

Product Datasheet



The global certified APD-165-C is a dual stage high efficiency smart LED driver. 10kV surge protection level, 100khour long life and 7-year warranty provide high confidence to luminaire users. It supports not only traditional 0-10V control, but also D4i smart protocols with NFC programmability. All around protections including digital OTP (internal and external by NTC) with auto-recovery secure 24hour non-stop operation for luminaires.

- Street
- Flood
- Tunnel
- Shoe box
- Architectural



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165W, DPAC™ Tech, D4i and NFC Programmable LED Driver

■ Features

- Supply Voltage: 176-264Vac
- Great Surge Immunity 10kV
- **DPAC™ Tech (D4i Plus 0-10V Combo)**
- D4i/DALI2.0 Comply with IEC62386-101,102,150,207,250,251,252,253
- Integrated 16Vdc Bus Power Supply
- $\pm 1\%$ Energy Report Accuracy
- Dim Off with 0.5W Standby Power
- 24V 3W (10W Transient Peak) Aux-Power
- 100,000Hour Life @ $T_c=75^\circ\text{C}$ & 7 Year Warranty @ $T_c \leq 75^\circ\text{C}$
- $\pm 2\%$ Output Current Accuracy
- Airset™ NFC Programmability
- Class II and Class I Combo
- Safety according to EN 61347-1, 61347-2-13, 62384

■ Model List

Model Number	Input Voltage Range	Output Power	Output Voltage	Full Power Settable Current Min	Full Power Settable Current Max	Dimming	Certification
APD-165-C105-ARE	176-264Vac	165 W	94-262Vdc	630mA	1050mA	D4i&0-10V Combo	ENEC/CB/EL/CE/RCM
APD-165-C105-ERE	176-264Vac	165 W	94-262Vdc	630mA	1050mA	0-10V	

- Note:** 1. For –ARE model, D4i priority is higher than 0-10V if both dimming control signals exist.
2. See the **Output Operation Range Section** for details.

■ Technical Data

Input Voltage	176-264Vac
Input Frequency	47~63Hz
Power Factor	>0.9@60-100%load, refer to PF vs. Load curve
THD	<15%@60-100%load, refer to THD vs. Load curve
Input Current	0.85Amax@220Vac & Full-Load
Inrush Current	See Inrush Current Section in the datasheet
Leakage Current	0.7mA max @240Vac 50/60Hz, IEC60598-1
Input Under Voltage	Shut down and auto-restart
Surge Protection	Line to line 6kV, line to ground 10kV, IEC 61000-4-5
Current Accuracy	$\pm 2\%$ lo for programmable model, $\pm 5\%$ lo for non-programmable model
Ripple Current	lp-p:5%lo max
Setup Time	1.2s max
Overshoot	10% lo max & LED Load
Output Over Voltage	120% Vomax, typ.
Short Circuit	Auto recovery. The output recovers when short is removed.
Over Temperature	Lower the output current when $T_c \geq 105 \pm 10^\circ\text{C}$; Auto Recovery When

165W, DPAC™ Tech, D4i and NFC Programmable LED Driver

	$T_c \leq 70 \pm 10^\circ\text{C}$
Auxiliary Power (Vaux)	24V+/-5%, 3W (10W Transient Peak)
Operating Temperature	Case Temperature $T_c = -40^\circ\text{C} \sim +85^\circ\text{C}$; 10%RH ~ 100%RH
Storage Temperature	$-40^\circ\text{C} \sim +85^\circ\text{C}$; 5%RH ~ 100%RH
MTBF	$\geq 320,000$ hours, 75°C case temperature (MIL-HDBK-217F)
Lifetime	$\geq 100,000$ hours, 75°C case temperature, refer to life vs. T_c curve
Case Temperature	85°C max, marked in the T_c point of label
Dimensions	150.0 x 90.0 x 40.0 by mm
Net Weight	740g
Packing	See Package Information Section in the datasheet

Notes: Unless specified, all the test results are measured in 25°C room temperature.

