Astrodyne TDI
Now you have power.

60W Single Output LED Driver with PFC

DR060 series

- Constant Voltage and Current Output
- Universal AC Input of 100~305VAC
- Built-in Active PFC function
- Protections: Short Circuit/Over Voltage/Over Load
- Fixed Derating-Cutoff Type of Temperature Protection
- Cooling by Free Air Convection
- 3 in 1 Dimming Function (optional)
- Adjustable Output Voltage and Current (optional)
- Suitable for LED Lighting and LED Electronic Display Applications
- IP65 with Vo/Io Adjustment Screws, IP67 without
- Class II Some Models
- Suitable for Dry / Damp / Wet Locations
- 5 Year Warranty

c UL us CE FC IP65/67 RoHS

■ General functions

Output Power	60W	Input Frequency	50/60Hz
Input Voltage Range	100~305Vac	Operating Temperature	-40℃~+60℃
Storage Temperature	-45℃~+85℃	Safety & EMC	UL8750, UL1310 Class 2, 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

All specifications are typical at nominal input, full load, and 25°C unless otherwise noted

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TABLE 1:

Model		DR060-172S035X-YY	DR060-086S070X-YY	DR060-057S105X-YY	DR060-024S250X-YY	DR060-016S375X-YY
Output	DC Voltage	172Vdc	86Vdc	57Vdc	24Vdc	16Vdc
	Constant Current Operation Voltage note.5	104~172Vdc	52~86Vdc	34~57Vdc	14.4~24Vdc	10~16Vdc
	Rated DC Current	350mA	700mA	1050mA	2500mA	3750mA
	Current Range	0~350mA	0~700mA	0~1050mA	0~2500mA	0~3750mA
	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 note.3	155~181Vdc	77~90Vdc	51~60Vdc	22~25Vdc	14~17Vdc
	Current ADJ. Range note.3	210~350mA	420~700mA	630~1050mA	1500~2500mA	2250~3750mA
	Voltage Tolerance	±5%	±5%	±5%	10%	±10%
	Voltage Line Regulation	±3%	±3%	±3%	±3%	±3%
	Voltage Load Regulation	±5%	±5%	±5%	±5%	±5%
Input	Efficiency	91%	91%	90.5%	88.5%	87.0%
	Power Factor	0.96/230Vac	0.96/230Vac	0.96/230Vac	0.96/230Vac	0.96/230Vac
	AC Current	0.8A/100Vac, 0.36A/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%/℃ (0~50℃)				
	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℃/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		UL class 2/TUV/CE/FCC/RoHS/CQC/REACH		
	MTBF	377k Hrs at full load and 30℃ ambient conditions per MIL-HDBK-217F				
	Input Over-voltage	Can survive input over-voltage stress of 320Vac for 48 hours				
	Dimensions (mm)	199×59×40				
	Max. Case Temp.	Tc max=80℃				
	Net Weight	0.83Kg/pcs				
Note	1. All parameters NOT specially mentioned are measured at 230Vac input, rated load and 25℃ 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.					
	10. Canada (output voltage: 42-60V) : suitable for class 2 wiring method.					

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DR060 series

Model		DR060-048S130X-YY	DR060-042S140X-YY	DR060-036S175X-YY	DR060-030S210X-YY	DR060-020S300X-YY
Output	DC Voltage	48Vdc	42Vdc	36Vdc	30Vdc	20Vdc
	Constant Current Operation Voltage note.5	29~48Vdc	26~42Vdc	22~36Vdc	18~30Vdc	12~20Vdc
	Rated DC Current	1300mA	1400mA	1750mA	2100mA	3000mA
	Current Range	0~1300mA	0~1400mA	0~1750mA	0~2100mA	0~3000mA
	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 note.3	43~50Vdc	38~44Vdc	32~38Vdc	27~32Vdc	18~21Vdc
	Current ADJ. Range note.3	780~1300mA	840~1400mA	1050~1750mA	1260~2100mA	1800~3000mA
	Voltage Tolerance	±5%	±5%	±5%	±5%	10%
	Voltage Line Regulation	±3%	±3%	±3%	±3%	±3%
	Voltage Load Regulation	±5%	±5%	±5%	±5%	±5%
Input	Efficiency	91.0%	90.0%	90.0%	90.0%	88.0%
	Power Factor	0.96/230Vac	0.96/230Vac	0.96/230Vac	0.96/230Vac	0.96/230Vac
	AC Current	0.8A/100Vac, 0.36A/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%/℃ (0~50℃)				
	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℃/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	377k Hrs at full load and 30℃ ambient conditions per MIL-HDBK-217F				
	Input Over-voltage	Can survive input over-voltage stress of 320Vac for 48 hours				
	Dimensions (mm)	199×59×40				
	Max. Case Temp.	Tc max=80℃				
	Net Weight	0.83Kg/pcs				
Note	1. All parameters NOT specially mentioned are measured at 230Vac input, rated load and 25℃ 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.					
	10. Canada (output voltage: 42-60V) : suitable for class 2 wiring method.					

