

LED DRIVER SPECIFICATIONS

Customer's Part Number: SL-LU0923501US

MOONS' Part Number: _____

Model: MU035H105AQ_CP/OFF

P/N: _____

CUSTOMER'S APPROVAL STAMP

Please sign back after your approval. The specifications will come into force when we receive purchase order.

DWG.	CHK.	STANDARD	APPD.

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■ **Features**

- Input voltage: 108-305Vac
- Built-in active PFC function: 0.99 Typ.
- Low THD: 10% Typ.
- High efficiency: 88% Typ.
- IP67 design for indoor or outdoor installations
- Constant current/ 0-10V dimming/ clock dimming(CLK)/ PWM dimming
- Protection: OVP, SCP, OTP
- Full power at 65%Iomax~100%Iomax (constant power)
- High surge immunity



■ **Specification**

MU035H105AQ_CP/OFF		
Input	Efficiency (120Vac)(Typ.) _{Note.1}	86% (Typical) , >84% @ full load
	Efficiency (220Vac)(Typ.) _{Note.1}	88% (Typical) , >86% @ full load
	Efficiency (277Vac)(Typ.) _{Note.1}	87% (Typical) , >85% @ full load
	Voltage Range (V) _{Note.2}	108 ~ 305Vac
	Voltage Rated (V) _{Note.2}	120 ~ 277Vac
	Frequency Range (Hz)	47~63
	Power Factor	0.97 (minimum) at 120Vac/60Hz input, with 80%-100% load
		0.94 (minimum) at 220Vac/50Hz input, with 80%-100% load
		0.90 (minimum) at 277Vac/60Hz input, with 80%-100% load
	THD	15% (maximum) at 120Vac/60Hz input, with 80%~100% load conditions
		20% (maximum) at 220Vac/50Hz input, with 80%~100% load conditions
		20% (maximum) at 277Vac/60Hz input, with 80%~100% load conditions
AC Current (Max.)	0.5A at 120VAC input, 0.22A at 277VAC	
Inrush Current (Max.)	40A at 300Vac input 25℃ Cold Start (time wide=500uS, measured at 50% Ipeak,Not applicable for the inrush current to Noise Filter for less than 0.2ms)	
Leakage Current (Max.)	0.7mA at 300Vac/60Hz	
Output	Rated Output Voltage (V)	33-39
	Output Voltage Range (V)	30-50
	Rated Current (mA)	700-1050
	Output Current Range (mA)	70-1050
	Rated Power (W)	35
	Output Current Setting Range	10%-100% of Io_max
	Constant Power Setting Range	67%-100% of Io_max
	Ripple Current (Typ.)	10% of Io_max. ((PK-AV)/AV) with LED default mode and full load)
	Current Tolerance	±5%
	Line Regulation	±5%
	Load Regulation	±5%
	Turn on delay Time	<0.5s, at 120Vac; <0.35s, at 277Vac
Dimming	12Vdc Output Voltage (V)	11.4-12.6
	12Vdc Output Current (mA)	200 (Max.)
	0~10V/DMI+ Voltage (V)	Absolute maximum voltage -10Vmin~20 Vmax
	0~10V/DMI+ Short Current (mA)	100uA~340uA(DIM(+)=0)
	Dimming Function	0~10V/10%Io~100%Io ref. Dimming module diagram and dimming cruve
Protection	Over Voltage (V)(Typ.)	<58 Protection type: Voltage limiting.output will not exceed the upper limit voltage , recovers automatically after fault condition is removed.
	Short Circuit	Protection type: Hiccup mode. recovers automatically after short is removed.
	Over temperature	Protection type: Decrease output current. When tc reaches 100℃+/-10℃, the output current decrease to approximate 50% of rated value until tc drops below 90℃.
Environment	Operating Temp.	-40~+70℃(Refer to 'Derating Curve')
	Tc	90℃ max
	Operating Humidity	20~95%RH
	Storage Temp., Humidity	-40~+85℃ , 10-95%RH
	Temp. Coefficient	0.03%/℃ (0~50℃)
Safety & EMC	Vibration	10-500Hz, 5G 12min/cycle, period for 72min each along X、 Y、 Z axes
	Safety Standard	meet the standard of UL8750, UL1310 Class 2, CSA C22.2 No.223-M91, EN61347-1, EN61347-2-13, GB19510.1, GB19510.14
	Withstand Voltage	I/P-O/P:3.75KVac, I/P-FG:1.875KV, O/P-FG:1.5KV
	Isolation Resistance	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500Vdc/25℃/70%RH
	EMC Emission	EN55015/FCC Part 15 Class B, EN61000-3-2 Class C, EN61000-3-3
	EMC Immunity	EN61000-4-2,3,4,5,6,8,11, EN61547 (Surge: L-N 4KV, L/N-Earth 6KV)
Others	MTBF	300,000 Hours, measured at full load, 25℃ ambient temperature
	Lifetime	50,000 Hours at Tc 75℃(Refer to"Life Time VS. Tcase (Ref.)")
	Dimension	193 x 42.5 x34.5 (mm) (LxWxH)
	Weight (Typ.)	0.54Kg

