

## **DR035 Series**

### 35W Single Output LED Driver



#### ■ Features

- Constant voltage and current output
- Universal AC input 100~305VAC
- Built-in active PFC function
- 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
- Class 2 power unit
- Compliance to worldwide safety regulations for lighting
- Suitable for dry/damp/wet locations











FC 1P65/67 8







#### General functions

Output Power	35W	Input Frequency	50/60Hz
Input Voltage Range	100~305Vac	Operating Temperature	-40°C~+60°C
Storage Temperature	-45°C~+85°C	Safety & EMC	UL8750, UL1310 Class 2, IEC61347, EN55015
Turn-on Delay Time	3.0S max.	Inrush Current	40A at 230Vac, Cold start
Over Temp Protection	Fixed derating-cutoff type temperature protection	Waterproof	IP65/IP67



# ■ Detailed Specification

### TABLE 1:

	Model	DR035-100S035X-YY	DR035-048S070X-YY	DR035-042S084X-YY	DR035-036S100X-YY	DR035-024S150X-YY		
	DC Voltage	100Vdc	48Vdc	42Vdc	36Vdc	24Vdc		
	Constant Current Operation Voltage note.5	60~100Vdc	29~48Vdc	26~42Vdc	22~36Vdc	14~24Vdc		
	Rated DC Current	350mA	700mA	840mA	1000mA	1500mA		
	Current Range	0~350mA	0~700mA	0~840mA	0~1000mA	0~1500mA		
	Dimming Current Range	10~100% rated output current (≥50% rated output voltage)						
Output	Ripple and Noise	10%Vo	10%Vo	10%Vo	10%Vo	10%Vo		
	Voltage ADJ. Range note.3	90~105Vdc	43~50Vdc	38~44Vdc	36Vdc  22~36Vdc  1000mA  0~1000mA  % rated output voltage)  10%Vo  32~38Vdc  600~1000mA  ±10%  ±3%  ±5%  85%  0.96/230Vac  Short-circuit power ≤10W. ecover  be); O/P-FG: 2.00KVac  cover  of ambient temperature. ated with a 0.1µf & 47µf parallel with a 0.1µf & 47µf	22~25Vdc		
	Current ADJ. Range note.3	210~350mA	420~700mA	504~840mA	600~1000mA	900~1500mA		
	Voltage Tolerance	±10%	±10%	26~42Vdc  840mA  0~840mA  0~840mA  0~1000mA  tput current (≥50% rated output voltage)  10%Vo  38~44Vdc  32~38Vdc  504~840mA  600~1000mA  ±10%  ±10%  ±3%  ±5%  86%  85%  0.96/230Vac  0.96/230Vac  up; Dimmer type: Short-circuit power ≤10W re-power on to recover  Y、Z axes. move discharge tube); O/P-FG: 2.00KVac /70% RH ss B  EN61000-3-3 V50204, EN61547, EN55024  UL class 2/TUV/CE/FCC/RoHS/CQC/REAC ms per MIL-HDBK-217F for 48 hours  d load and 25 °C of ambient temperature. d pair-wire terminated with a 0.1µf & 47µf property of the set o	±10%	±10%		
Output	Voltage Line Regulation	±3%	±3%	±3%	±3%	±3%		
	Voltage Load Regulation	±5%	±5%	±5%	±5%	±5%		
	Efficiency	87%	86%	86%	85%	84%		
Input Output Protection  Environmental	Power Factor	0.96/230Vac	0.96/230Vac	0.96/230Vac	0.96/230Vac	0.96/230Vac		
Input	AC Current	0.45A/100Vac, 0.23A/230Vac						
	Leakage Current	<0.75mA/230Vac; <0.5	mA/120Vac	42Vdc 36Vdc 26~42Vdc 22~36Vdc 840mA 1000mA 0~840mA 0~1000m output current (≥50% rated output voltage 10%Vo 10%Vo 38~44Vdc 32~38Vd 504~840mA 600~1000m ±10% ±10% ±3% ±3% ±5% ±5% 86% 85% 0.96/230Vac 0.96/230V ciccup; Dimmer type: Short-circuit power ≤ ge, re-power on to recover  (A. Y. Z axes.  remove discharge tube); O/P-FG: 2.00KVac ge, re-power on to recover  (A. Y. Z axes.  remove discharge tube); O/P-FG: 2.00KVac ge, re-power on to recover  (A. Y. Z axes.  remove discharge