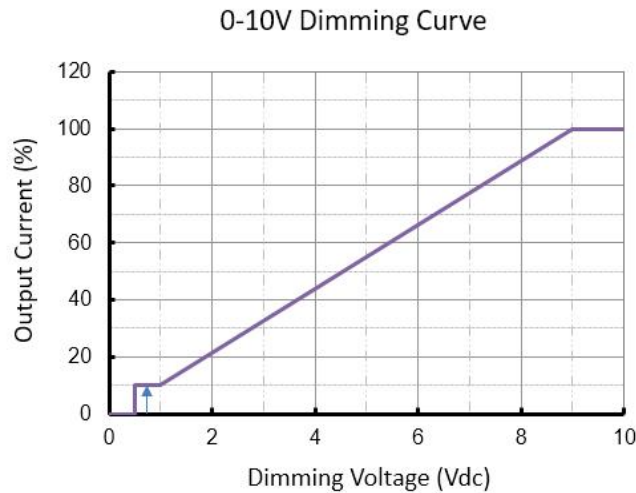
Safety/EMC Compliance

Safety Standard	Description
UL8750	Light emitting diode(LED) equipment for use in lighting products
UL1012	Power units other than class 2
IEC 61347-1	Lamp control gear Part 1: general and safety requirements
IEC 61347-2-13	Lamp control gear Part 2-13: particular requirement for d.c. or a.c. supplied electronic control gear for LED modules
EMI Standards	Description
IEC 55015	Conducted emission test & radiated emission test
IEC 61000-3-2	Harmonic current emissions; Class C
IEC 61000-3-3	Voltage fluctuations & flicker
FCC Part 15	ANSI C63.4:2009 Class B
EMS Standards	Description
IEC 61000-4-2	Electrostatic discharge (ESD): 8 kV air discharge, 4 kV contact discharge
IEC 61000-4-3	Radio frequency electromagnetic field susceptibility test (RS)
IEC 61000-4-4	Electrical fast transient (EFT)
IEC 61000-4-5	Surge immunity test
IEC 61000-4-6	Conducted radio frequency disturbances test (CS)
IEC 61000-4-8	Power frequency magnetic field test
IEC 61000-4-11	Voltage dips
IEC 61547	Electromagnetic immunity requirements applies to lighting equipment

■ Dimming

D4i Related Parameter	Min.	Typ.	Max.
DALI Interface Standard	IEC62386-101,102,150,207,250,251,252,253		
Dimming Range	10%	-	100%
DA1,DA2 High Level	9.5V	16V	22.5V
DA1,DA2 Low Level	-6.5V	0	6.5V
DA1,DA2 Current	0		2mA
Bus Power Supply Voltage	12Vdc	16Vdc	20Vdc
Bus Power Supply Current	52mA	-	60mA
Auxiliary Power Voltage	21.6V	24V	26.4V
Auxiliary Power	3W	-	4W
Auxiliary Power Endurance @6W	3.8ms/6ms	-	4.5ms/6ms
Auxiliary Power Endurance @10W	1.8ms/6ms	-	2.2ms/6ms
Bus Power Supply Current	52mA	-	60mA
0-10V Related Parameter	Min.	Typ.	Max.
Vdim Sourcing Current	100uA	150uA	200uA
Vdim Allowed Input Voltage	-20 V		20 V
0-10V Dimming Range	10% (Vdim=1V)	Linear	100% (Vdim=9~10V)
Dim off threshold	0.4V	0.5V	0.6V
Dim on threshold	0.6V	0.7V	0.8V

