

DR120 Series

120W 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 luminaires
- 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



IP65/67



■ General functions

Output Power	120W	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	65A at 230Vac, Cold start
Over Temp Protection	Fixed derating-cutoff type temperature protection	Waterproof	IP65/IP67

■ Detailed Specification

TABLE 1:

Model		DR120-172S070X-YY	DR120-110S110X-YY	DR120-058S210X-YY	DR120-048S250X-YY	DR120-036S350X-YY
Output	DC Voltage	172Vdc	110Vdc	58Vdc	48Vdc	36Vdc
	Constant Current Operation Voltage <small>note.5</small>	103 ~172Vdc	66 ~110Vdc	35~58Vdc	29~48Vdc	22~36Vdc
	Rated DC Current	700 mA	1100 mA	2100 mA	2500 mA	3500 mA
	Current Range	0~700 mA	0~1100mA	0~2100mA	0~2500mA	0~3500mA
	Dimming Current Range	10~100% rated output current (≥50% rated output voltage)				
	Ripple and Noise	10%Vo	10%Vo	10%Vo	10%Vo	10%Vo
	Voltage ADJ. Range <small>note.3</small>	155~181Vdc	99~116Vdc	52~61Vdc	43~50Vdc	32~38Vdc
	Current ADJ. Range <small>note.3</small>	420~700 mA	660~1100mA	1260~2100mA	1500~2500mA	2100~3500mA
	Voltage Tolerance	±5%	±5%	±5%	±5%	±5%
	Voltage Line Regulation	±1%	±1%	±1%	±1%	±1%
	Voltage Load Regulation	±5%	±5%	±5%	±5%	±5%
Input	Efficiency	92%	91%	91%	91%	90%
	Power Factor	0.96/230Vac	0.96/230Vac	0.96/230Vac	0.96/230Vac	0.96/230Vac
	AC Current	1.5A/100Vac, 0.7A/230Vac				
	Leakage Current	<0.75mA/230Vac; <0.5mA/120Vac				
Output Protection	Over Current	Constant current limiting				
	Short Circuit	Non-dimmer type: recover automatically at hiccup; Dimmer type: Short-circuit power ≤10W.				
	Over Voltage	Shut down at 140% Vo and latch off o/p voltage, re-power on to recover				
Environmental	Operating Humidity	20~95% RH, non-condensing				
	Storage Humidity	10~95% RH				
	Temperature Coefficient	±0.03%/°C (0~50 °C)				
	Vibration	10~300Hz, 1G, Period for 60min, each along X、 Y、 Z axes.				
Safety & EMC	Withstand Voltage	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				
	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				
Others	Authentication	UL/TUV/CE/FCC/RoHS/CQC/REACH				
	MTBF	341k 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				
	Dimensions (mm)	211×68×41.3				
	Max. Case Temp.	Tc max=80°C				
	Net Weight	1.04Kg/pcs				
	Note	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 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.						

TABLE 2:

Model		DR120-029S420X-YY	DR120-024S500X-YY	DR120-020S600X-YY	DR120-343S035X-YY	DR120-267S045X-YY
Output	DC Voltage	29Vdc	24Vdc	20Vdc	343Vdc	267Vdc
	Constant Current Operation Voltage <small>note.5</small>	17~29Vdc	15~24Vdc	12~20Vdc	206 ~343Vdc	160 ~267Vdc
	Rated DC Current	4200 mA	5000mA	6000mA	350 mA	450 mA
	Current Range	0~4200mA	0~5000mA	0~6000mA	0~350mA	0~450mA
	Dimming Current Range	10~100% rated output current (≥50% rated output voltage)				
	Ripple and Noise	10%Vo	10%Vo	10%Vo	10%Vo	10%Vo
	Voltage ADJ. Range <small>note.3</small>	26~30Vdc	22~25Vdc	18~21Vdc	309~360Vdc	240~280Vdc
	Current ADJ. Range <small>note.3</small>	2520~4200mA	3000~5000mA	3600~6000mA	210~350mA	270~450mA
	Voltage Tolerance	±5%	±5%	±5%	±5%	±5%
	Voltage Line Regulation	±1%	±1%	±1%	±1%	±1%
	Voltage Load Regulation	±5%	±5%	±5%	±5%	±5%
Input	Efficiency	90%	89%	88%	92%	92%
	Power Factor	0.96/230Vac	0.96/230Vac	0.96/230Vac	0.96/230Vac	0.96/230Vac
	AC Current	1.5A/100Vac, 0.7A/230Vac				
	Leakage Current	<0.75mA/230Vac; <0.5mA/120Vac				
Output Protection	Over Current	Constant current limiting				
	Short Circuit	Non-dimmer type: recover automatically at hiccup; Dimmer type: Short-circuit power ≤10W.				
	Over Voltage	Shut down at 140% Vo and latch off o/p voltage, re- power on to recover				
Environmental	Operating Humidity	20~95% RH, non-condensing				
	Storage Humidity	10~95% RH				
	Temperature Coefficient	±0.03%/°C (0~50 °C)				
	Vibration	10~300Hz, 1G, Period for 60min, each along X、 Y、 Z axes.				
Safety & EMC	Withstand Voltage	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				
	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				
Others	Authentication	UL/TUV/CE/FCC/RoHS/CQC/REACH			TUV/CE/RoHS/REACH	
	MTBF	341k 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				
	Dimensions (mm)	211×68×41.3				
	Max. Case Temp.	Tc max=80 °C				
	Net Weight	1.04Kg/pcs				
	Note	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 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.						

TABLE 3:

Model		DR120-086S140X-YY	DR120-081S148X-YY	DR120-069S175X-YY	DR120-054S222X-YY	DR120-042S280X-YY
Output	DC Voltage	86Vdc	81Vdc	69Vdc	54Vdc	42Vdc
	Constant Current Operation Voltage <small>note.5</small>	52 ~86Vdc	49~81Vdc	41~69Vdc	33 ~54Vdc	26~42Vdc
	Rated DC Current	1400 mA	1480 mA	1750 mA	2220 mA	2800 mA
	Current Range	0~1400mA	0~1480mA	0~1750mA	0~2220mA	0~2800mA
	Dimming Current Range	10~100% rated output current (≥50% rated output voltage)				
	Ripple and Noise	10%Vo	10%Vo	10%Vo	10%Vo	10%Vo
	Voltage ADJ. Range <small>note.3</small>	77~90Vdc	73~85Vdc	62~72Vdc	49~57Vdc	38~44Vdc
	Current ADJ. Range <small>note.3</small>	840~1400mA	888~1480mA	1050~1750mA	1332~2220mA	1680~2800mA
	Voltage Tolerance	±5%	±5%	±5%	±5%	±5%
	Voltage Line Regulation	±1%	±1%	±1%	±1%	±1%
	Voltage Load Regulation	±5%	±5%	±5%	±5%	±5%
Input	Efficiency	91%	91%	91%	91%	91%
	Power Factor	0.96/230Vac	0.96/230Vac	0.96/230Vac	0.96/230Vac	0.96/230Vac
	AC Current	1.5A/100Vac, 0.7A/230Vac				
	Leakage Current	<0.75mA/230Vac; <0.5mA/120Vac				
Output Protection	Over Current	Constant current limiting				
	Short Circuit	Non-dimmer type: recover automatically at hiccup; Dimmer type: Short-circuit power ≤10W.				
	Over Voltage	Shut down at 140% Vo and latch off o/p voltage, re- power on to recover				
Environmental	Operating Humidity	20~95% RH, non-condensing				
	Storage Humidity	10~95% RH				
	Temperature Coefficient	±0.03%/°C (0~50 °C)				
	Vibration	10~300Hz, 1G, Period for 60min, each along X、 Y、 Z axes.				
Safety & EMC	Withstand Voltage	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				
	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				
Others	Authentication	TUV/CE/ RoHS/REACH				
	MTBF	341k 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				
	Dimensions (mm)	211×68×41.3				
	Max. Case Temp.	Tc max=80°C				
	Net Weight	1.04Kg/pcs				
Note	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 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.					

