Quantum Power GmbH

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LED DRIVER OUTDOOR
CONSTANT CURRENT
DIMMABLE

QP-150H-V214A-1050

QP-150H-V214A-1050

0- 10V/ 1- 10V/ 10V PWM/ 100K resistor dimming driver is one of the constant current dimming LED driver developed by my company with high power factor, high efficiency, high precision, the use of the efficient stable low loss switch control chip and the high performance components makes it with low noise, energy saving, environmental protection, long life and other characteristics. 0 / 1-10V digital dimming driver adopts standard signal interface, which can match all 0-10V / 1-10V control systems and dimmers in the market. Unique design slow light and slow off function, experience more comfortable lighting, safe and convenient large aperture terminal.

APPLICATION

- Road lighting
- Industrial lighting
- Venue lighting Floodlight lighting
- Landscape lighting、Plant lighting

FEATURES

- Class I structure
- Input voltage: 120-277 V ~ 50/60 Hz
- Efficiency :92%(Typ.)
- Constant power drive and constant current output control mode
- Metal shell structure, protection grade: IP67
- Lightning protection level: differential mode 6kV, common mode 15kV
- Function selection:
  - Output current is adjusted by external potentiometer (A version only)
  - Input over-voltage protection (only P version optional)
  - Isolated 3 in 1 dimming (X/P version only)
  - Auxiliary source: 12V/300mA (X version only)

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MODELLIST

Model NO.	Input voltage	Output power	Output voltage	The default current	Eff.	T.H.D	PF
QP-150H-V214A-1050	120-277V 50/60Hz	150W	95-214Vdc	0.7A	≥92.3%	≤10%	≥0.95

Note

1.Testconditionsoftheaboveparameters:Ta=25

2.Whentheinputislessthan108Vac 10%,theoutputpowergraduallydecreases.
Whentheinput120-277Vac,ratedpower150W.Pleasereferto
“THEOUTPUTPOWERVSINPUTVOLTAGE”curvechartfordetails.

3.Pversioncanbeequippedwithinputover-voltageprotectionfunction.

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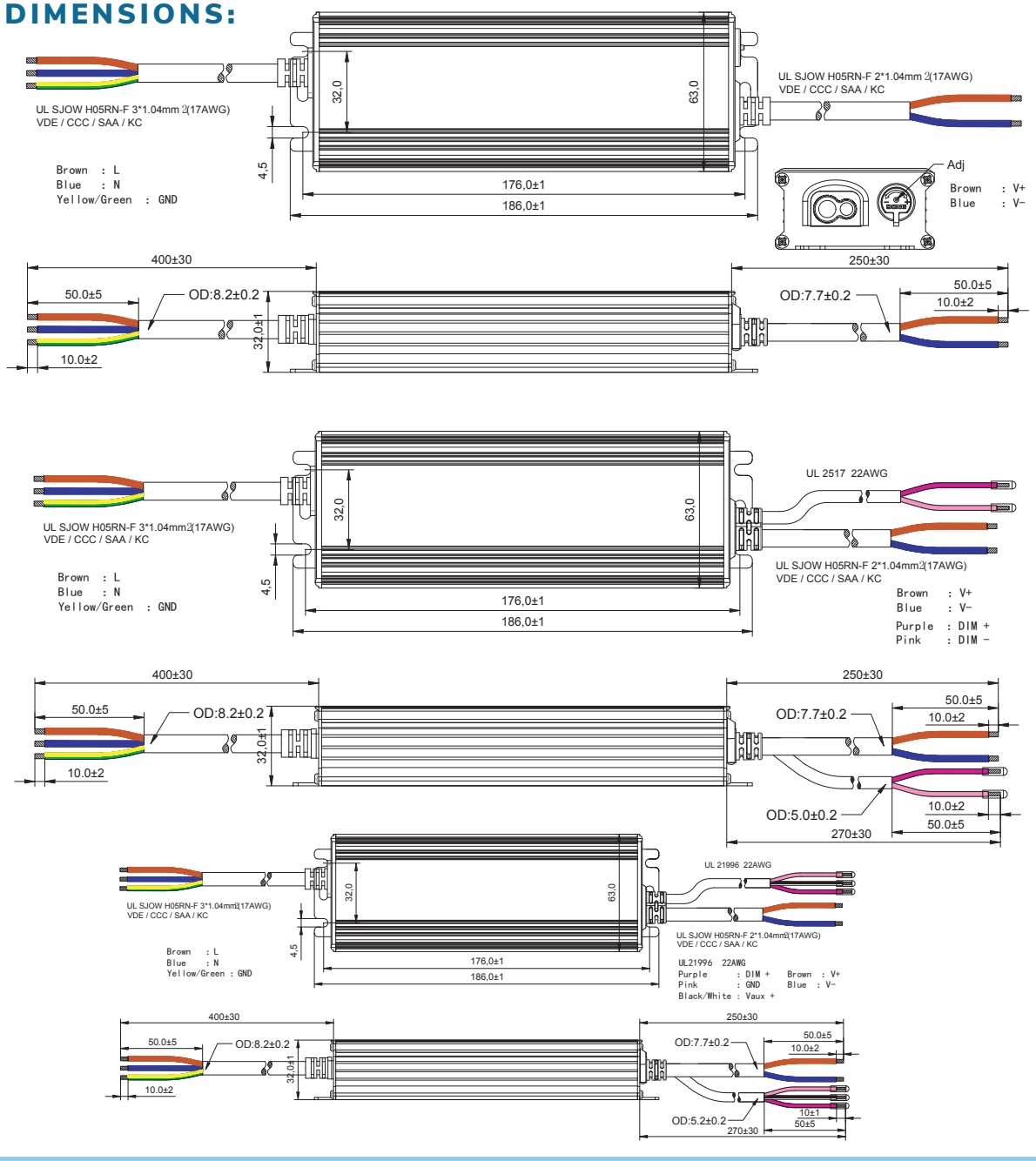
DIMENSIONS:



QP-150H-V214A-1050

INPUT CHARACTERISTIC:

Parameter	Min	Typ.	Max	Note
Rated input voltage	120Vac 150Vdc	230Vac	277Vac 420Vdc	
Input voltage range	108Vac	-	305Vac	
Rated frequency	47Hz	50/60Hz	63Hz	
Power factor	0.95	-	-	@230Vacfullload,ratedinputvoltage
Power factor	0.9	-	-	80%-100%load,120-277VACinput
T.H.D.	-	-	10%	@230Vacfullload
T.H.D.	-	-	20%	80%-100%load,120-277VACinput
Input current	-	-	1.5A	@120Vacfullload
Inrush current	-	-	70A	230Vac,coldstart(25 ℃)

QP-150H-V214A-1050

OUTPUT CHARACTERISTIC:

Parameter	Min	Typ.	Max	Note
Rated current QP-150H-V214A-1050	- -	0.7A	- -	
Output current range QP-150H-V214A-1050	1.7A 0.5A	- -	4.2A 1.05A	
Output voltage range QP-150H-V214A-1050	95V	-	214V	
Rated power(90-120Vac)	-	75W	150W	Thederatingbeginswhentheinput voltageislessthan108Vac ±10%
Rated power(120-277Vac)	-	150W	-	
No-load voltage QP-150H-V214A-1050	-	-	250V	
Efficiency@120Vac QP-150H-V214A-1050	88.0%	90.0%	-	fullload@120Vac

QP-150H-V214A-1050

OUTPUT CHARACTERISTIC:

Parameter	Min	Typ.	Max	Note
Efficiency@230Vac QP-150H-V214A-1050	90.8%	92.3%	-	full load @230Vac
Output Current Ripple	-	5% Iomax	-	100% load , 20 MHz BW ; Ripple =rms/ average
Accuracy of output current	-5%	-	+5%	full load
Line regulation	-3%	-	+3%	full load
Load regulation	-3%	-	+3%	full load
Starting time	300 ms	-	1000 ms	Full load@120-277Vac
Auxiliary source output voltage	10.8V	12V	13.2V	-
Auxiliary source output current	0 mA	-	300 mA	Reference ground is “Dim -”
Auxiliary source output transient peak current @6W	-	-	500 mA	In a 5.0ms cycle, the maximum duration of the maximum peak current of 500mA is 2ms, and the average value must not exceed 250mA

Note: 1. The output current range is limited by the input and output voltage, please refer to “I-V WORKING AREA” for details.