tube); O/P-FG: 2.00KVac ge, re-power on to recover  (A. Y. Z axes.  remove discharge tube); O/P-FG: 2.00KVac ge, re-power on to recover  (A. Y. Z axes.  remove discharge tube); O/P-FG: 2.00KVac ge, re-power on to recover  (A. Y. Z axes.  remove discharge tube); O/P-FG: 2.00KVac ge, re-power on to recover  (A. Y. Z axes.  remove discharge tube); O/P-FG: 2.00KVac ge, re-power on to recover  (A. Y. Z axes.  remove discharge tube); O/P-FG: 2.00KVac ge, re-power on to recover  (A. Y. Z axes.  remove discharge tube); O/P-FG: 2.00KVac ge, re-power on to recover  (A. Y. Z axes.  remove discharge tube); O/P-FG: 2.00KVac ge, re-power on to recover  (A. Y. Z axes.  remove discharge tube); O/P-FG: 2.00KVac ge, re-power on to recover  (A. Y. Z axes.  remove discharge tube); O/P-FG: 2.00KVac ge, re-power on to recover				
	Over Current	Constant current limiti	ng					
Protection -	Short Circuit	Non-dimmer type: recover automatically at hiccup; Dimmer type: Short-circuit power ≤10W.						
Protection	Over Voltage	Shut down at 140% Vo	and latch off o/p voltage	42Vdc 36Vdc  26~42Vdc 22~36Vdc  840mA 1000mA  A 0~840mA 0~1000mA  10%Vo 10%Vo  10%Vo				
	Operating Humidity $20\sim95\%$ RH, non-condensing Storage Humidity $10\sim95\%$ RH  Temperature Coefficient $\pm0.03\%$ /°C (0 $^{\circ}50$ °C)	densing						
	Storage Humidity							
Environmental	Temperature Coefficient							
	Vibration	10~300Hz, 1G, Period	for 60min, each along X	Y、Z axes.	36Vdc 22~36Vdc 1000mA 0~1000mA 1000mA 100Vo 32~38Vdc 600~1000mA ±10% ±3% ±5% 85% 0.96/230Vac  rt-circuit power ≤10W. fer  O/P-FG: 2.00KVac  O/P-FG: 2.00KVac			
	Withstand Voltage	I/P-OP: 3.75KVac; IP-F	G: 1.56KVac/2.00KVac (re	move discharge tube); O	22~36Vdc 14~24' 1000mA 1500r 0~1000mA 0~1500r 10%Vo 10%Vo 32~38Vdc 22~25' 600~1000mA 900~1500r 110% ±10% ±10% ±10% ±10% ±10% ±10% ±10%			
	Isolation Resistance	IP-OP, IP-FG, O/P-FG: 100M Ohms/500Vdc/25°C/70% RH						
Safety & EMC	EMC Interference	Compliance to EN5501	5, EN55022 (CISPR22) CI	voltage, re-power on to recover  ong X、Y、Z axes.  vac (remove discharge tube); O/P-FG: 2.00KVac  c/25°C/70% RH  k22) Class B  wload); EN61000-3-3  11; ENV50204, EN61547, EN55024  UL class 2/TUV/CE/FCC/RoHS/CQC/REACH  onditions per MIL-HDBK-217F				
	EMC Emission	Compliance 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; El	26~42Vdc  840mA  1000mA  0~840mA  0~1000mA  utput current (≥50% rated output voltage)  10%Vo  38~44Vdc  32~38Vdc  504~840mA  600~1000mA  ±10%  ±3%  ±5%  86%  85%  0.96/230Vac  0.96/230Vac  cup; Dimmer type: Short-circuit power ≤10W. e, re-power on to recover  Y. Z axes. emove discharge tube); O/P-FG: 2.00KVac  C/70% RH ass B b); EN61000-3-3  NV50204, EN61547, EN55024  UL class 2/TUV/CE/FCC/RoHS/CQC/REACH ons per MIL-HDBK-217F e for 48 hours  ded load and 25°C of ambient temperature. ed pair-wire terminated with a 0.1μf & 47μf paral type only). and regulation. ge. This is the suitable operation region for LED region. Characteristics for more details. GB7000.1, FCC part18. cover supply may lead to increase of the set up time of time of the set up time of the set				
