

## **DH250 Series**

250W Single Output LED Driver



#### ■ Features

- Constant voltage and current output
- Universal AC input 100~305VAC
- Built-in active PFC function
- High efficiency
- Output protections: Short circuit/Over voltage/Over load
- Fixed derating-cutoff type temperature protection
- Cooling by free air convection
- Digital, analog or DALI control dimming function
- Suitable for inside of the outdoor LED luminaries
- IP65 with Vo/Io adjusting screws, IP67 without Vo/Io adjusting screws
- Compliance to worldwide safety regulations for lighting
- Suitable for dry/damp/wet locations











**FC** 1P65/67







#### General functions

Output Power	250W	Input Frequency	50/60Hz
Input Voltage Range	100~305Vac	Operating Temperature	-40°C~+60°C
Storage Temperature	-45°C~+85°C	Safety & EMC	UL8750, IEC61347, EN55015
Turn-on Delay Time	3.0S max.	Inrush Current	50A at 230Vac, Cold start
Over Temp Protection	Fixed derating-cutoff type temperature protection	Waterproof	IP65/IP67



# ■ Detailed Specification

### TABLE 1:

	Model	DH250-054S463X-YY	DH250-048S520X-YY	DH250-042S600X-YY	DH250-036S700X-YY	DH250-030S833X-YY	
	DC Voltage	54Vdc	48Vdc	42Vdc	36Vdc	30Vdc	
	Constant Current Operation Voltage note.5	33~54Vdc	29~48Vdc	26~42Vdc	22~36Vdc	18~30Vdc	
	Rated DC Current	4630 mA	5200 mA	6000 mA	7000 mA	8330 mA	
	Current Range	0~4630 mA	0~5200 mA	0~6000 mA	0~7000 mA	0~8330 mA	
Output	Dimming Current Range	10~100% rated output current (≥50% rated output voltage)					
Output	Ripple and Noise	200mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p	
	Voltage ADJ. Range note.3	49~57Vdc	43~50Vdc	26~42Vdc 22~36Vdc 6000 mA 7000 mA 0~6000 mA 0~7000 mA put current (≥50% rated output voltage) 200mVp-p 38~44Vdc 32~38Vdc 3000~6000 mA 3500~7000 m ±1% ±1% ±0.5% ±0.5% 93% 93% 0.97/230Vac 0.97/230Vac p; Dimmer type: Short-circuit power ≤10 re-power on to recover  7. Z axes. 100ve discharge tube); O/P-FG: 2.00KVac 770% RH s B EN61000-3-3 550204, EN61547, EN55024  10 s per MIL-HDBK-217F 10 r 48 hours  11 load and 25°C of ambient temperature pair-wire terminated with a 0.1μf & 47μ 1/pe only). 1. This is the suitable operation region for no. 1. arracteristics for more details. 17000.1, FCC part18. 18 rer supply may lead to increase of the se bination with final equipment. Since EM	32~38Vdc	27~32Vdc	
	Current ADJ. Range note.3	2315~4630 mA	2600~5200 mA	3000~6000 mA	3500~7000 mA	4165~8330 mA	
	Voltage Tolerance	±1%	±1%	±1%	±1%	±1%	
Input  Output Protection  Environmental	Voltage Line Regulation	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
	Voltage Load Regulation	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
	Efficiency	94.0%	93.5%	93%	93%	93%	
L.	Power Factor	0.97/230Vac	0.97/230Vac	0.97/230Vac	0.97/230Vac	0.97/230Vac	
Input	AC Current	3.0A/100Vac, 1.4A/230Vac					