2. When the output voltage is in the constant power range, the current accuracy is -5%-+5%; when the output voltage is below the constant power range, the current accuracy is -10%-+10%;

DIMMING CHARACTERISTIC:

Dimming function		Min	Typ.	Max	Instructions
0-10V Dimming (Optional)	Safe applied voltage range	0V	-	12V	Whentheexternalvoltageis ≥12V,thedimmingwillfail
	Dimming output range	0%	-	100%	-
	Rated dimming voltage range	0V	-	10V	Itcanbesettonegative dimmingmodethrough programsetting
PWM Dimming (Optional)	PWM high level	9.5V	-	10.5V	-
	PWM low level	0	-	0.3V	-
	PWM frequency band	300Hz	-	2000Hz	-
	PWM duty cycle	0%	-	100%	Outputfullpowerat99%duty cycle
Resistor Dimming (Optional)	External resistance value	0KΩ	-	100KΩ	-
	Dimming output range	0%	-	100%	-
Multiple time-controlled dimming (optional)	MCU control		Set segment dimming function through program		Workingmode
	Timer control		Itisdividedintosixsegments bydefaultandcanbe customized		

PROTECTION

Function		Function instructions			
Input over-voltage protection (P version only)	Input over-voltage protection	Min.	Typ.	Max.	Notes
		320 Vac	340 Vac	350 Vac	Turnofftheoutputwhentheinputvoltageexceeds protectionvoltage.
	Input over-voltage recovery	Min.	Typ.	Max.	Notes
		300 Vac	320 Vac	340 Vac	Thedriverwillrestartautomaticallywhentheinput voltagefallsbelowrecoveryvoltage.
Input under-voltage protection		Whentheinputvoltageislessthan108Vac ± 10%,theoutputpowergraduallydecreases.			
Output overload protection		Protectionmode:hiccupmode,recoversautomaticallyafterfaultconditionisremoved.			
Output short circuit protection		Hiccupmode:recoversautomaticallyafterfaultconditionisremoved			
Over temperature protection		Self-recoverytype： whenthehousingtemperatureisgreaterthan90 ℃,theoutputpower decreasesgradually.			
Output over-voltage protection		Protectionmode:Hiccupmodeorclampedinoutputhighestvoltage,theproductisnotdamaged , LEDdriverworksnormallyafterfaultconditionisremoved.			

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ENVIROMENT

Environmental categories	Parameter
Working temperature	-40~+55 ℃@200-277Vac,-40~+45 ℃ @120-200Vac(referto"LifeCurve")
Max.Case Temp.	-40~90 ℃
Working humidity	20~95%RH, noncondensing
Storage temperature、humidity	-40 ~ +80℃, 10 ~ 95% RH
Resistant to vibration	10~500Hz,5G12min/cycle,X,Y,Zaxis72mineach
MTBF	230Khrsmin.MIL-HDBK-217F(Ta=25 ℃)
Lifetime	75,000hours@Tcase,230Vac,80%Load,Pleasereferto"TcaseVSLifetime"section