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DR060 series

Model		DR060-012S500X-YY				
Output	DC Voltage	12Vdc				
	Constant Current Operation Voltage note.5	7.2~12Vdc				
	Rated DC Current	5000mA				
	Current Range	0~5000mA				
	Dimming Current Range	10~100% rated output current (≥50% rated output voltage)				
	Ripple and Noise	10%Vo				
	Voltage ADJ. Range note.3	11~13Vdc				
	Current ADJ. Range note.3	3000~5000mA				
	Voltage Tolerance	±10%				
	Voltage Line Regulation	±3%				
	Voltage Load Regulation	±5%				
Input	Efficiency	86%				
	Power Factor	0.96/230Vac				
	AC Current	0.8A/100Vac, 0.36A/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%/℃ (0~50℃)				
	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℃/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	377k Hrs at full load and 30℃ ambient conditions per MIL-HDBK-217F				
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	10. Canada (output voltage: 42-60V) : suitable for class 2 wiring method.					

Part number code

D	R	060	-	024	S	250	TC	A

Lighting products

R：High performance LED driver
E：Economical LED driver

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:105 means 105V，024means24V

Output channel：one letter or number
S: Single channel output　D: Double channel output
T: Triple channel output　Q: Quadruple channel output
F: Quintuple channel output　H: sextuple channel output

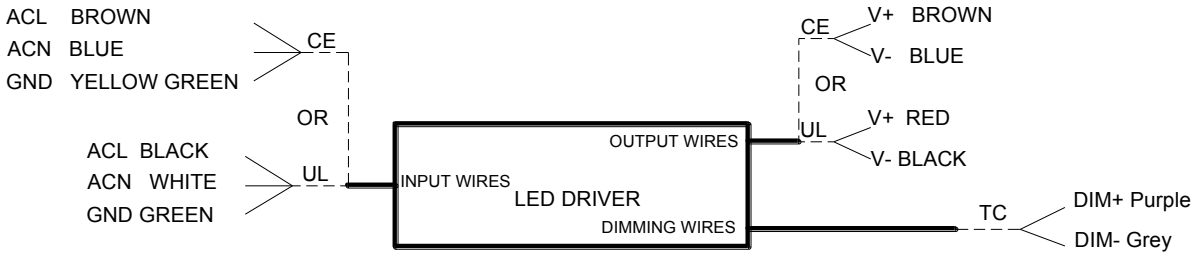
Output current(*10mA)：three numbers
Filled 0 in front of it when less than 3;
four numbers are available if needed.
For example:250means 2500mA，035 means 350mA

Optional mode：two letters
Default：no additional features，output voltage and current can regulation
TC: 3 in 1 dimming function(PWM、resistance, voltage)