TABLE 4:

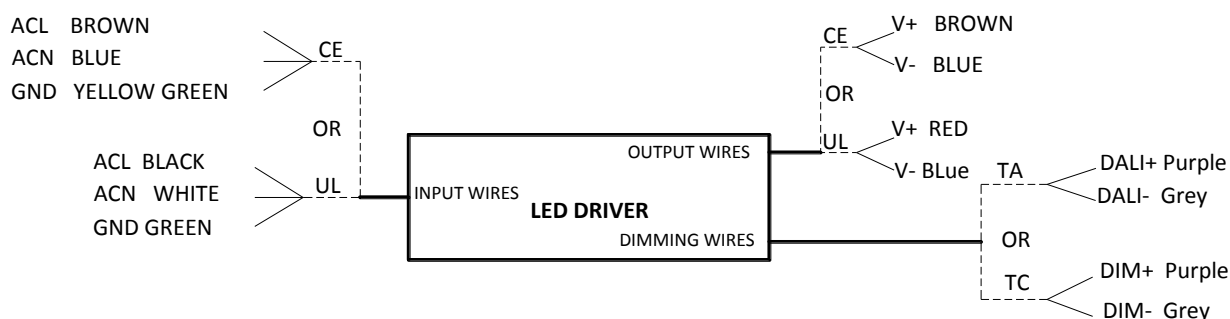
Model		DR120-038S315X-YY				
Output	DC Voltage	38Vdc				
	Constant Current Operation Voltage <small>note.5</small>	23~38Vdc				
	Rated DC Current	3150 mA				
	Current Range	0~3150mA				
	Dimming Current Range	10~100% rated output current (≥50% rated output voltage)				
	Ripple and Noise	10%Vo				
	Voltage ADJ. Range <small>note.3</small>	34~40Vdc				
	Current ADJ. Range <small>note.3</small>	1890~3150mA				
	Voltage Tolerance	±5%				
	Voltage Line Regulation	±1%				
	Voltage Load Regulation	±5%				
Input	Efficiency	90%				
	Power Factor	0.96/230Vac				
	AC Current	1.5A/100Vac, 0.7A/230Vac				
	Leakage Current	<0.75mA/230Vac; <0.5mA/120Vac				
Output Protection	Over Current	Constant current limiting				
	Short Circuit	Non-dimmer type: recover automatically at hiccup; Dimmer type: Short-circuit power ≤10W.				
	Over Voltage	Shut down at 140% Vo and latch off o/p voltage, re-power on to recover				
Environmental	Operating Humidity	20~95% RH, non-condensing				
	Storage Humidity	10~95% RH				
	Temperature Coefficient	±0.03%/°C (0~50°C)				
	Vibration	10~300Hz, 1G, Period for 60min, each along X、 Y、 Z axes.				
Safety & EMC	Withstand Voltage	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				
	EMC Interference	Compliance to EN55015, EN55022 (CISPR22) Class B				
	EMC Emission	Compliance to EN61000-3-2 Class C (≥50%load); EN61000-3-3				
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	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