SAFETY AND EMC

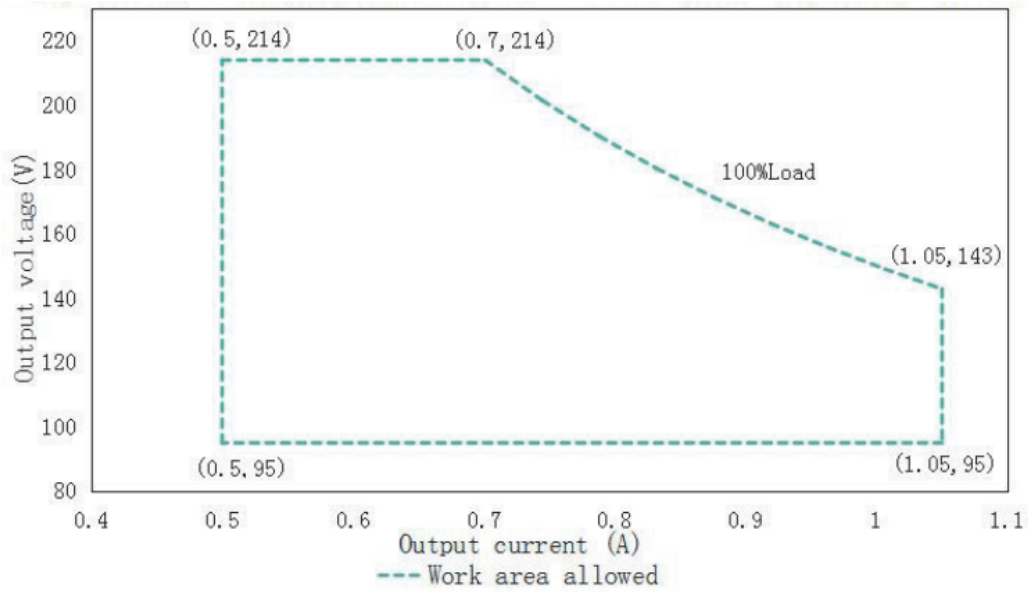
Safety categories	Standard
Safety	GB19510.1、GB19510.14、EN61347-1、EN61347-2-13、IEC61347-1、IEC61347-2-13、AS/NZS61347.1、AS61347.2.13、EN62384 、 UL8750;
EMC	EN55015 、EN61000-3-2 、GB/T17743 、GB17625.1、 EN61000-3-3
Surge protection	DifferentialmodeL-N±6KV （2ohm ）,commonmodeL ，N-PE±15KV(12ohm) ；RefertoIEC61000-4-5 2014CriterionB
High-pot test	I/P-O/P:3.75KVac I/P-PE :1.5KVac O/P-PE : 0.5KVac I/P-DIM:1.5KVac O/P-DIM:1.5KVac
Insulation impedance	I/P-PE:100MΩ/500VDC;I/P-O/P:100MΩ/500VDC/25 ℃/70%RH
Leakage current	<0.7mA@277Vac

SAFETY AND EMC

Note:

The driver is considered as a component that will be operated in combination with the final equipment.
Since EMC performance will be affected by the complete installation,the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.

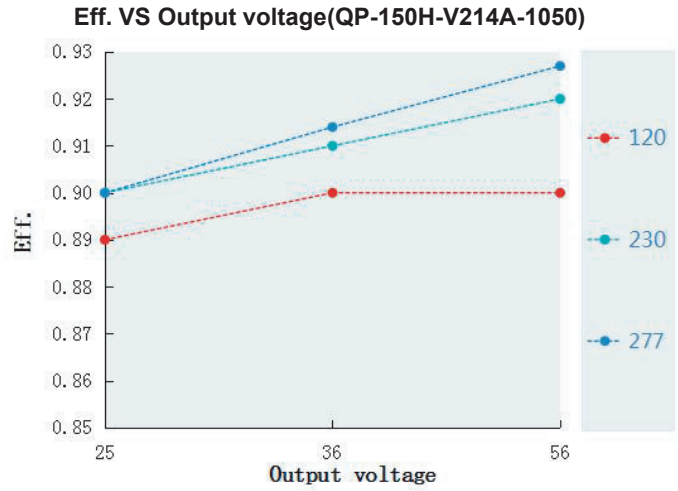
I-V WORKIG AREA

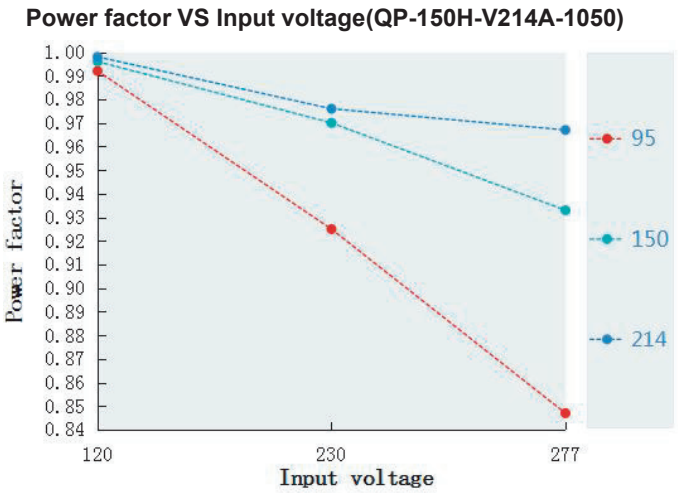


Load	Output								
Load working Voltage	95V	120V	135V	143V	165V	180V	190V	200V	214V
Io_MAX	1.05A	1.05A	1.05A	1.05A	0.91A	0.83A	0.79A	0.75A	0.7A
Po_MAX	99.75W	126.0W	141.75W	150W	150W	150W	150W	150W	150W