	Authentication	UL/TUV/CE/FCC/RoHS		UL class 2/TUV/CE/F	CC/RoHS/CQC/REACH			
	MTBF	324k Hrs at full load and 30°C ambient conditions per MIL-HDBK-217F						
	Input Over-voltage	Can survive input over-voltage stress of 320Vac for 48 hours						
Others	Dimensions (mm)	169×42×34			2Vdc 22~36Vdc  mA 1000mA  0mA 0~1000mA  t (≥50% rated output voltage)  6V0 10%V0  4Vdc 32~38Vdc  40mA 600~1000mA  0% ±10%  % ±3%  % ±5%  % 85%  30Vac 0.96/230Vac   type: Short-circuit power ≤10W. In to recover  rge tube); O/P-FG: 2.00KVac  -3  61547, EN55024  2/TUV/CE/FCC/RoHS/CQC/REACH  HDBK-217F  5  suitable operation region for LED rela  cs for more details.  C part18.  may lead to increase of the set up time in the final equipment. Since EMC perform			
	Max. Case Temp.	Tc max=80°C		32°38Vdc 32°38Vdc 32°38Vdc 32°7700mA 504°840mA 600°1000mA ±10% ±10% ±3% ±3% ±3% ±5% ±5% 86% 86% 86% 85% 36/230Vac 0.96/230Vac  Vac  Domatically at hiccup; Dimmer type: Short-circuit power ≤10W. The off o/p voltage, re-power on to recover  One of o/p voltage, re-power on to recover  O				
	Net Weight	0.43Kg/pcs	700mA 840mA 1000mA 0~700mA 0~840mA 0~1000mA 10~100% rated output current (≥50% rated output voltage) 10%Vo 10%Vo 10%Vo 43~50Vdc 38~44Vdc 32~38Vdc 420~700mA 504~840mA 600~1000mA ±10% ±10% ±10% ±3% ±3% ±3% ±3% ±5% ±5% ±5% 86% 86% 85% 0.96/230Vac 0.96/230Vac 0.96/230Vac mA/120Vac ng over automatically at hiccup; Dimmer type: Short-circuit power ≤10W. and latch off o/p voltage, re-power on to recover densing  for 60min, each along X · Y · Z axes. 3: 1.56KVac/2.0KVac (remove discharge tube); O/P-FG: 2.00KVac 00M Ohms/500Vdc/25°C/70% RH 5, EN55022 (CISPR22) Class B 0-3-2 Class C (≥50%load); EN61000-3-3 0-4-2, 3, 4, 5, 6, 8, 11; ENV50204, EN61547, EN55024  UL class 2/TUV/CE/FCC/RoHS/CQC/REACH dd 30°C ambient conditions per MIL-HDBK-217F evoltage stress of 320Vac for 48 hours  ured at 230Vac input, rated load and 25°C of ambient temperature. dth by using a 12" twisted pair-wire terminated with a 0.1μf & 47μf paral ernal potentiometer ("A" type only). egulation and voltage load regulation. 100% rated output voltage. This is the suitable operation region for LED reome specific system design. Please check the Static Characteristics for more details. 12. Turning ON/OFF the power supply may lead to increase of the set up tire at will be operated in combination with final equipment. Since EMC perfounfacturers must re-qualify EMC Directive on the complete installation against and the comple					
			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.							
	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.							
	5. Constant current operation region is within 60% ~100% rated output voltage. This is the suitable operation region for LED related applications, but							
Note	please reconfirm special electrical requirements for some specific system design.  6. Described may be peeded under low input voltages. Please check the Static Characteristics for more details.							
	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.							
	10. Canada (output voltage:	42-60V) : suitable for cla	ss 2 wiring method.					