	Leakage Current	<0.75mA/230Vac; <0.5	5mA/120Vac				
	Over Current	Constant current limit	ing				
·	Short Circuit	Non-dimmer type: recover automatically at hiccup; Dimmer type: Short-circuit power ≤10W.					
Protection	Over Voltage	age Shut down at 140% Vo and latch off o/p voltage, re-power on to recover g Humidity 20~95% RH, non-condensing umidity 10~95% RH					
	Operating Humidity						
Environmental	Temperature Coefficient ±0.03%/°C (0~50°C)						
	Vibration	10~300Hz, 1G, Period	for 60min, each along X	Y、Z axes.	±0.5%  93%  0.97/230Vac  Short-circuit power ≤10W. ecover  be); O/P-FG: 2.00KVac		
	Withstand Voltage	ge I/P-OP: 3.75KVac; IP-FG: 1.56KVac/2.00KVac (remove discharge tube); O/P-FG: 2.00KVac					
	Isolation Resistance	IP-OP, IP-FG, O/P-FG: 100M Ohms/500Vdc/25°C/70% RH					
Safety & EMC	EMC Interference	Compliance to EN55015, EN55022 (CISPR22) Class B					
	EMC Emission	Compliance to EN61000-3-2 Class C (≥50%load); EN61000-3-3					
Withstand Voltage I/P-OP: 3.75 KVac; IP-FG: Isolation Resistance IP-OP, IP-FG, O/P-FG: 100  EMC Interference Compliance to EN55015,  EMC Emission Compliance to EN61000-  EMC Immunity Compliance to EN61000-	ompliance to EN61000-4-2, 3, 4, 5, 6, 8, 11; ENV50204, EN61547, EN55024						
	Authentication	UL/ CE/RoHS/REACH					
	MTBF	173k Hrs at full load and 30°C ambient conditions per MIL-HDBK-217F					
Otherus	Input Over-voltage	Can survive input over	-voltage stress of 320Vac	for 48 hours			
Others	Dimensions (mm)	249×68×41.3					
	Max. Case Temp.	Tc max=80°C					
	Net Weight	1.24Kg/pcs					
	1. All parameters NOT specia	ally mentioned are meas	ured at 230Vac input, rat	ed load and 25°C of amb	pient temperature.		
	2. Ripple & noise are measured: at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1µf & 47µf parallel capacitor.						
	3. Output voltage and current can be adjusted by internal potentiometer ("A" type only).						
	4. Tolerance: includes set up tolerance, voltage line regulation and voltage load regulation.						
Note	5. Constant current operation region is within 60% ~100% rated output voltage. This is the suitable operation region for LED related applications, but please reconfirm special electrical requirements for some specific system design.						
	6. Derating may be needed under low input voltages. Please check the Static Characteristics for more details.						
	7. Safety and EMC design refer to EN60598-1, subject 8750 (UL), CNS15233, GB7000.1, FCC part18.						
	8. Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.						
	9. The power supply is considered as a component that will be operated in combination with 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.						
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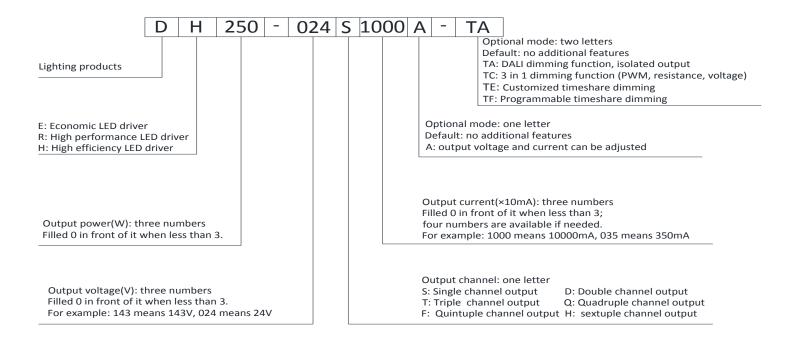