- Dimming Curve

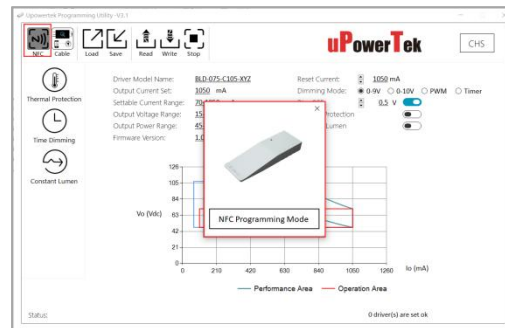
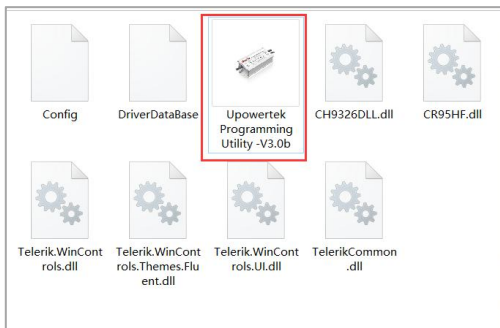


■ Programming

- NFC Programming by PC/Laptop

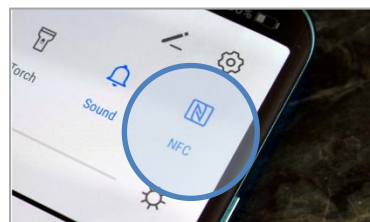


- Download PC Software at <https://www.upowertek.com/download-2/>
- Click Upowertek Programming Utility.exe
- The GUI start and notify you the programming mode (cable programming or NFC programming)
- Click “NFC” button if it’s not NFC programming mode.



- NFC Programming by Smartphone

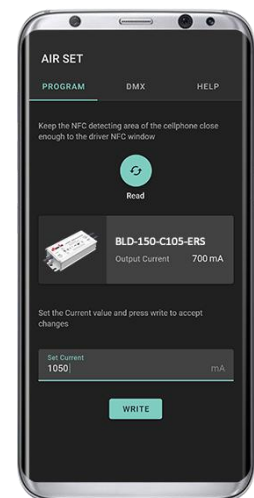
- Download Android APP at <https://www.upowertek.com/download-2/>
- Only available on Android cellphone (iPhone is not supported)
- The cellphone should have NFC function and make sure it is enabled.



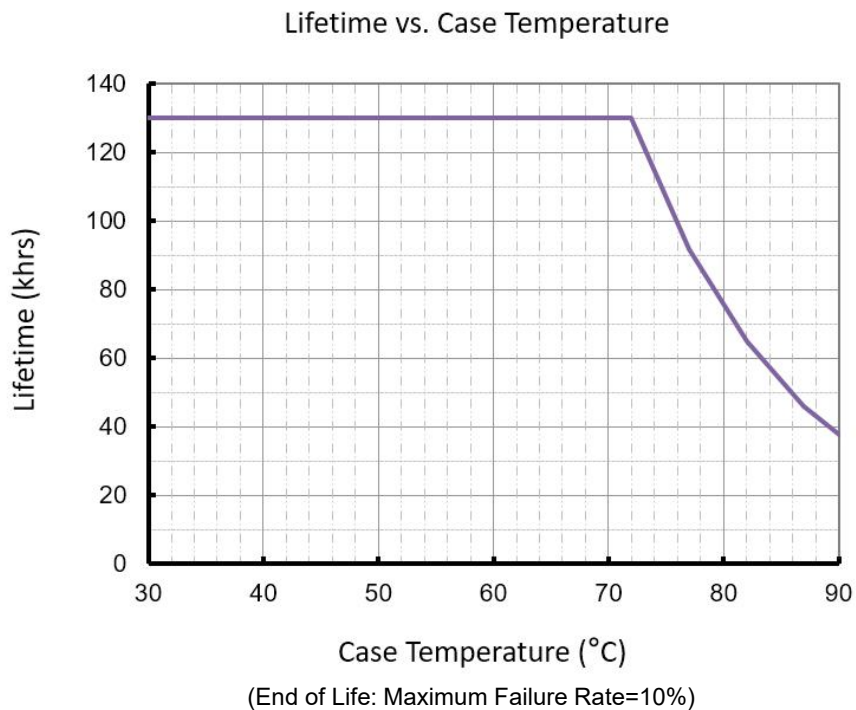
- Turn on NFC switch of cellphone, then open the APP by icon below.