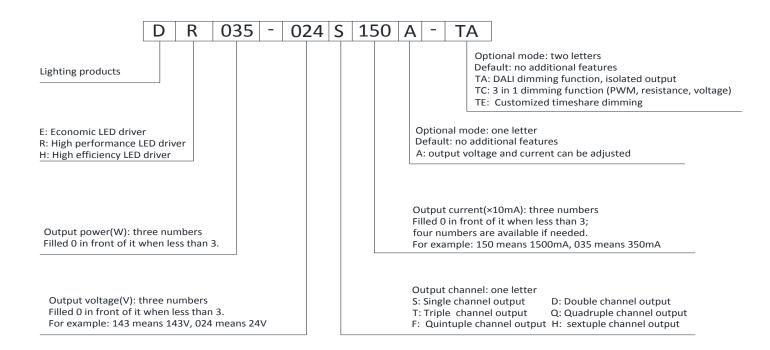


#### TABLE 2:

	Model	DR035-020S175X-YY	DR035-015S240X-YY	DR035-012S300X-YY			
	DC Voltage	20Vdc	15Vdc	12Vdc			
	Constant Current Operation Voltage note.5	12~20Vdc	9~15Vdc	7~12Vdc			
	Rated DC Current	1750mA	2400mA	3000mA			
	Current Range	0~1750mA	0~2400mA	0~3000mA			
	Dimming Current Range	10~100% rated output current (≥50% rated output voltage)					
Output	Ripple and Noise	10%Vo	10%Vo	10%Vo			
Output Protection  Environmental  Safety & EMC	Voltage ADJ. Range note.3	18~21Vdc	14~16Vdc	11~13Vdc			
	Current ADJ. Range note.3	1050~1750mA	1440~2400mA	1800~3000mA			
	Voltage Tolerance	±10%	±10%	±10%			
	Voltage Line Regulation	±3%	±3%	±3%			
	Voltage Load Regulation	±5%	±5%	±5%			
	Efficiency	84%	84%	83%			
Innut	Power Factor	0.96/230Vac	0.96/230Vac	0.96/230Vac			
Input	AC Current	0.45A/100Vac, 0.23A/230Vac					
	Leakage Current	<0.75mA/230Vac; <0.5mA/120Vac					
	Over Current	Constant current limiti	ng				
· ·	Short Circuit	Non-dimmer type: rec	over automatically at hic	r automatically at hiccup; Dimmer type: Short-circuit power ≤10W.			
Frotection	Over Voltage Shut down at 140% Vo and latch off o/p voltage, re-power on to recover						
	Operating Humidity 20~95% RH, non-condensing						
	Storage Humidity	ge Humidity 10~95% RH					
Environmental	Temperature Coefficient	nt ±0.03%/°C (0~50°C)					
	Vibration	10~300Hz, 1G, Period	0.03%/°C (0~50°C) 0~300Hz, 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 tube); O/P-FG: 2.00KVac					
	Isolation Resistance	olation 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					
	EMC Immunity	Compliance to EN61000-4-2, 3, 4, 5, 6, 8, 11; ENV50204, EN61547, EN55024					
	Authentication	UL class 2	TUV/CE/Ro	oHS/ REACH			
	MTBF	324k Hrs at full load and 30°C ambient conditions per MIL-HDBK-217F					
Other	Input Over-voltage Can survive input over-voltage stress of 320Vac for 48 hours						
Others	Dimensions (mm)	169×42×34					
	Max. Case Temp.	Tc max=80°C					
	Net Weight 0.43Kg/pcs						
	1. 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 0.1µf & 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.						
	5. Constant current operation region is within 60% ~100% rated output voltage. This is the suitable operation region for LED related applications, but						
Note	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.						
	10. Canada (output voltage: 42-60V) : suitable for class 2 wiring method.						

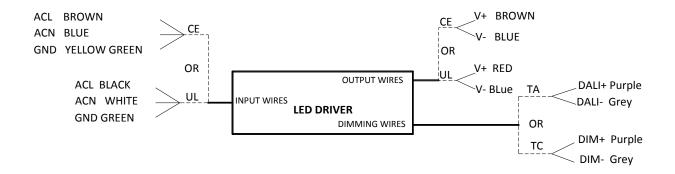


#### ■ Part number code



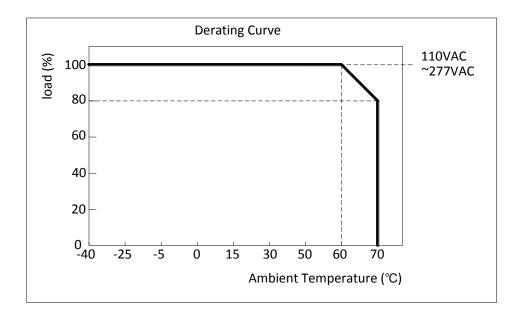
For example: DR035-024S150A-TA means: high performance LED driver; output power 35W; output voltage 24Vdc; output current 1500mA; single output; output voltage and current can be adjusted; with DALI dimming function and isolated output.

