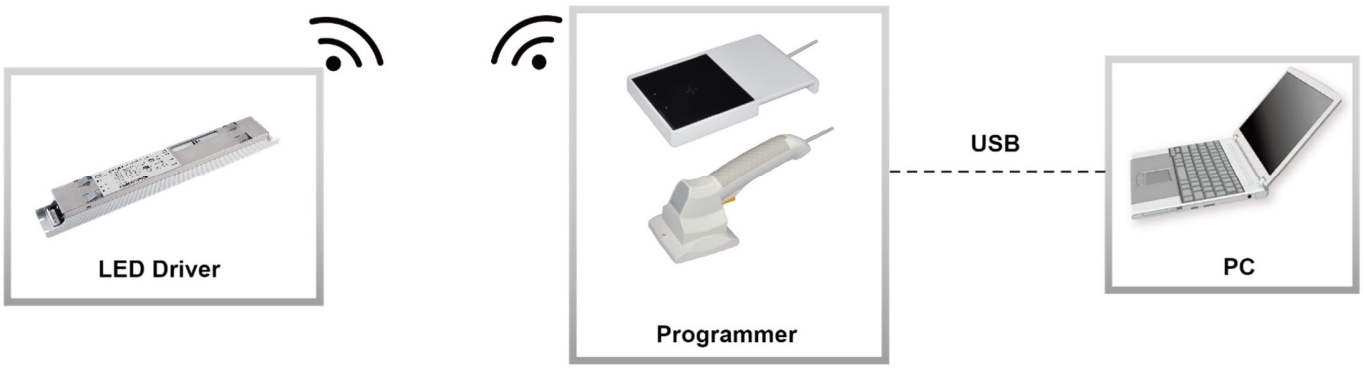


Constant Lumen

Constant lumen function 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. This function is disabled by default.

Programming Connection Diagram

NFC Programming Device



Note: (1) The driver does not need to be powered on during the programming process.
(2) Please refer to PRG-NFC-H or PRG-NFC-D2 (Programmer) datasheet for details.
(3) Supports T4T functionality.

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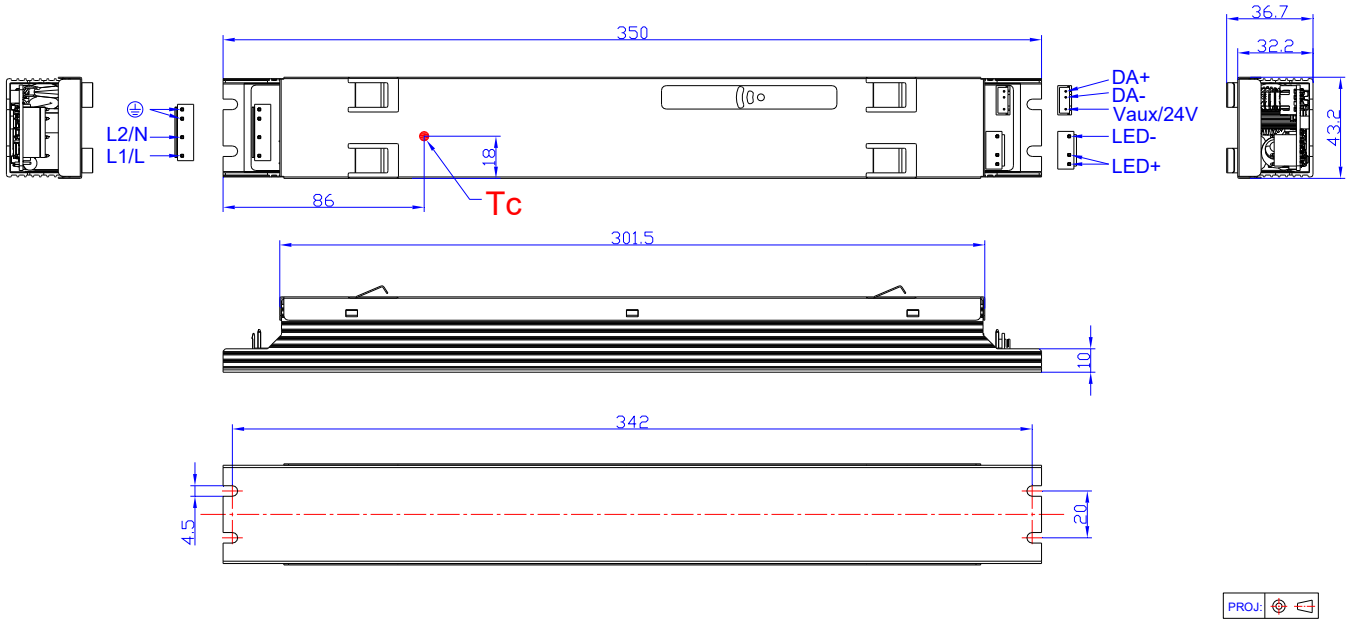
Mechanical Outline



Unspecified tolerance:±1

Connections

Connectors	Type	Code	Counterpart	Alternative
Mains input	JVT:3. 96mm 180° WAFER-06P 2, 4th PIN missing	JVT1120WN0-06SN-D-N24	JVT1121 series 6P	TE:3.96 EP PLUG HSG 6P1-1123722-6
LED output	JVT:3.96mm 180° WAFER-04P 2nd PIN missing	JVT1120WN0-04SN-D-N2	JVT1121 series 4P	TE:3.96 EP PLUG HSG 4P1-1123722-4
DALI interface	JVT:2.5mm 180° WAFER	JVT1001WN0-04SN-D-N2	JVT2001 series 4P	JST: 2.5 mm 180°

Environmental Compliance

RoHS

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.

Product Order Overview

Order Code & Packaging

Order Code (EAN)	Product Version Name	Certification Markings on Product	Packaging unit (Pieces/Box)	Packing Dimensions (L × W × H)(mm)
6942736279616	AT DX 220/200-480/1A/N NFC L P00	UL, CE, DALI2, D4i	25	540 x 355 x 310

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