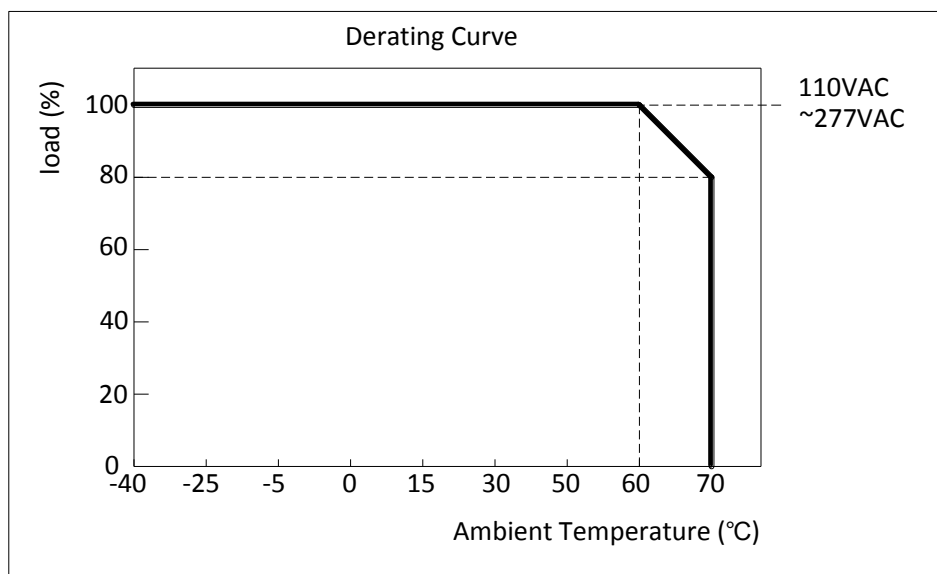
D	R	120	-	024	S	500	A	-	TA
Lighting products		Output power(W): three numbers Filled 0 in front of it when less than 3.			Output voltage(V): three numbers Filled 0 in front of it when less than 3. For example: 143 means 143V, 024 means 24V		Output current(×10mA): three numbers Filled 0 in front of it when less than 3; four numbers are available if needed. For example: 500 means 5000mA, 035 means 350mA		
E: Economic LED driver R: High performance LED driver H: High efficiency LED driver							Optional mode: two letters Default: no additional features TA: DALI dimming function, isolated output TC: 3 in 1 dimming function (PWM, resistance, voltage) TE: Customized timeshare dimming TF: Programmable timeshare dimming		
							Optional mode: one letter Default: no additional features A: output voltage and current can be adjusted		
							Output channel: one letter S: Single channel output D: Double channel output T: Triple channel output Q: Quadruple channel output F: Quintuple channel output H: sextuple channel output		

For example: DR120-024S500A-TA means: high performance LED driver; output power 120W; output voltage 24Vdc; output current 5000mA; single output; output voltage and current can be adjusted; with DALI dimming function and isolated output.