### wiring diagram

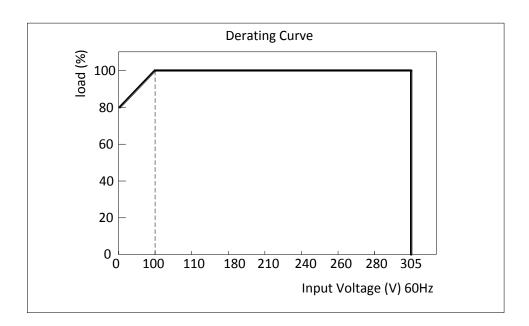




## ■ Derating Curve

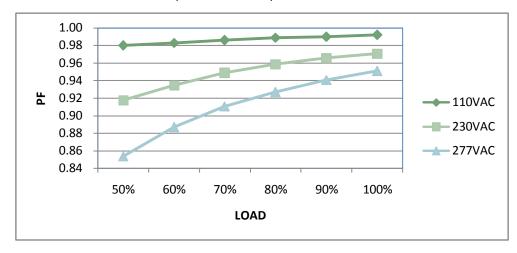


### ■ Static Characteristics

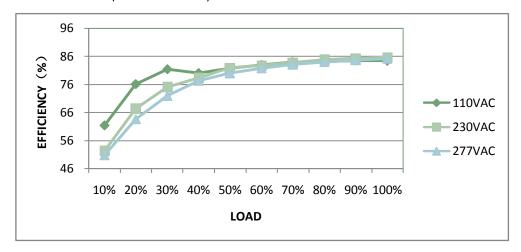




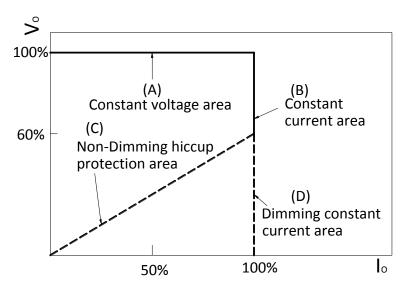
■ Power Factor Characteristic (DR035-024S150)



■ EFFICIENCY vs LOAD (DR035-024S150)

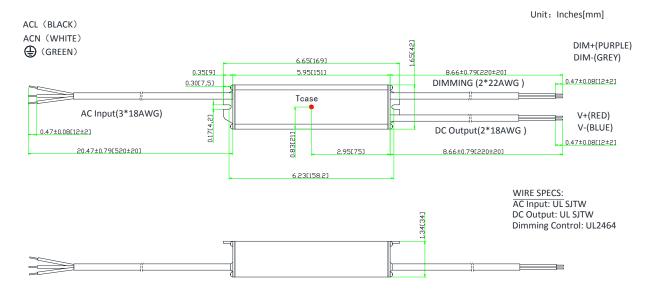


■ Typical LED power supply I-V curve





### ■ Mechanical Outline



- **XTcase:** Max. Case Temperature
- \*No dimming control wire if without dimming function.

### ■ "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

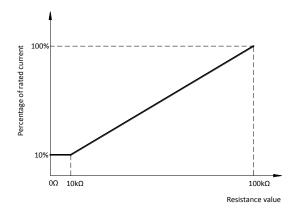
- a. DALI Testing Software: Please refer to www.impowercorp.com for downloading.
- b. Percentage of rated current: 10%~100%.
- c. "TA" version LED driver shall work with a DALI Master and DALI Master control software.



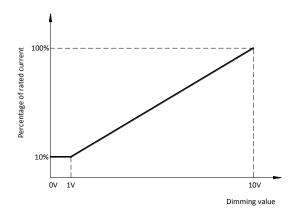


## ■ "-TC" option: 0-10V, resistance & PWM dimming

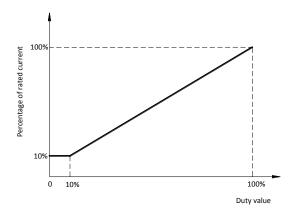
a. Reference resistance value for output current adjustment (Typical)



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

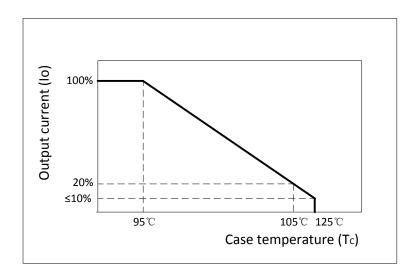
### ■ "-TE" option: Customized timeshare dimming.

- 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.

## ■ 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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