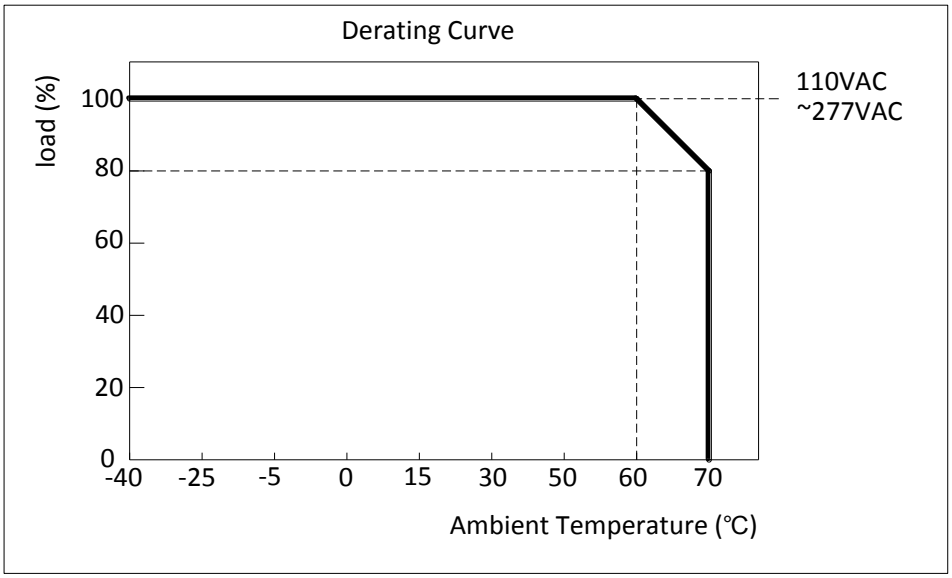
Optional mode: output voltage and current are adjustable (IP65 rated)

For example: DR060-024S250TC means it is a high performance LED driver, output power 60W, output voltage 24Vdc, output current 2500mA，single output, with 3 in 1 dimming function.