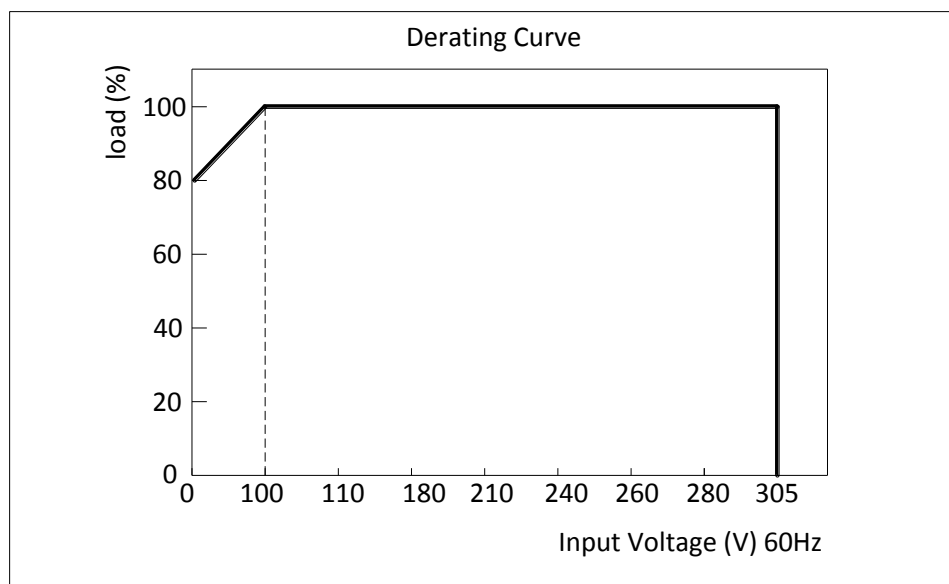
■ wiring diagram



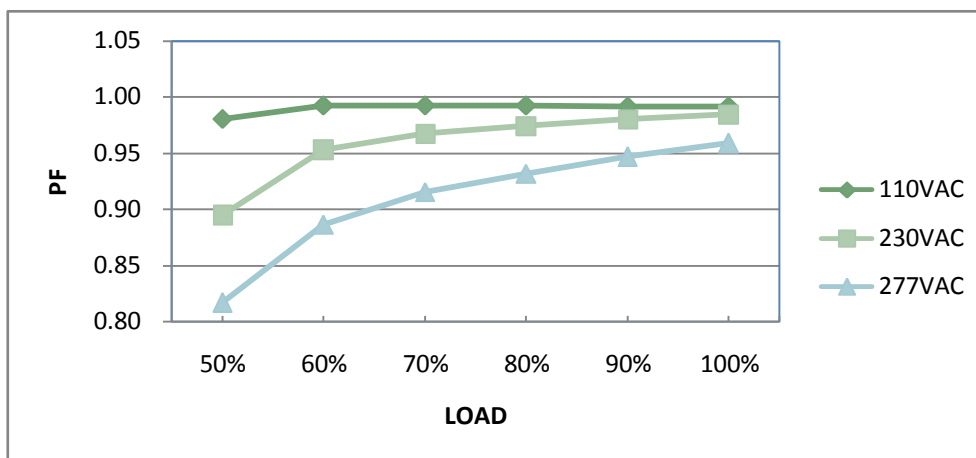
■ Derating Curve



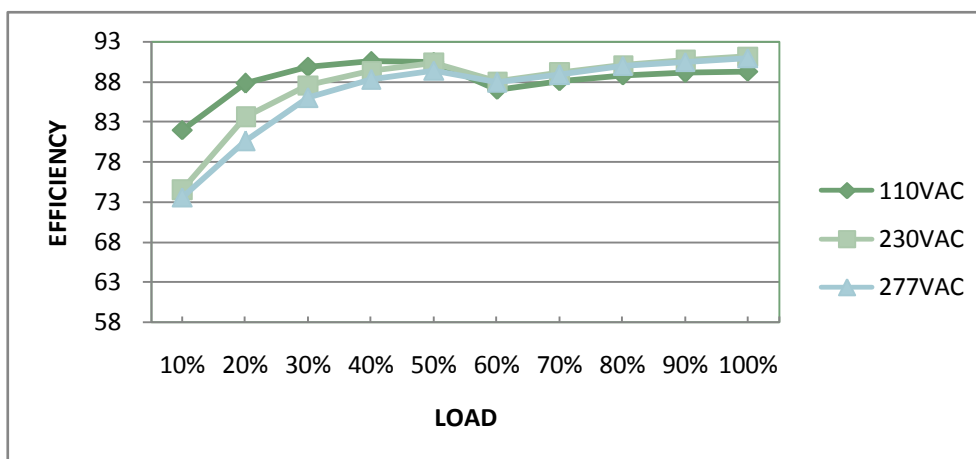
■ Static Characteristics



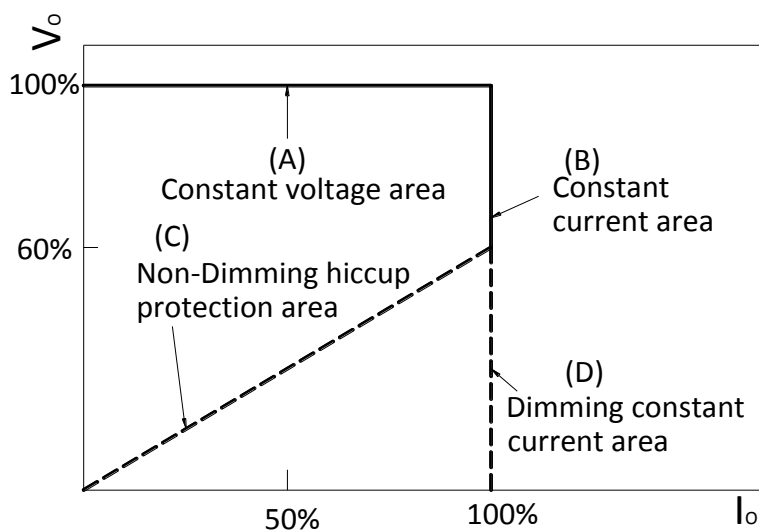
■ Power Factor Characteristic (DR120-024S500)