### TABLE 2:

	Model	DH250-024S1000X-YY	DH250-020S1250X-YY	DH250-015S1500X-YY	DH250-012S1600X-YY		
	DC Voltage	24Vdc	20Vdc	15Vdc	12Vdc		
	Constant Current Operation Voltage note.5	15~24Vdc	12~20Vdc	9~15Vdc	8~12Vdc		
	Rated DC Current	10000 mA	12500 mA	15A	16A		
	Current Range	0~10000 mA	0~12500 mA	0~15A	0~16A		
	Dimming Current Range		10~100% rated o	utput current (≥50% rate	d output voltage)		
Voltage	Ripple and Noise	150mVp-p	200mVp-p	200mVp-p	200mVp-p		
	Voltage ADJ. Range note.3	22~25Vdc	18~21Vdc	14~16Vdc	12Vdc  8~12Vdc  16A  0~16A  % rated output voltage)  200mVp-p  11~13Vdc  8~16A  ±1%  ±0.5%  91%  0.97/230Vac  Short-circuit power ≤10W. ecover  Short-directive power ≤10W. ecover  abe); O/P-FG: 2.00KVac  of ambient temperature. hated with a 0.1µf & 47µf parallel power should be operation region for LED to more details. hated to increase of the set up to the set u		
	Current ADJ. Range note.3	5000~10000 mA	6250~12500 mA	7.5~15A	8~16A		
	Voltage Tolerance	±1%	±1%	15Vdc 8~12Vdc  9~15Vdc 8~12Vdc  15A 16A  0~15A 0~16A  output current (≥50% rated output voltage)  200mVp-p 200mVp-p  14~16Vdc 11~13Vdc  7.5~15A 8~16A  ±1% ±1%  ±0.5% ±0.5%  91.5% 91.5%  91.5% 91.8  0.97/230Vac  0.97/230Vac  10ccup; Dimmer type: Short-circuit power ≤10W. age, re-power on to recover  XX. Y. Z axes.  (remove discharge tube); O/P-FG: 2.00KVac  5°C/70% RH  Class B  add); EN61000-3-3  ENV50204, EN61547, EN55024  itions per MIL-HDBK-217F  fac for 48 hours  are doload and 25°C of ambient temperature. are depair-wire terminated with a 0.1µf & 47µf part (are for 48 hours)  are doload regulation. are considered as the set up combination with final equipment. Since EMC per combination with final equipment.	±1%		
DC Voltage   Rated I   Curren   Dimmi   Ripple   Voltage   Volta	Voltage Line Regulation	±0.5%	±0.5%	±0.5%	±0.5%		
	Voltage Load Regulation	±0.5%	±0.5%	±0.5%	±0.5%		
	Efficiency	93%	92%	91.5%	91%		
I manufacture of the second	Power Factor	0.97/230Vac	0.97/230Vac	0.97/230Vac	0.97/230Vac		
Efficiency   93%   92%   91.5%							
	Leakage Current	<0.75mA/230Vac; <0.5	mA/120Vac				
	Over Current	Constant current limiti	ng				
•	Short Circuit	Non-dimmer type: recover automatically at hiccup; Dimmer type: Short-circuit power ≤10W.					
Trottetton	Over Voltage	Shut down at 140% Vo	and latch off o/p voltage	e, re-power on to recover	r		
	Operating Humidity	20~95% RH, non-condensing					
Environmental	Storage Humidity	10~95% RH					
Environmental	Temperature Coefficient	±0.03%/°C (0~50°C)					
	Vibration	10~300Hz, 1G, Period 1	for 60min, each along X、	Y、Z axes.	12Vdc  8~12Vdc  16A  0~16A  6 rated output voltage)  200mVp-p  11~13Vdc  8~16A  ±1%  ±0.5%  91%  0.97/230Vac  Short-circuit power ≤10W.  cover  pel; O/P-FG: 2.00KVac  of ambient temperature.  ated with a 0.1µf & 47µf parallel  ple operation region for LED related with a 0.1µf & 47µf parallel  and to increase of the set up time.  all equipment. Since EMC perform		
	move discharge tube); O	/P-FG: 2.00KVac					
	Isolation Resistance	IP-OP, IP-FG, O/P-FG: 100M Ohms/500Vdc/25°C/70% RH					
Current ADJ. Range note.3  Voltage Tolerance ±1%  Voltage Line Regulation ±0.5%  Voltage Load Regulation ±0.5%  Efficiency 93%  Power Factor 0.97/230Vac  AC Current 3.0A/100Vac, 1.4, Leakage Current Constant current  Short Circuit Non-dimmer type Over Voltage Shut down at 140  Protection Operating Humidity 20°95% RH, non- Storage Humidity 10°95% RH  Temperature Coefficient ±0.03%/°C (0°50  Vibration 10°300Hz, 1G, Pe Withstand Voltage I/P-OP: 3.75KVac; Isolation Resistance IP-OP, IP-FG, O/P- EMC Interference Compliance to EN EMC Immunity Compliance to EN EMC Imput Over-voltage Can survive input Dimensions (mm) 249×68×41.3  Max. Case Temp. Tc max=80°C Net Weight 1.24Kg/pcs  1. All parameters NOT specially mentioned are re 2. Ripple & noise are measured: at 20MHz of ba 3. Output voltage and current can be adjusted by 4. Tolerance: includes set up tolerance, voltage 5. Constant current operation region is within 6	EMC Interference	Compliance to EN55015, EN55022 (CISPR22) Class B					