QP-150H-V214A-1050

I-V WORKIG AREA





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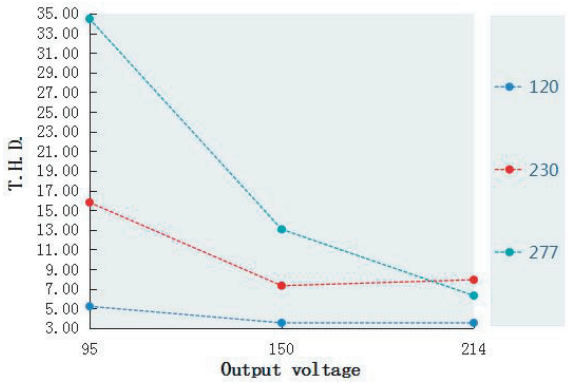
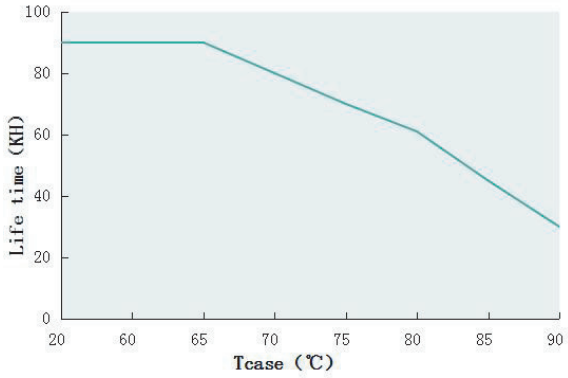
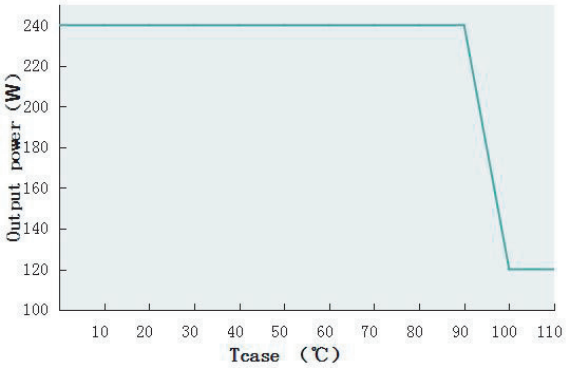
T.H.D. VS Output voltage(QP-150H-V214A-1050)



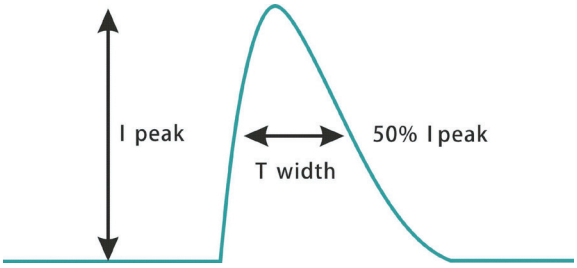
Tcase VS Lifetime(QP-150H-V214A-1050)



Output power VS Tcase (QP-150H-V214A-1050)