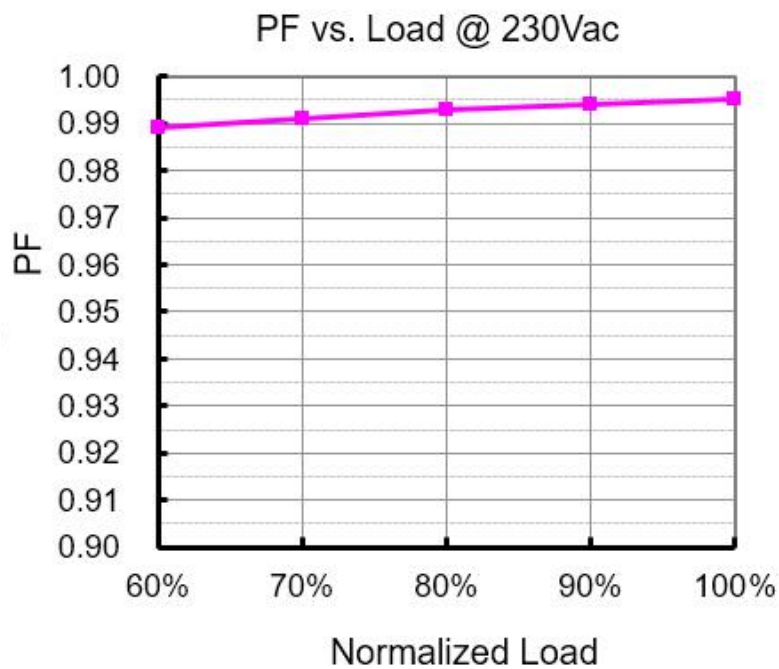
uPowerTek
Airset



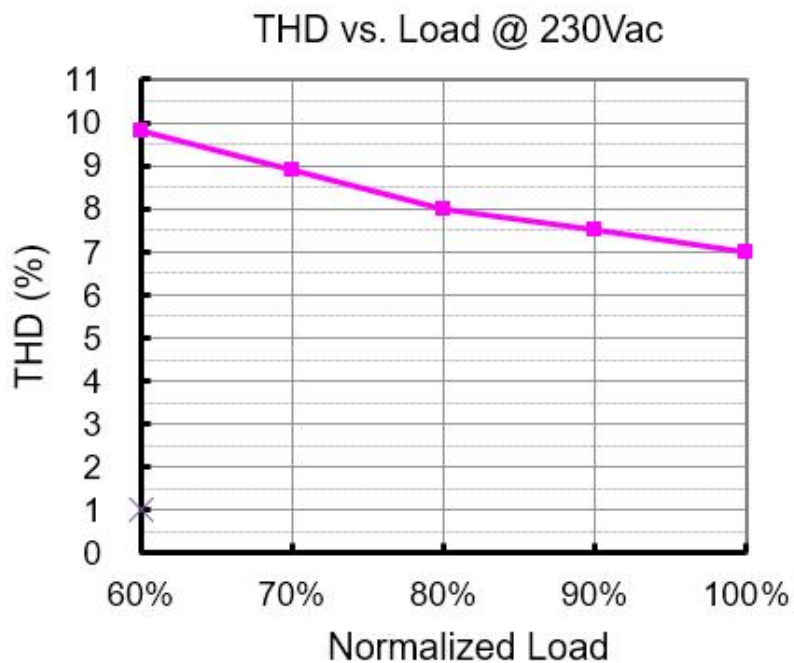
■ Lifetime vs. Case Temperature



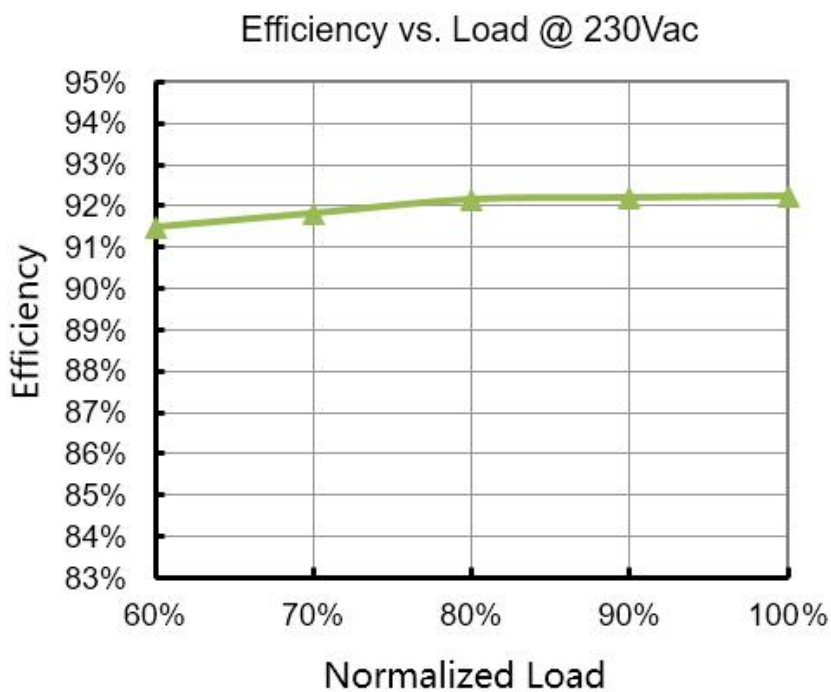
■ Power Factor vs. Load



