

DH320 Series

320W 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



IP65/67



■ General functions

Output Power	320W	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	40A at 230Vac, Cold start
Over Temp Protection	Fixed derating-cutoff type temperature protection	Waterproof	IP65/IP67

■ Detailed Specification

TABLE 1:

Model		DH320-105S305X-YY	DH320-084S381X-YY	DH320-072S444X-YY	DH320-060S533X-YY	DH320-054S593X-YY
Output	DC Voltage	105Vdc	84Vdc	72Vdc	60Vdc	54Vdc
	Constant Current Operation Voltage <small>note.5</small>	63~105Vdc	51~84Vdc	43~72Vdc	36~60Vdc	32~54Vdc
	Rated DC Current	3.05A	3.81A	4.44A	5.33A	5.93A
	Current Range	0~3.05A	0~3.81A	0~4.44A	0~5.33A	0~5.93A
	Dimming Current Range	10~100% rated output current (≥50% rated output voltage)				
	Ripple and Noise	200mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p
	Voltage ADJ. Range <small>note.3</small>	95~110Vdc	76~88Vdc	65~76Vdc	54~63Vdc	49~57Vdc
	Current ADJ. Range <small>note.3</small>	1.53~3.05A	1.91~3.81A	2.22~4.44A	2.67~5.33A	2.97~5.93A
	Voltage Tolerance	±1%	±1%	±1%	±1%	±1%
	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%
Input	Efficiency	95%	95%	95%	95%	95%
	Power Factor	0.97/230Vac	0.97/230Vac	0.97/230Vac	0.97/230Vac	0.97/230Vac
	AC Current	3.5A/100Vac, 1.65A/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/CE/RoHS/REACH				
	MTBF	152k 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)	249×90×43.7				
	Max. Case Temp.	Tc max=80 °C				
	Net Weight	1.59Kg/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		DH320-048S667X-YY	DH320-042S762X-YY	DH320-036S889X-YY	DH320-024S1333X-YY	DH320-015S1900X-YY
Output	DC Voltage	48Vdc	42Vdc	36Vdc	24Vdc	15Vdc
	Constant Current Operation Voltage <small>note.5</small>	28~48Vdc	25~42Vdc	21~36Vdc	14~24Vdc	9~15Vdc
	Rated DC Current	6.67A	7.62A	8.89A	13.33A	19A
	Current Range	0~6.67A	0~7.62A	0~8.89A	0~13.33A	0~193A
	Dimming Current Range	10~100% rated output current (≥50% rated output voltage)				
	Ripple and Noise	200mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p
	Voltage ADJ. Range <small>note.3</small>	43~50Vdc	38~44Vdc	32~38Vdc	22~25Vdc	14~16Vdc
	Current ADJ. Range <small>note.3</small>	3.34~6.67A	3.81~7.62A	4.45~8.89A	6.67~13.33A	9.5~19A
	Voltage Tolerance	±1%	±1%	±1%	±1%	±1%
	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%
Input	Efficiency	95%	95%	94%	93.5%	92%
	Power Factor	0.97/230Vac	0.97/230Vac	0.97/230Vac	0.97/230Vac	0.97/230Vac
	AC Current	3.5A/100Vac, 1.65A/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: 3.75KVdc; IP-FG: 1.56KVdc/2.00KVdc (remove discharge tube); O/P-FG: 2.00KVdc				
	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/CE/RoHS/REACH				
	MTBF	152k 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)	249×90×43.7				
	Max. Case Temp.	Tc max=80 °C				
	Net Weight	1.59Kg/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:

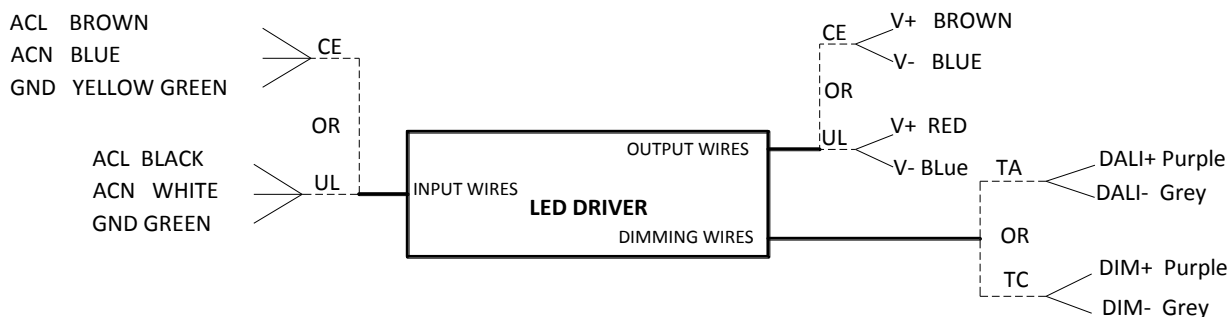
Model		DH320-012S2200X-YY	DH320-150S213X-YY	DH320-056S571X-YY	DH320-052S615X-YY	DH320-020S1600X-YY
Output	DC Voltage	12Vdc	150Vdc	56Vdc	52Vdc	20Vdc
	Constant Current Operation Voltage <small>note.5</small>	7~12Vdc	90~150Vdc	33~56Vdc	31~52Vdc	12~20Vdc
	Rated DC Current	22A	2.13A	5.71A	6.15A	16A
	Current Range	0~22A	0~2.13A	0~5.71A	0~6.15A	0~16A
	Dimming Current Range	10~100% rated output current (≥50% rated output voltage)				
	Ripple and Noise	200mVp-p	200mVp-p	200mVp-p	200mVp-p	200mVp-p
	Voltage ADJ. Range <small>note.3</small>	11~13Vdc	135~158Vdc	50~59Vdc	47~55Vdc	18~21Vdc
	Current ADJ. Range <small>note.3</small>	11~22A	1.07~2.13A	2.86~5.71A	3.08~6.15A	8~16A
	Voltage Tolerance	±1%	±1%	±1%	±1%	±1%
	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%
Input	Efficiency	91%	95%	93.5%	91%	91%
	Power Factor	0.97/230Vac	0.97/230Vac	0.97/230Vac	0.97/230Vac	0.97/230Vac
	AC Current	3.5A/100Vac, 1.65A/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: 3.75KVdc; IP-FG: 1.56KVdc/2.00KVdc (remove discharge tube); O/P-FG: 2.00KVdc				
	Isolation Resistance	IP-OP, IP-FG, O/P-FG: 100M Ohms/500Vdc/25°C/70% RH				
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	Dimensions (mm)	249×90×43.7				
	Max. Case Temp.	Tc max=80°C				
	Net Weight	1.59Kg/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.						

■ Part number code

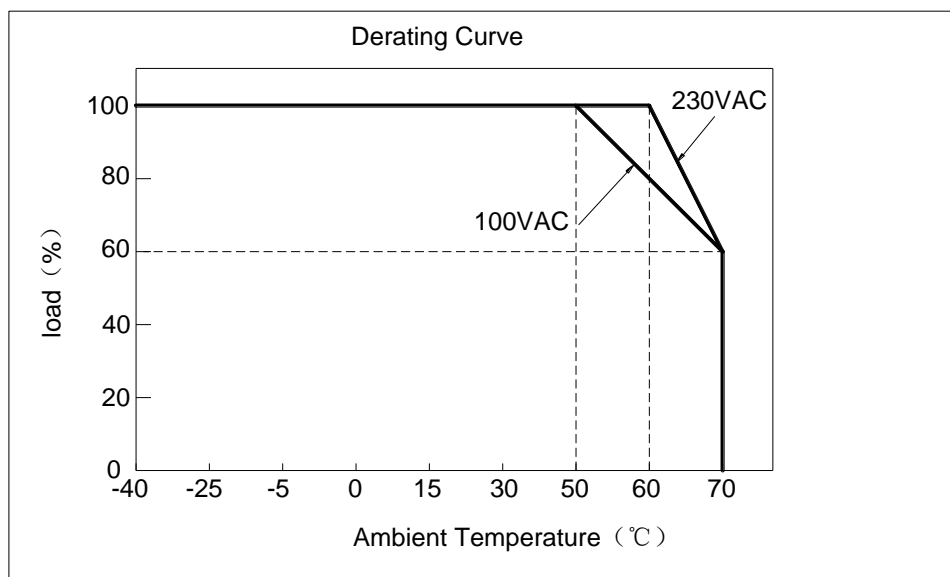
D	H	320	-	024	S	1333	A	-	TA
Lighting products							Optional mode: two letters Default: no additional features TA: DALI dimming function, isolated output TC: 3 in 1 dimming function (PWM, resistance, voltage) TE: Customized timeshare dimming TF: Programmable timeshare dimming		
E: Economic LED driver R: High performance LED driver H: High efficiency LED driver							Optional mode: one letter Default: no additional features A: output voltage and current can be adjusted		
Output power(W): three numbers Filled 0 in front of it when less than 3.							Output current(×10mA): three numbers Filled 0 in front of it when less than 3; four numbers are available if needed. For example: 1333 means 13330mA, 035 means 350mA		
Output voltage(V): three numbers Filled 0 in front of it when less than 3. For example: 143 means 143V, 024 means 24V							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: DH320-024S1333A-TA means: high efficiency LED driver; output power 320W; output voltage 24Vdc; output current 13330mA; single output; output voltage and current can be adjusted; with DALI dimming function and isolated output.