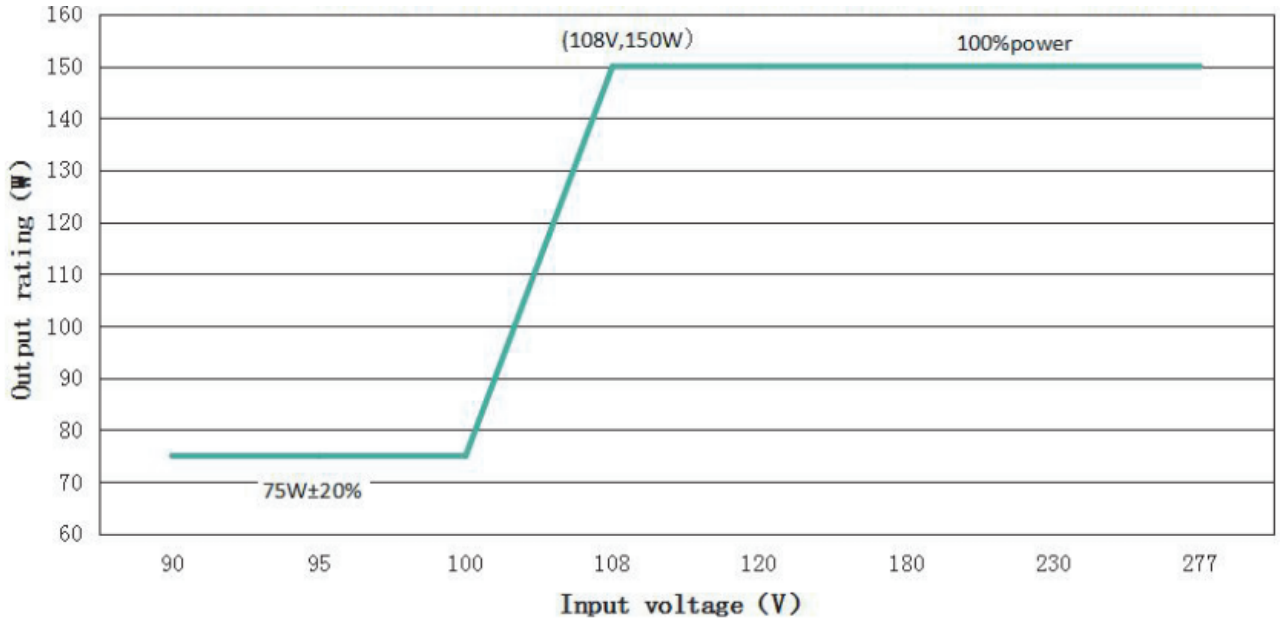
Inrush current(QP-150H-V214A-1050)

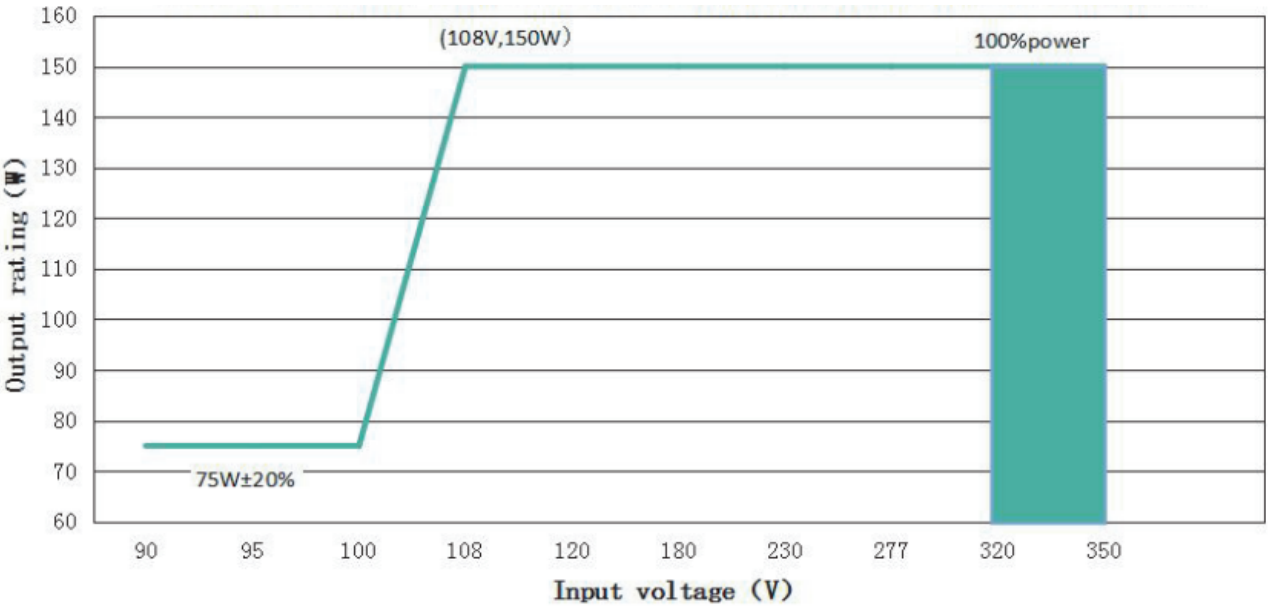


Input voltage	Peak current	T(@50% Peak current)
120Vac	28A	278us
230Vac	56A	236us
277Vac	68A	262us