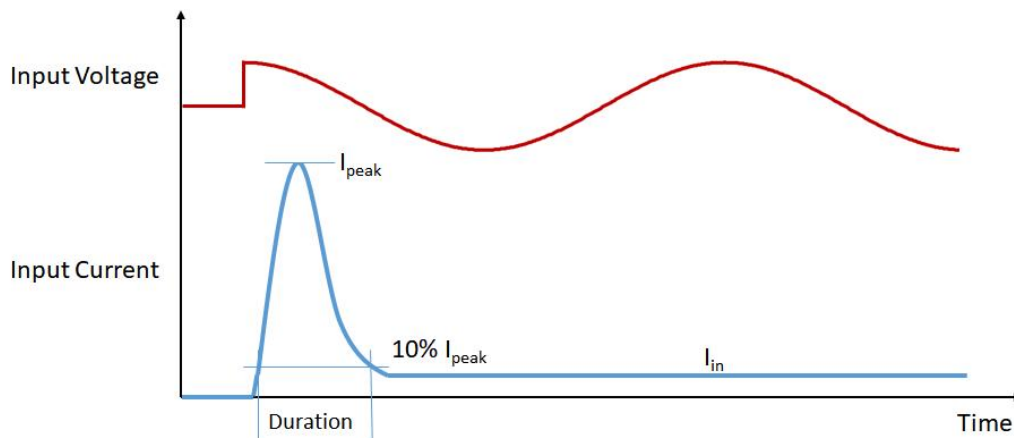
THD vs. Load



Efficiency vs. Load



■ Inrush Current



Input Voltage	I_{peak}	Duration
230Vac	62.8A	809us

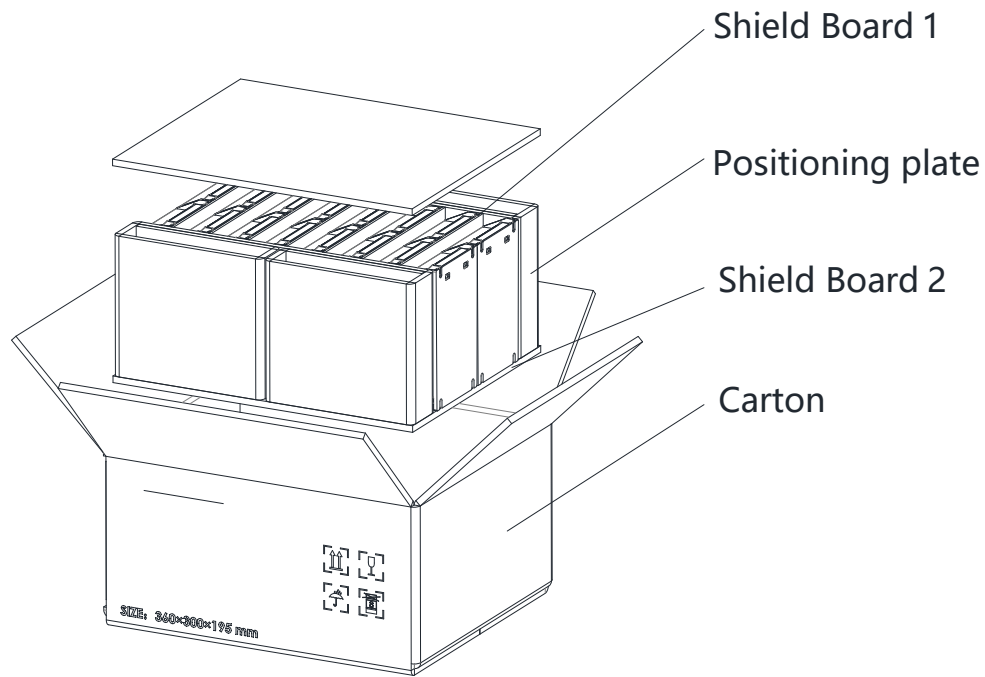
Please contact with us for MCB calculation and waveforms.

■ Dielectric Strength

Unit: Vac	Input	Output	NTC/Dimming/Vaux (SELV)	Case/PE
Input	-	3750	3750	1554
Output	3750	-	1554	1554
Dimming/Vaux/NTC (SELV)	3750	1554	-	1554
Case/PE	1554	1554	1554	-