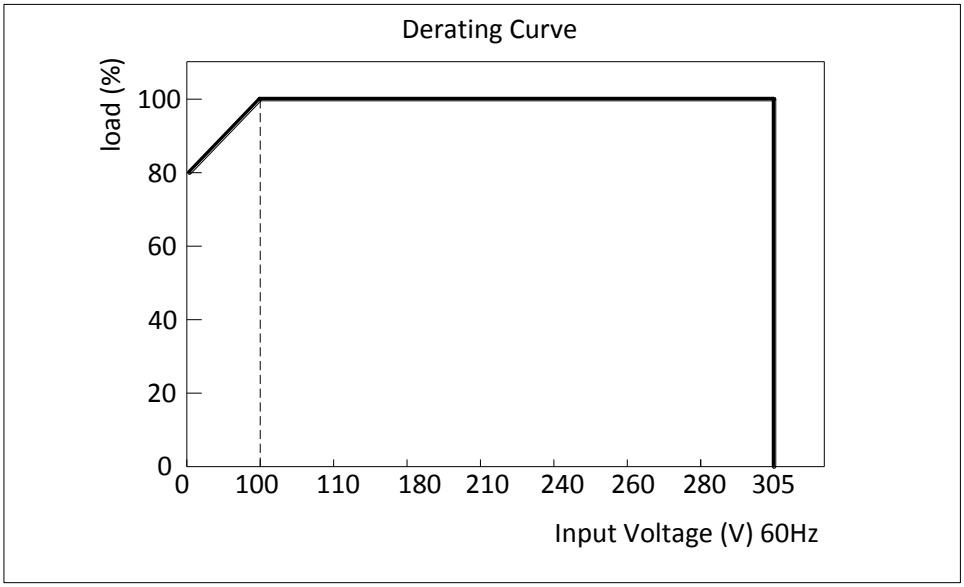
wiring diagram



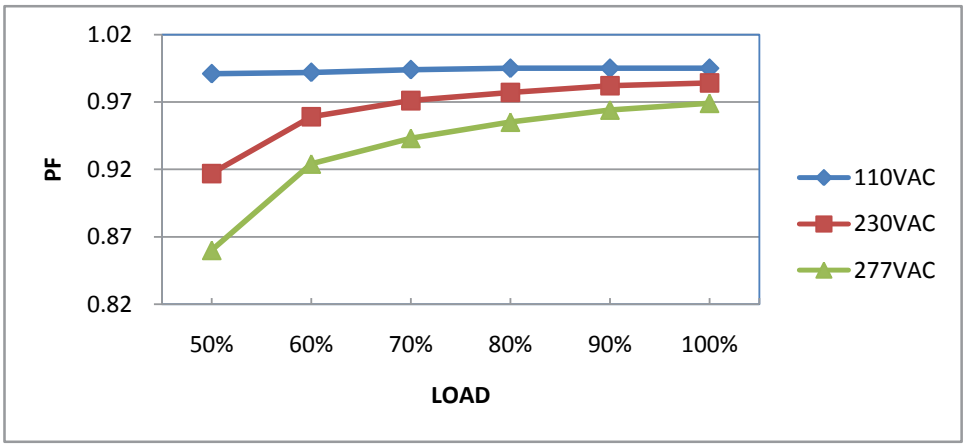
■ Derating Curve



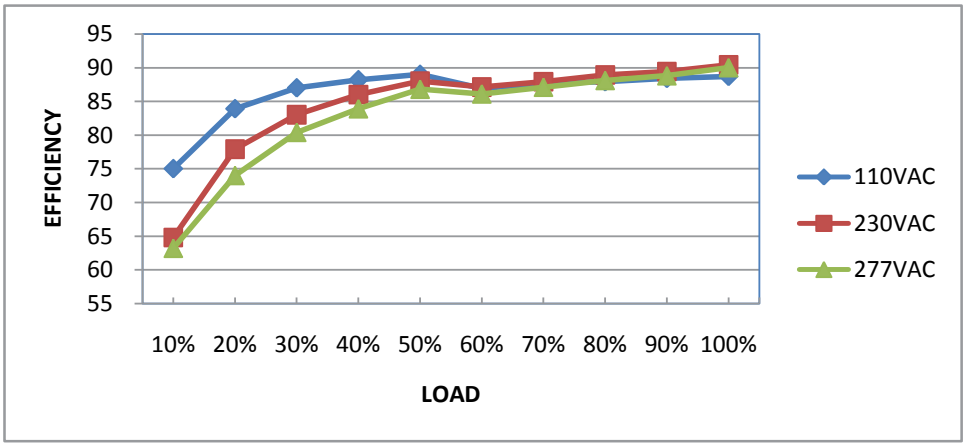
■ Static Characteristics



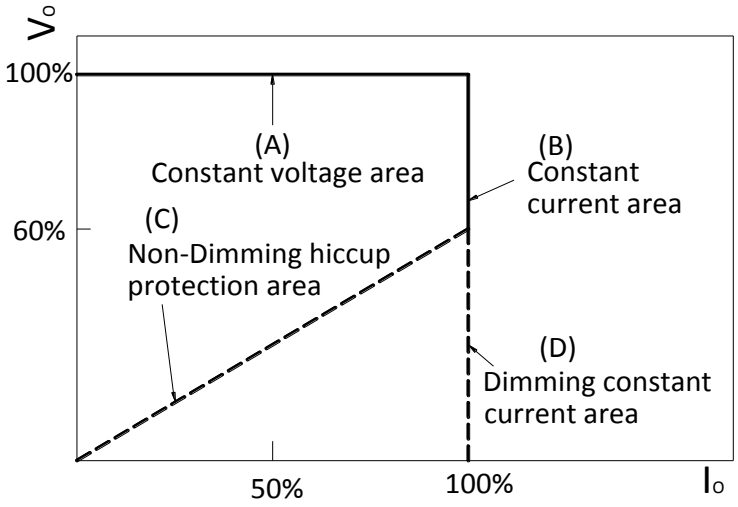
■ Power Factor Characteristic (DR060-032S200)



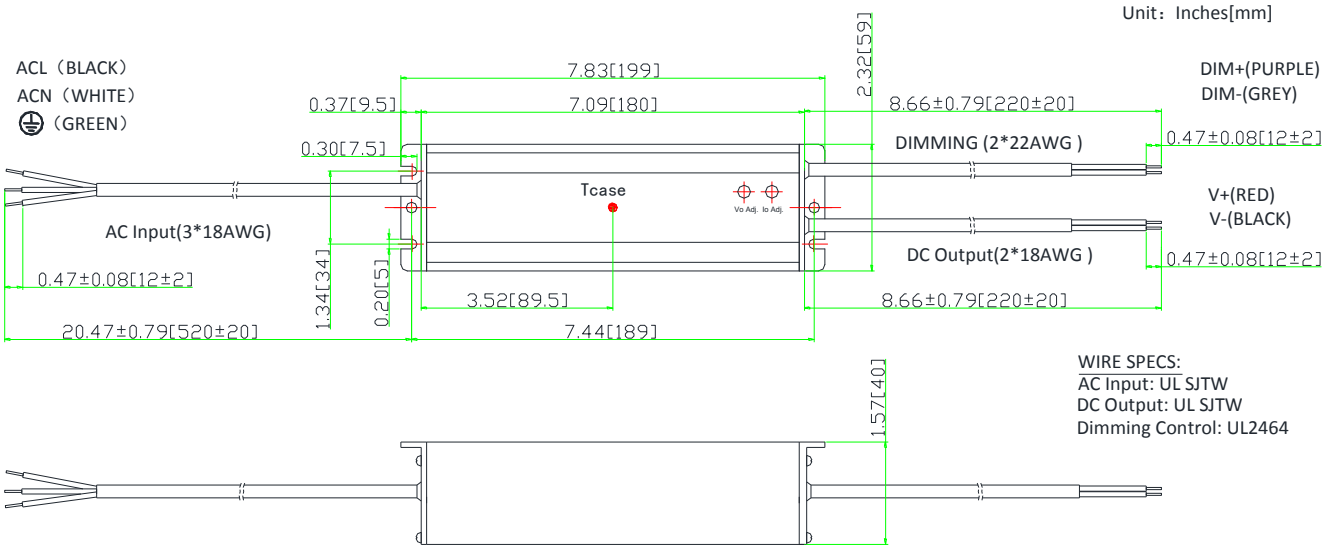
■ EFFICIENCY vs LOAD (DR060-032S200)