QP-150H-V214A-1050

OUTPUT POWER VS INPUT VOLTAGE





OUTPUT POWER VS INPUT VOLTAGE

QP-150H-V214A-1050 (When the output voltage is 214Vdc, the rated output current value and output power corresponding to different input voltage)								
Input Voltage	90Vac	95Vac	100Vac	108Vac	120Vac	180Vac	230Vac	277Vac
Iout	0.42A	0.42A	0.42A	0.7A	0.7A	0.7A	0.7A	0.7A
Pout	75W	75W	75W	150W	150W	150W	150W	150W

Note:

Output power will decrease gradually when input voltage less than 108Vac±10%;When the input voltage is 90Vac,the output power range is 75W±20%.

Dimming operation

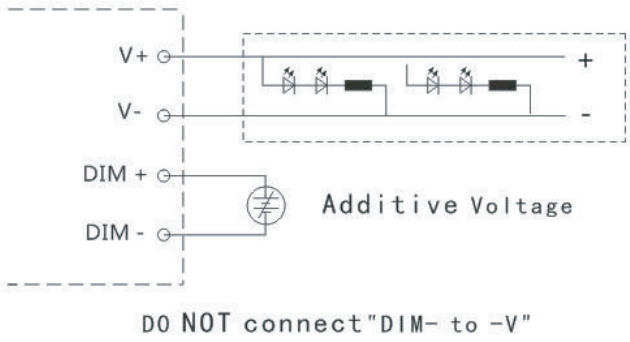
※ Three-in-one dimming function (X version only)

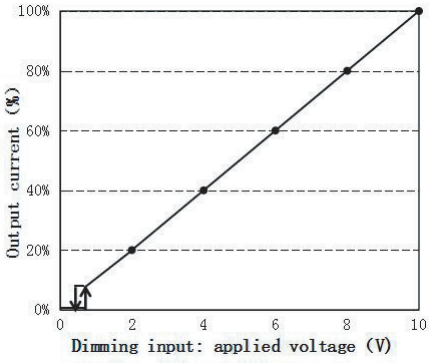
A. Connect a resistor 0-100K or 0-10V DC voltage or 10V PWM signal between DIM+ and DIM- to adjust the output current.

B. Output current of dimming port: 100uA (typical value).

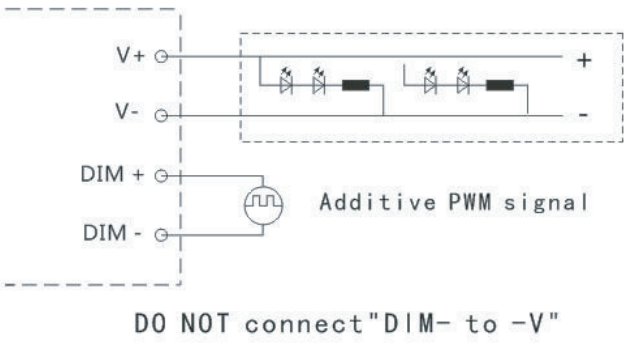
DIMMING OPERATION

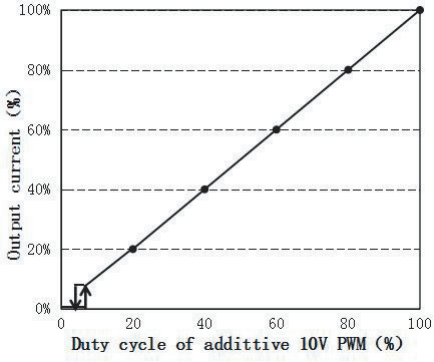
◎ With an applied voltage of 0-10V:





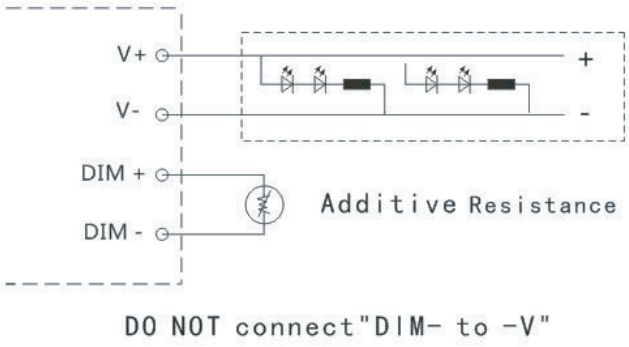
◎ Applying additive 10V PWM signal（Frequency range：300Hz-2K Hz）：

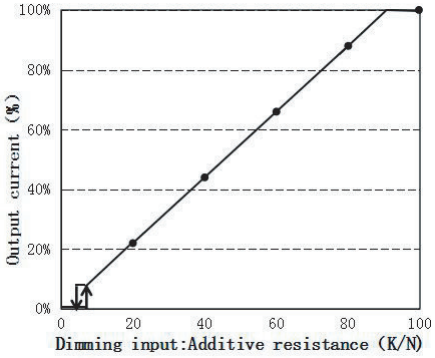




DIMMING OPERATION

◎ With an additional 0-100K resistor:





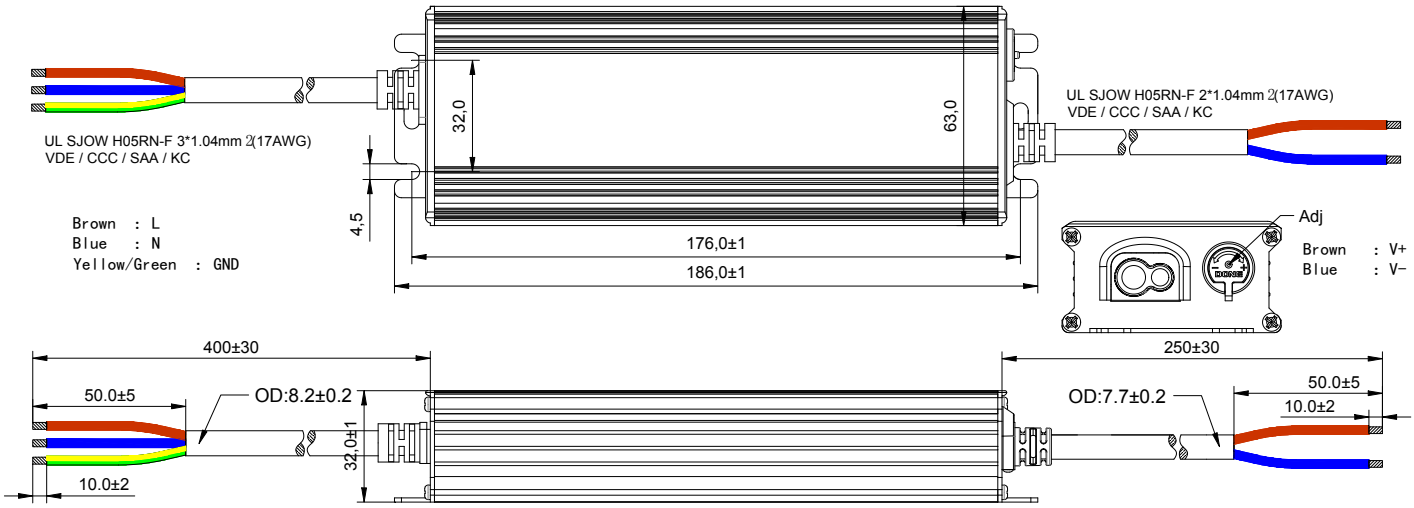
Note:

1. Positive and negative logic dimming can be programmed.
2. Dimming off only applies to positive logic. For other requirements, please contact technical personnel.

QP-150H-V214A-1050

Mechanical specification

Size（mm）	L186*W63*H37



Weight

Weight	800 g