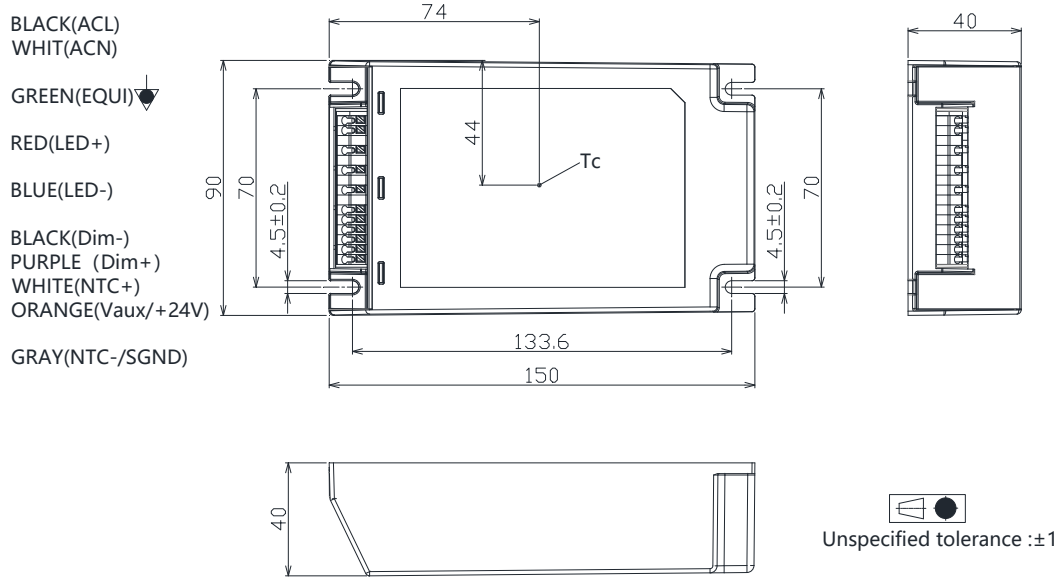
■ Packaging Information

Typical Carton Dimension(L×W×H)	360×300×195 mm
Shield Board 1	7pcs/carton
Positioning plate	2pcs/carton
Shield Board	2pcs/carton
LED Drivers	16pcs/carton
Net Weight	12.6kg/carton
Gross Weight	11.8kg/carton

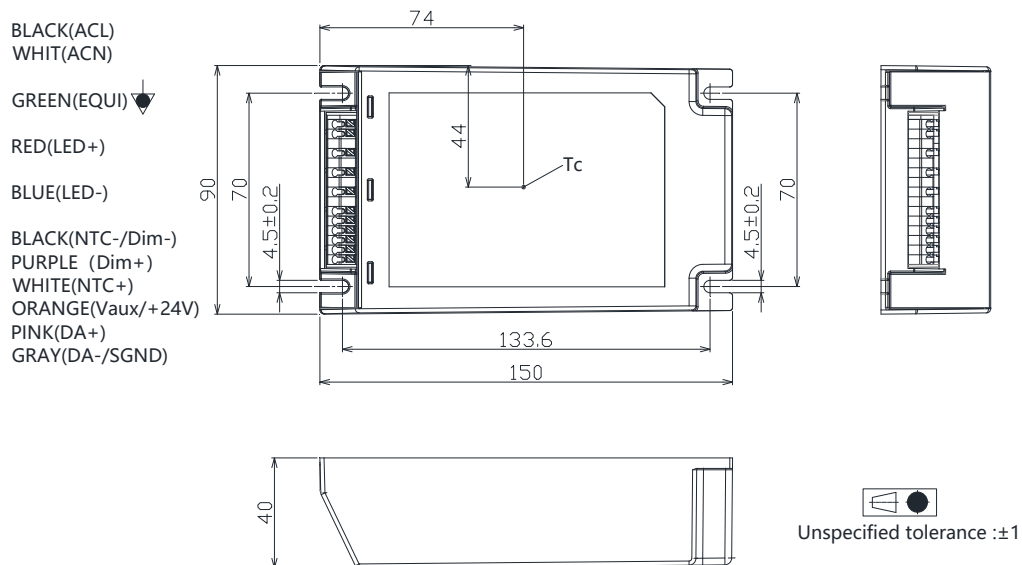


■ Mechanical Design and Tc Point

- APD-165-Cxxx-ARE



- APD-165-Cxxx-ERE



■ Output Operation Range

Model	Typical Set Output Current (mA)	Max Output Power (W)	Output Voltage Min (V)	Output Voltage Max(V)	Minimum Dimming Current (mA)
-C105	1050	165	94	157	105
	1000	165	99	165	100
	950	165	104	174	95
	900	165	110	183	90
	850	165	116	194	85
	800	165	124	206	80
	750	165	132	220	75
	700	165	141	236	70
	630	165	157	262	63
	600	157	157	262	60
	550	144	157	262	55
	500	131	157	262	50
	450	118	157	262	45
	400	105	157	262	40
	350	92	157	262	35
	300	79	157	262	30

	63	17	157	262	63

■ Revision History

Revision	Date	Contents
A	2022-07-22	1. New release
B	2022-10-27	1. Mechanical design and Tc point updated. 2. Packaging information updated.
C	2022-12-09	1. Mechanical data updated.
D	2023-07-14	1. Update leakage current