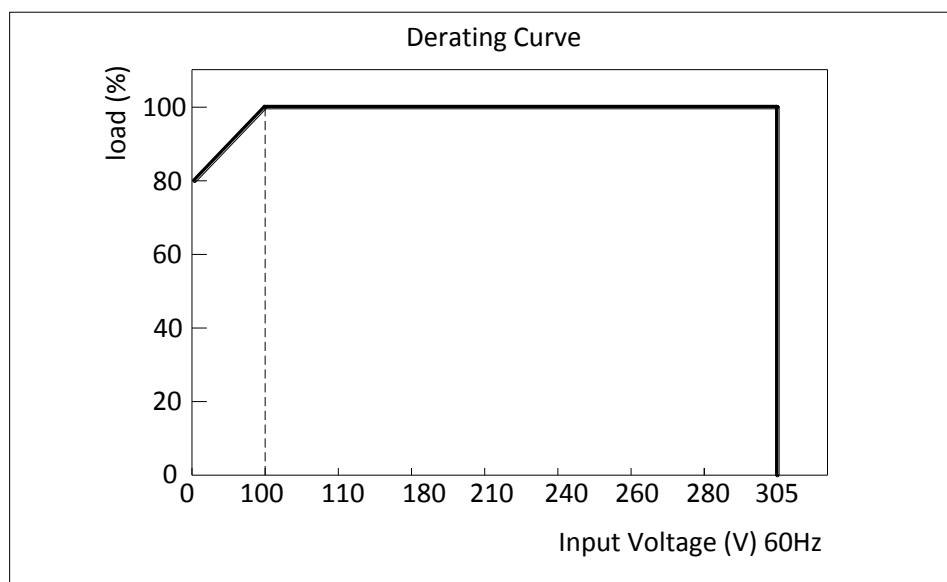
■ wiring diagram



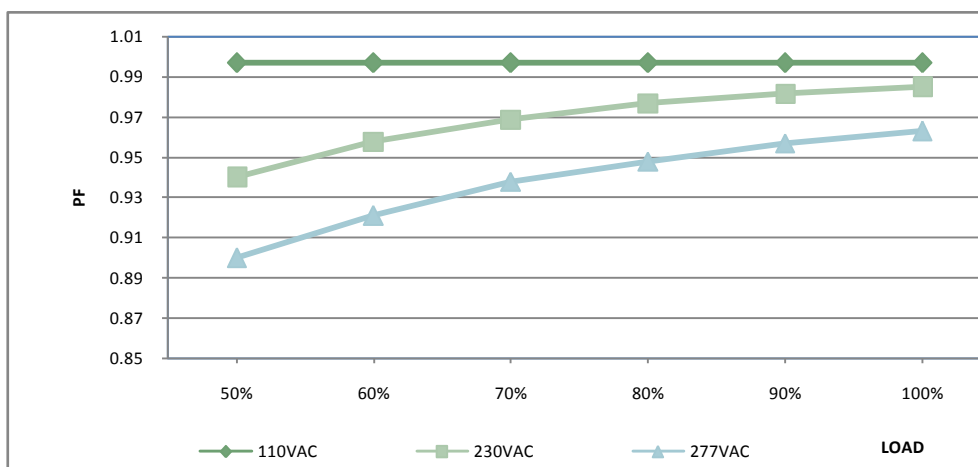
■ Derating Curve



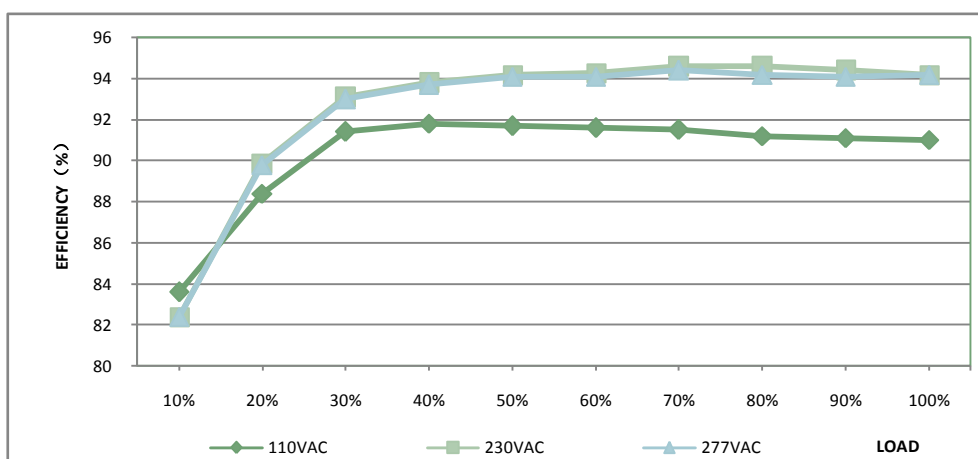
■ Static Characteristics



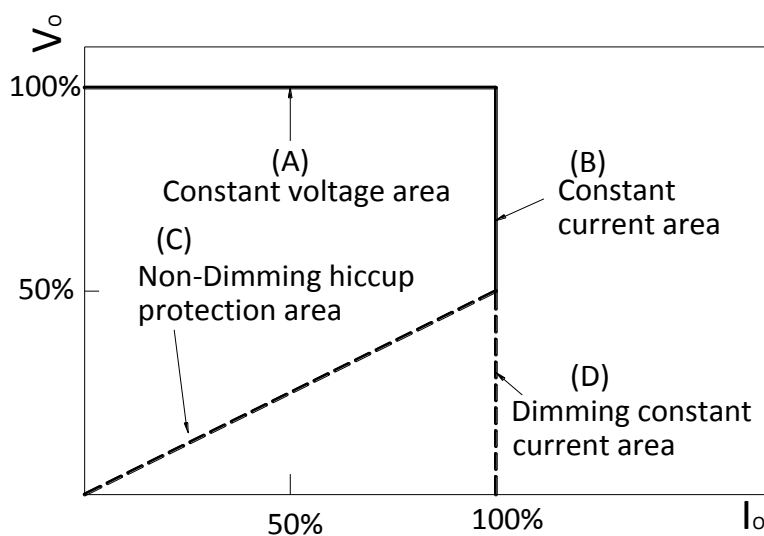
■ Power Factor Characteristic (DH320-024S1333)



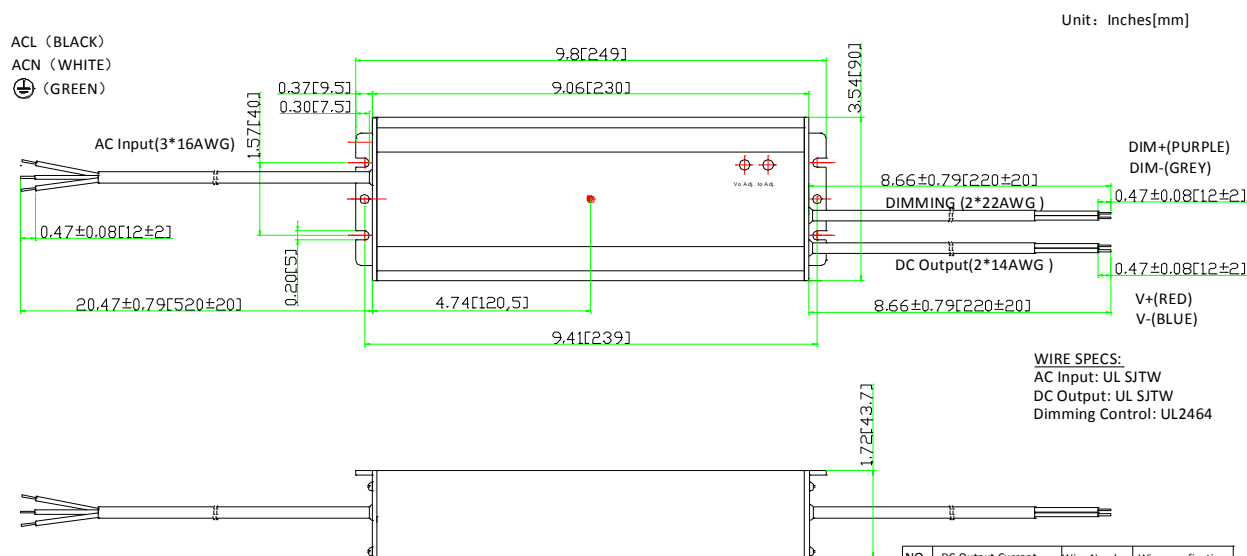
■ EFFICIENCY vs LOAD (DH320-024S1333)



■ 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.
- ※ Please DO NOT connect "DIM -" to "V -" (load)

NO.	DC Output Current	Wire Number	Wire specification
1	≤5A	1	2×AWG18
2	5~12A(Including 12A)	1	2×AWG16
3	12~15A(Including 15A)	1	2×AWG14
4	15~24A(Including 24A)	2	2×AWG16
5	24~30A(Including 30A)	2	2×AWG14

■ “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.