Note.1: Measured at full load and steady-state temperature in 25℃ ambient(Efficiency will be about 2% lower if measured immediately after startup); Note. 2: Derating may be needed under low input voltages , Please Refer to 'Derating Curve' ; Note. 3: All parameters NOT specially mentioned are measured at 220VAC input , rated load and 25℃ of ambient temperature ; Note.4: Includes set up tolerance, line regulation and load regulation.

subject to change without notice

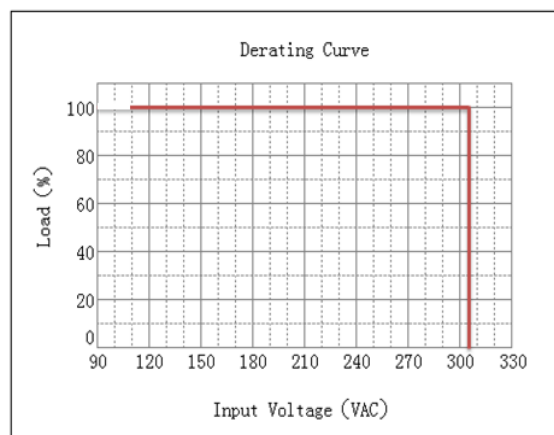
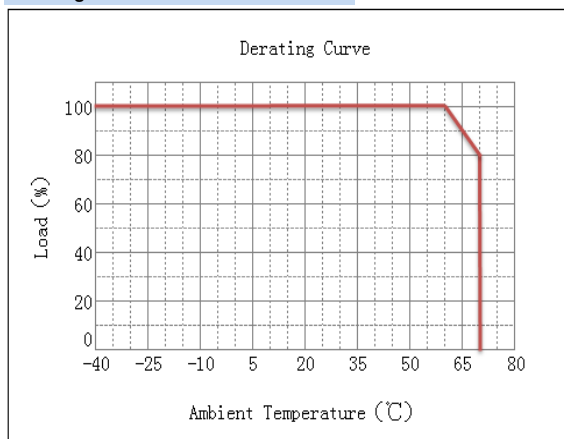
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SHANGHAI MOONS' AUTOMATION CONTROL CO., LTD.