■ Typical LED power supply I-V curve



■ Mechanical Outline



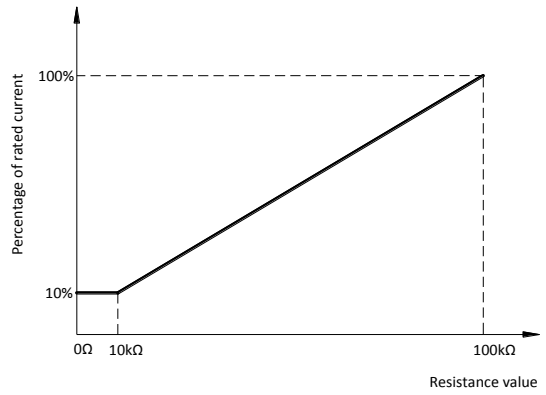
※Tcase: Max. Case Temperature
※Power's internal temperature is 10 ℃ warmer than case temperature.
※No dimming control wire if without dimming function.

■ “A” option

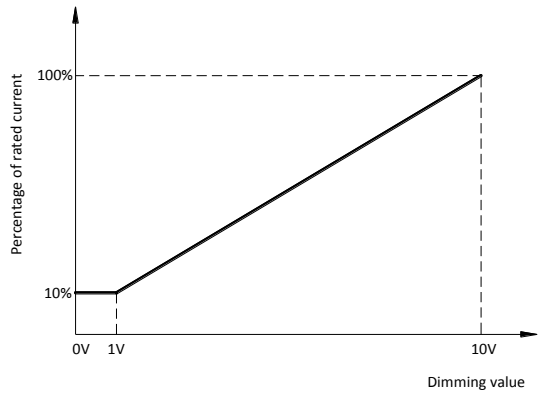
a. Output voltage and current can be adjusted by internal potentiometer.
b. IP65.
c. These products shall be enclosed in the end product, when the unit provided with voltage and current adjustable holes.

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

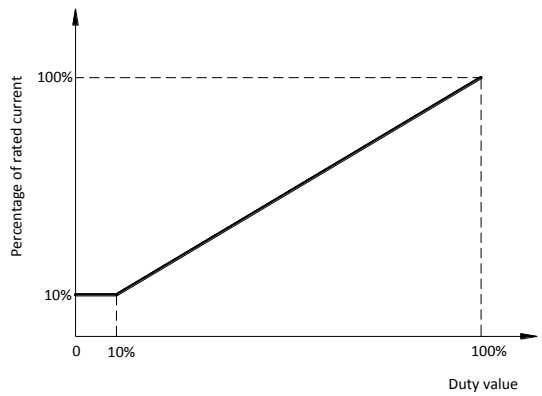
a. Reference resistance value for output current adjustment (Typical)



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



c. *10*V 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

Input and output Dielectric strength

Isolation	Input Wires	Output Wires	Isolated Dimming Control Wires	Chassis
Input Wires	NA	3750	2000	1560
Output Wires	3750	NA	2000	2000
Isolated Dimming Control Wires	2000	2000	NA	2000
Chassis	1560	2000	2000	NA

Fixed derating-cutoff type temperature protection