	Compliance to EN6100	mpliance to EN61000-3-2 Class C (≥50%load); EN61000-3-3					
	EMC Immunity	Compliance to EN6100	0-4-2, 3, 4, 5, 6, 8, 11; EN	NV50204, EN61547, EN55	5Vdc 8~12Vdc  5A 16A  15A 0~16A  t (≥50% rated output voltage)  nVp-p 200mVp-p  6Vdc 11~13Vdc  15A 8~16A  1.% ±1%  1.5% ±0.5%  5.% ±0.5%  230Vac 0.97/230Vac  Trype: Short-circuit power ≤10W. On to recover  arge tube); O/P-FG: 2.00KVac  13-3  161547, EN55024  HDBK-217F  s  25°C of ambient temperature.  terminated with a 0.1µf & 47µf paral  1. e suitable operation region for LED recover of the set up tire with final equipment. Since EMC perfectivity final equipment. Since EMC perfections are suitable operation.		
	Authentication	UL/ CE/RoHS/REACH		55022 (CISPR22) Class B Class C (≥50%load); EN61000-3-3			
	MTBF	173k Hrs at full load and 30°C ambient conditions per MIL-HDBK-217F					
Others	Input Over-voltage	Can survive input over-	±0.5% ±0.5% 91%  92% 91.5% 91%  0.97/230Vac 0.97/230Vac 0.97/230Vac  30Vac  0.5mA/120Vac  itting  ecover automatically at hiccup; Dimmer type: Short-circuit power ≤10W.  /o and latch off o/p voltage, re-power on to recover  idensing  d for 60min, each along X、Y、Z axes.  -FG: 1.56KVac/2.00KVac (remove discharge tube); O/P-FG: 2.00KVac  100M Ohms/500Vdc/25°C/70% RH  1015, EN55022 (CISPR22) Class B  1000-3-2 Class C (≥50%load); EN61000-3-3  1000-4-2, 3, 4, 5, 6, 8, 11; ENV50204, EN61547, EN55024  and 30°C ambient conditions per MIL-HDBK-217F  er-voltage stress of 320Vac for 48 hours  assured at 230Vac input, rated load and 25°C of ambient temperature.  width by using a 12" twisted pair-wire terminated with a 0.1µf & 47µf parallel capa internal potentiometer ("A" type only).  eregulation and voltage load regulation.  ~100% rated output voltage. This is the suitable operation region for LED related a r some specific system design.				
Power Factor   0.97/230Vac   0.97/230Vac   0.97/230Vac   0.97/230Vac   0.97/230Vac   AC Current   3.0A/100Vac, 1.4A/230Vac   Co.75mA/230Vac							
	Max. Case Temp.	Tc max=80°C					
Protection  Over Voltage  Shut down at 140% Vo and latch off o/p voltage, re-power on to 20°95% RH, non-condensing  Storage Humidity  10°95% RH  Temperature Coefficient  10°300Hz, 1G, Period for 60min, each along X. Y. Z axes.  Withstand Voltage  I/P-OP: 3.75KVac; IP-FG: 1.56KVac/2.00KVac (remove discharge Isolation Resistance IP-OP, IP-FG, O/P-FG: 100M Ohms/500Vdc/25°C/70% RH  EMC Interference  EMC Emission  Compliance to EN55015, EN55022 (CISPR22) Class B  EMC Immunity  Compliance to EN61000-3-2 Class C (≥50%load); EN61000-3-3  EMC Immunity  Compliance to EN61000-4-2, 3, 4, 5, 6, 8, 11; ENV50204, EN615  Authentication  UL/ CE/RoHS/REACH  MTBF  173k Hrs at full load and 30°C ambient conditions per MIL-HDB 173k Hrs at full load and 30							
	1. All parameters NOT specia	L. All parameters NOT specially mentioned are measured at 230Vac input, rated load and 25 °C of ambient temperature.					
	2. Ripple & noise are measured: at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a $0.1\mu$ f & 47 $\mu$ f parallel capacitor.						
	3. Output voltage and current can be adjusted by internal potentiometer ("A" type only).						
	4. Tolerance: includes set up tolerance, voltage line regulation and voltage load regulation.						
Note	5. Constant current operation region is within 60% ~100% rated output voltage. This is the suitable operation region for LED related applications, but please reconfirm special electrical requirements for some specific system design.						
	6. Derating may be needed under low input voltages. Please check the Static Characteristics for more details.						
	7. Safety and EMC design refer to EN60598-1, subject 8750 (UL), CNS15233, GB7000.1, FCC part18.						
	8. Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.						
	9. The power supply is considered as a component that will be operated in combination with 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.						