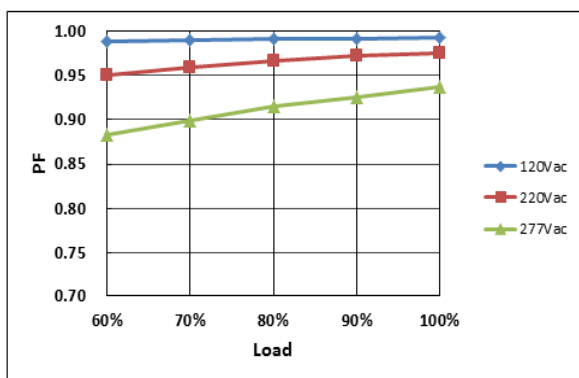
Add: No.168, Mingjia Road, Shanghai 201107, P.R.China

Tel: +86 (0)21 52634688 Website: www.moons.com.cn

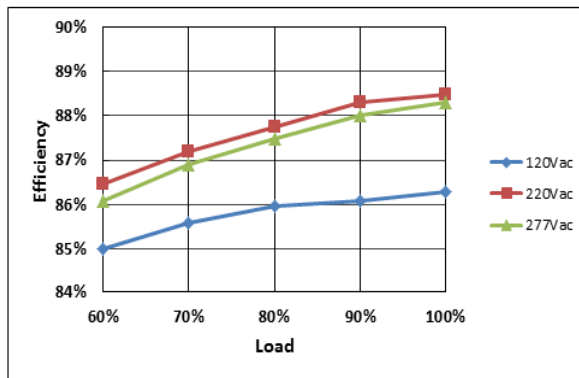
Derating Curve



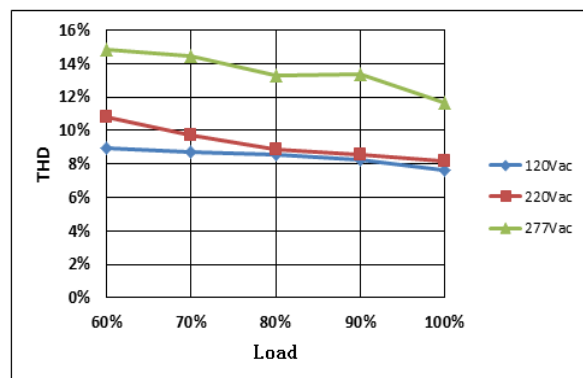
Power Factor VS. Load Curve (900mA)



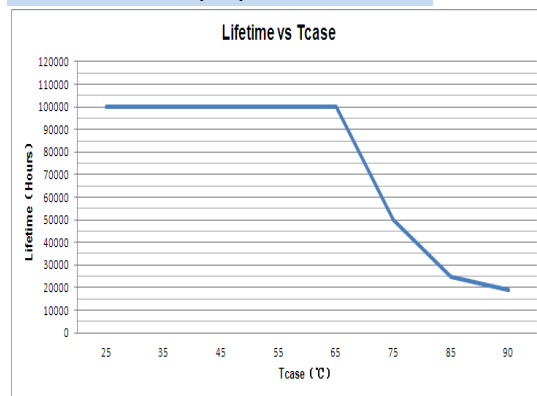
Efficiency VS. Load Curve (900mA)



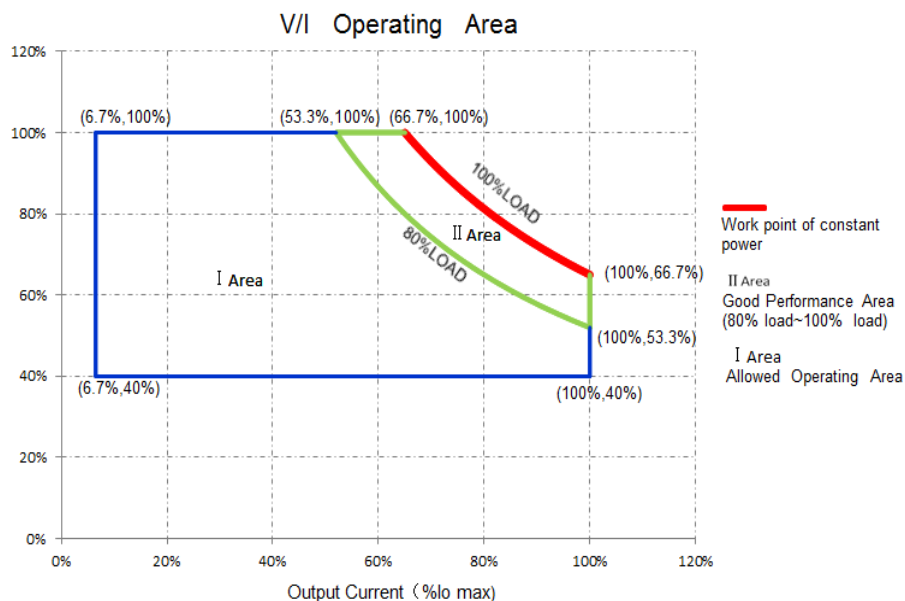
THD VS. Load Curve (900mA)