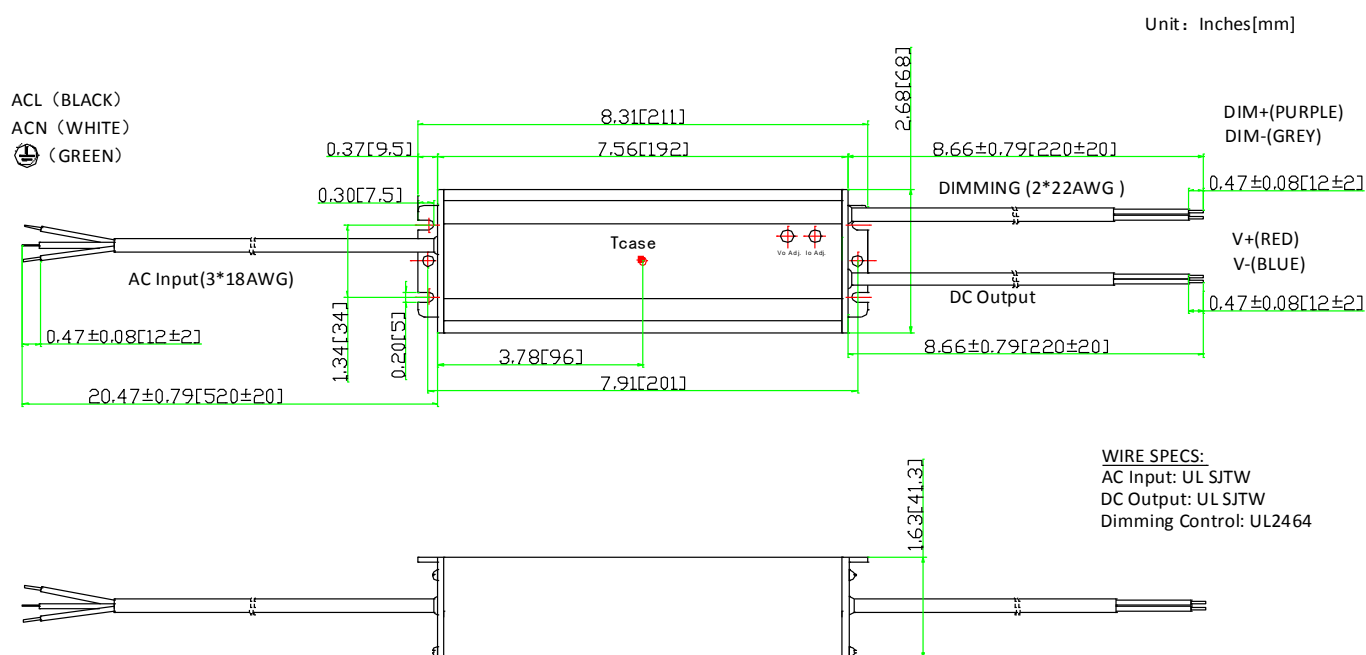
■ EFFICIENCY vs LOAD (DR120-024S500)



■ Typical LED power supply I-V curve



■ Mechanical Outline



- ※Tcase: Max. Case Temperature
- ※Power's internal temperature is 10 °C warmer than case temperature.
- ※No dimming control wire if without dimming function.

NO.	DC Output Current	Wire Number	Wire specification
1	≤5A	1	2×AWG18
2	5~12A(Including 12A)	1	2×AWG16