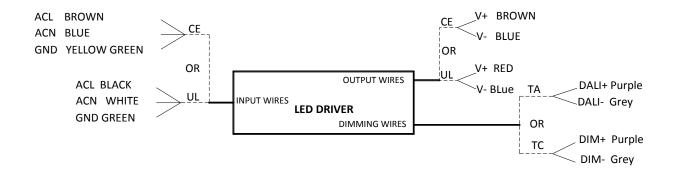


#### ■ Part number code



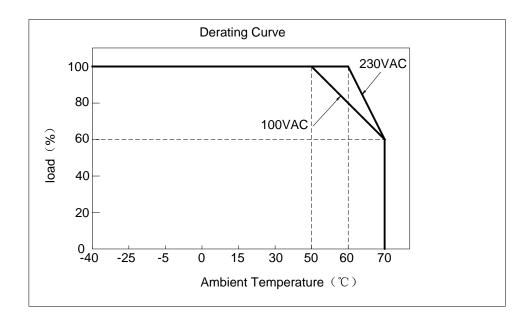
For example: DH250-024S1000A-TA means: high efficiency LED driver; output power 250W; output voltage 24Vdc; output current 10000mA; single output; output voltage and current can be adjusted; with DALI dimming function and isolated output.

### ■ wiring diagram

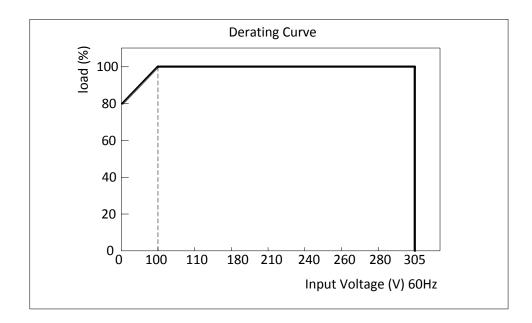




# ■ Derating Curve

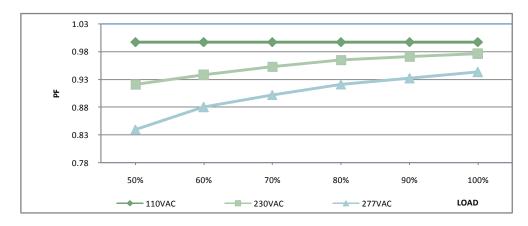


## ■ Static Characteristics

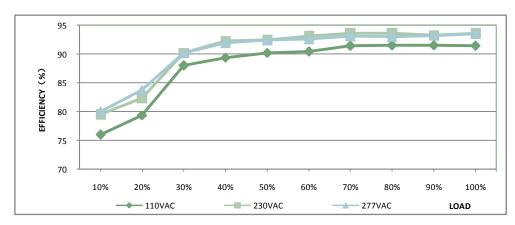




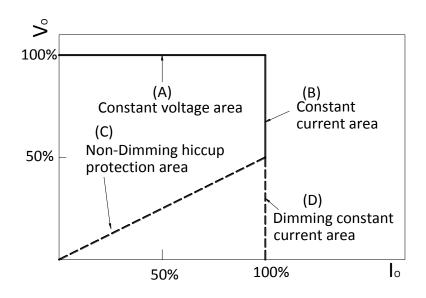
## ■ Power Factor Characteristic (DH250-024S1000)