Life Time VS. Tcase (Ref.)

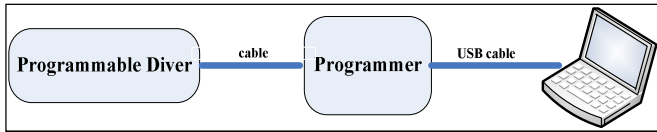


V/I Curve



■ Instruction

1.Field Programmable Topology



The programmable driver can be programmed by using special PC software and the programmer module.

2.Dimming Interface Description

Pin description

Pin	Destination	min.	typ.	max.	Description
1	12V	11.4V	12.0V	12.6V	DC supply output voltage
		-	100mA	200mA	DC supply output source current
2	Dim+/Program()	-10V	-	20V	Absolute maximum voltage on the DIM+
		100uA	-	340uA	Source current on the DIM+
3	Dim-	0V	-	-	DC Ground
4	Dim off (V)	0.88	0.93	0.98	
5	Dim min (V)	-	1	-	10%Io
6	Dim on (V)	1.25	1.35	1.45	
7	Dim max (V)	8	-	10	100%Io

3.Dimming Software Function Instruction

■ Adjustable Output Current(AOC)

Adjustable Output Current(AOC)

Module Current mA

Max Current mA Power W

Users can set the rated current between 10%*Max Current and 100%*Max Current.

■ Adjustable Startup Time(AST)

Adjustable Startup Time(AST)

Start Fadeup Time s

Set driver's "Start Fadeup Time". It means how much time the driver costs to achieve the "Module Current" that the user set. The valid value is 0s, 1s, 2s, 5s, 10s, 20s, 40s.

■ Fade Time(FT)

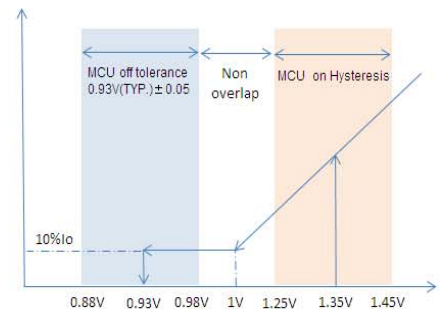
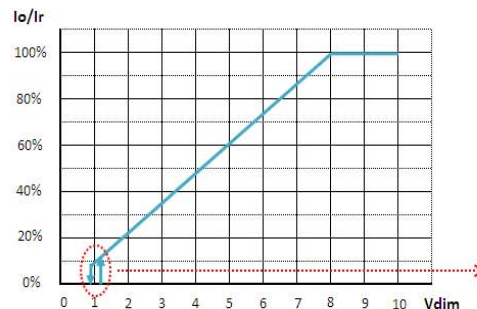
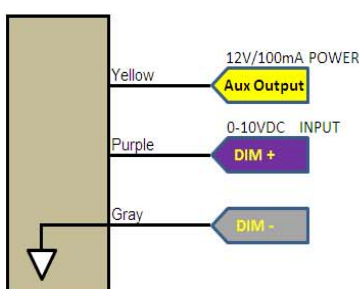
Fade Time(FT)

Fadeup Time s

Set driver's "Fadeup Time". This function is available in the Smart Midnight ClockDIM and Fixed ClockDIM mode; It means how much time the driver costs to achieve another dimming level from previous dimming level. The valid value is 0s, 1s, 2s, 5s, 10s, 20s, 40s.