■ “A” option

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

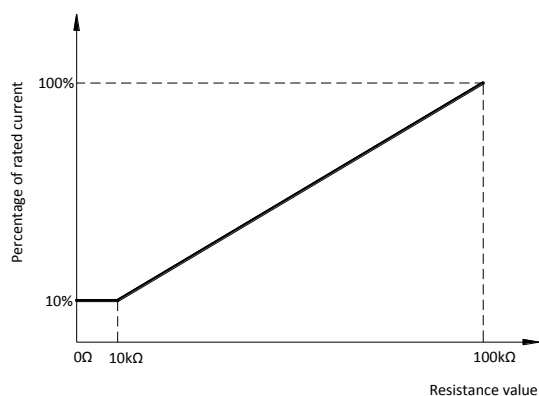
■ “-TA” option: DALI dimming

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

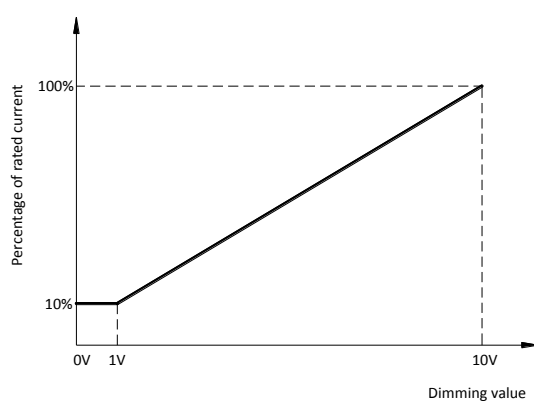


■ “-TC” option: 0-10V, resistance & PWM dimming

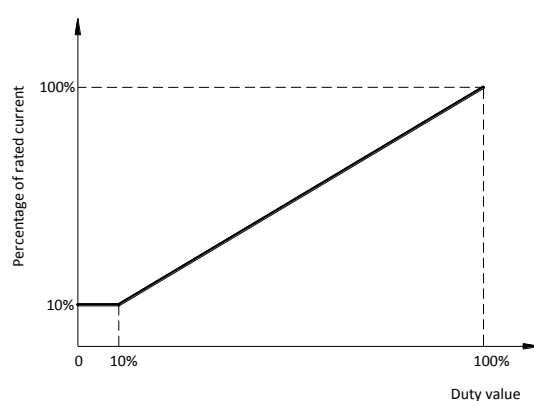
a. Reference resistance value for output current adjustment (Typical)



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.

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

■ "-TF" option: Programmable timeshare dimming.

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

For example:

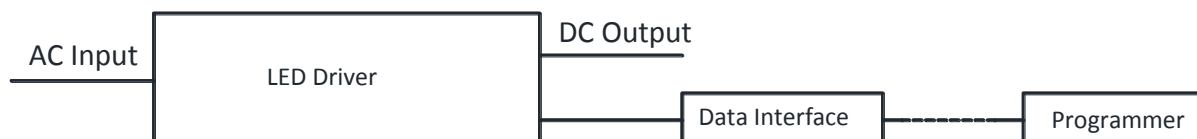
The first section: the time period is 0~1h, the output current is 40% of rated output current.

The second section: the time period is 1h~4h, the output current is 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.

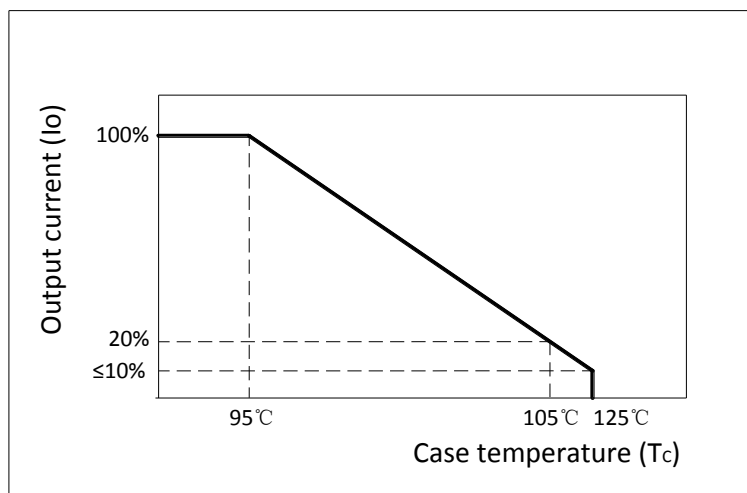
- The parameters are set by a programmer.
- The data interface is waterproof.



■ 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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