## ■ EFFICIENCY vs LOAD (DH250-024S1000)

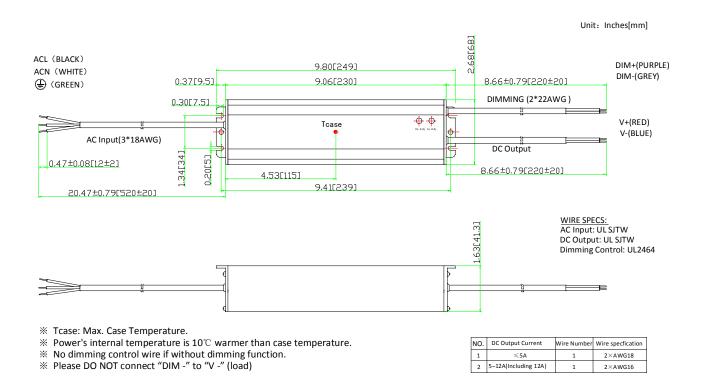


## ■ Typical LED power supply I-V curve





### ■ Mechanical Outline



## ■ "A" option

- a. Output voltage and current can be adjusted by internal potentiometer.
- b. IP65.
- c. These products shall be enclosed in the end product, when the unit provided with voltage and current adjustable holes.

## ■ "-TA" option: DALI dimming

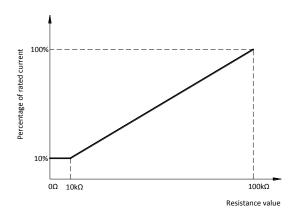
- a. DALI Testing Software: Please refer to <a href="www.impowercorp.com">www.impowercorp.com</a> for downloading.
- b. Percentage of rated current: 10%~100%.
- c. "TA" version LED driver shall work with a DALI Master and DALI Master control software.



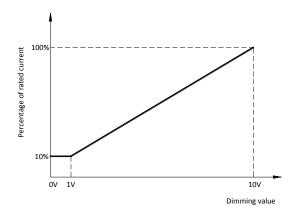


# ■ "-TC" option: 0-10V, resistance & PWM dimming

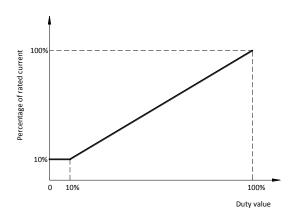
a. Reference resistance value for output current adjustment (Typical)



b. 0-10V dimming function for output current adjustment (Typical)



c. 10V PWM signal for output current adjustment (Typical): Frequency range: 200Hz~1.5KHz





#### Dimming control details:

Parameters		Minimum	Typical	Maximum
Dimming Type	Resistance	0kΩ	0-100kΩ	∞
	Voltage	-2V	0-10V	15V
	PWM(10%~100% f=200Hz~1.5KHz)	-2V	0-10V	15V
Dimming Current		-0.5mA	-	0.5mA

### ■ "-TE" option: Customized timeshare dimming.

- a. Different output current (10% 100% rate output current) can be set for different time periods.
- b. Maximum 4 sections is available. The minimum length is 0 to maximum 12 hours for each section.
- c. The parameter can't be changed after shipping.

### "-TF" option: Programmable timeshare dimming.

- a. Output current is programmable with the range of 10%~100% of rated output current.
- b. Maximum 4 sections timeshare dimming is available. The minimum length is 0 to maximum 12 hours for each section.

#### For example:

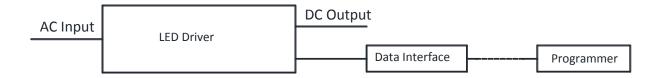
The first section: the time period is  $0^{\sim}1h$ , the output current is 40% of rated output current.

The second section: the time period is  $\underline{1h} \sim 4h$ , the output current is  $\underline{100\%}$  of rated output current.

The third section: the time period is  $4h^8h$ , the output current is 40% of rated output current.

The fourth section: the time period is  $8h^{12h}$ , output current is 60% of rated output current.

- c. The parameters are set by a programmer.
- d. The data interface is waterproof.

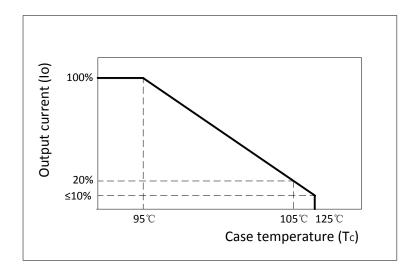


## ■ Input and output Dielectric strength

Isolation	Input Wires	Output Wires	Isolated Dimming Control Wires	Chassis
Input Wires	NA	3750	2000	1560/2000(remove discharge tube)
Output Wires	3750	NA	2000	2000
Isolated Dimming Control Wires	2000	2000	NA	2000
Chassis	1560/2000(remove discharge tube)	2000	2000	NA



■ Fixed derating-cutoff type temperature protection



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