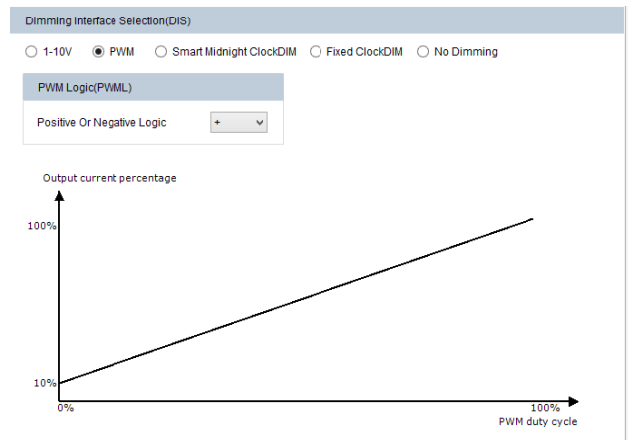
■ 1-10V

Allow users to set the max and min output current and corresponding output voltage to clarify the 1-10V dimming curve. Input a 0~10V signal from 2nd pin of the dimming interface. Default: input $\leq 1V$, output current 10%; input $\geq 8.0V$, output current 100%. Input $\leq 0.93V$ (type), dimming off. Input $\geq 1.35V$ (type), dimming on. Compatible dimmer: Lutron NFTV single pole slide dimmer and Leviton IP710.



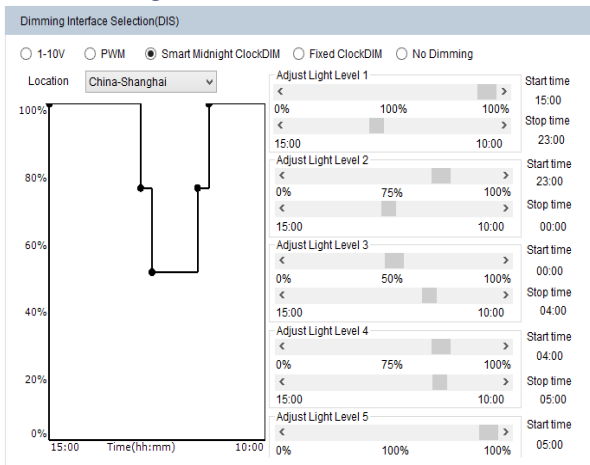
■ PWM

Input a PWM signal from the 2nd pin(Dim+/Program) of the dimming interface to change the output current. User can set "Positive Logic" or "Negative Logic" of the PWM signal. PWM duty circle: 1%~99%(it has both positive and negative logics), frequency: 500Hz~2kHz, 3V~10V is high, -0.3V~0.8V is low. Default: PWM $\leq 5\%$, Dimming off, PWM $\geq 8\%$, Dimming on.



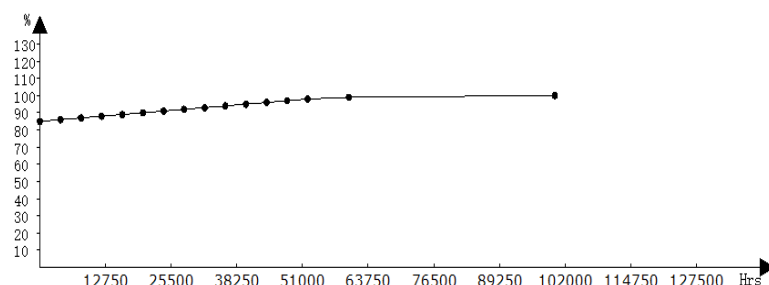
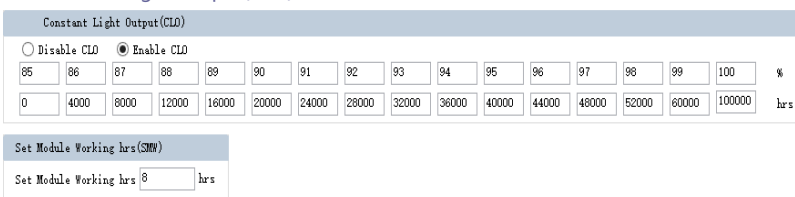
Instruction