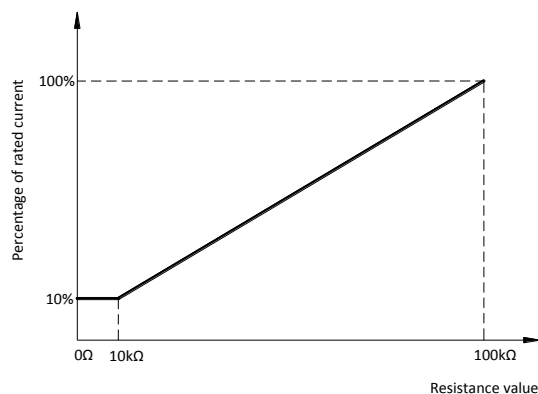
■ “-TA” option: DALI dimming

- 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.

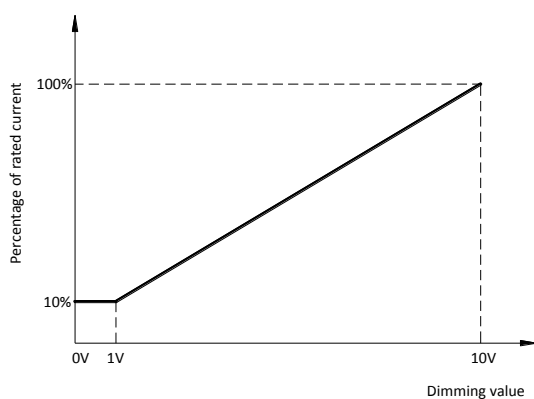


■ “-TC” option: 0-10V, resistance & PWM dimming

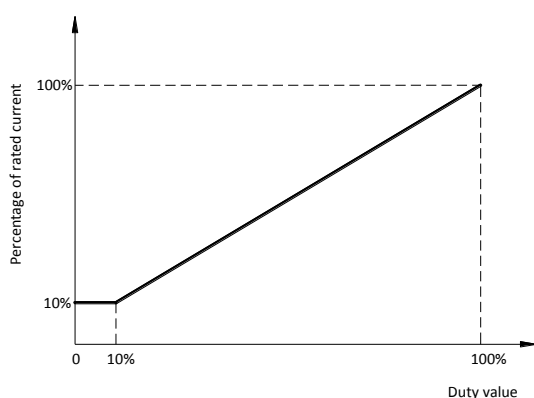
a. Reference resistance value for output current adjustment (Typical)



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:

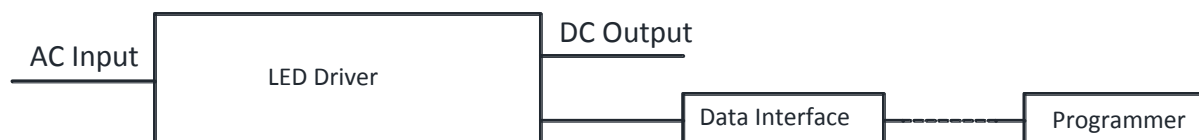
The first section: the time period is 0~1h, the output current is 40% of rated output current.

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.

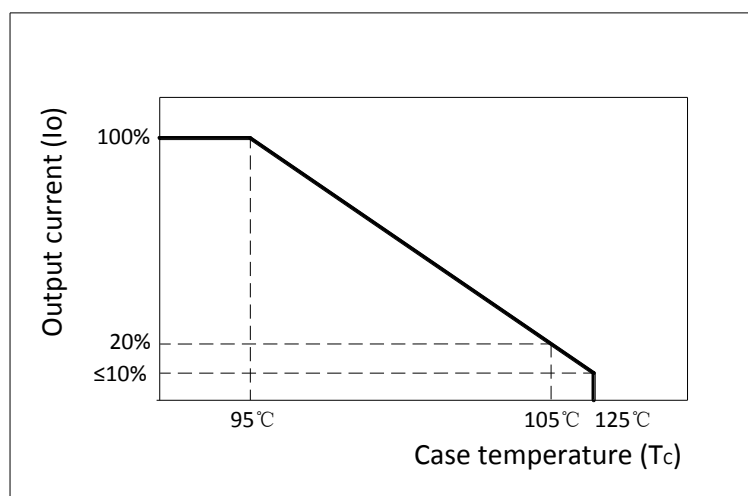
- The parameters are set by a programmer.
- The data interface is waterproof.



■ 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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