Smart Midnight ClockDIM

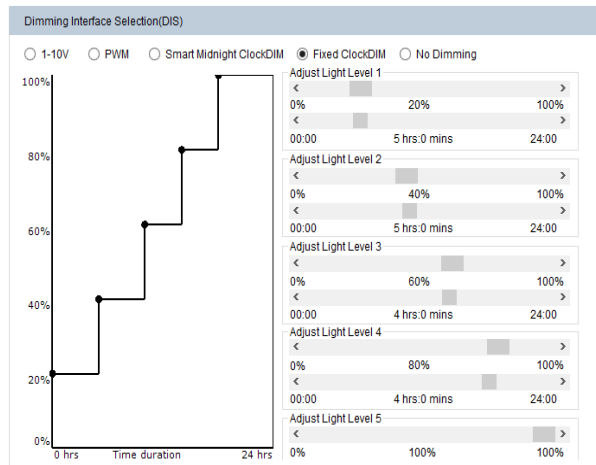


Smart Midnight ClockDIM allows dimming to predefined light levels based on the nightly operating time. With flexibility in setting time and light levels, the user can configure the driver for specific locations and application needs. Using Integrated Dynadimmer, it is possible to set up to 5 dim levels and time intervals. The driver does not have a real time clock. Instead it runs a virtual clock, determined by the length of nightly operating hours. After 3 ON-OFF cycles, the driver will calculate the virtual clock time. A valid ON-time is defined as a period during which the driver operates continuously for ≥ 4 hours to ≤ 24 hours. For example, if the requirement in summer is: 23:00-00:00: 75%, 00:00-04:00: 50%, 04:00-05:00: 75% (other time 100% or Off). The driver should be powered on for 7h, so it can calculate the virtual clock time as 22:00. Then we can set the dimming plan: 22:00~23:00: 100%, 23:00-00:00: 75%, 00:00-04:00: 50%, 04:00-05:00: 75%. From summer to winter, the valid ON-time changes day by day. The driver should be powered on for 17h in winter, and it also can calculate the virtual clock time as 17:00. Then the dimming plan is 17:00~23:00: 100%, 23:00-00:00: 75%, 00:00-04:00: 50%, 04:00-05:00: 75%, 05:00~10:00: 100%. From the above, if we set the dimming plan as shown in the picture, after repeating the driver ON-time for 3 consecutive days, the dimming plan takes effect from the 4th day onwards. Each day the driver powered on, it has a different start time according to the virtual clock time. So the driver can satisfy different requirements for different seasons.

Constant Light Output(CLO)

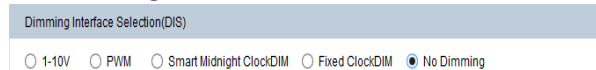


Fixed ClockDIM



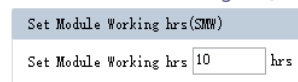
Allow users to separate 24hrs into 5 sections and corresponding output current.

No Dimming



The driver will be in constant output mode.

Set Module Working hrs(SMW)



User can check how much time the driver works through this function.

Traditional light sources suffer from depreciation in light output over time. This applies to LED light sources as well. The CLO feature enables LED solutions to deliver constant lumen output through the life of the light engine. Based on the type of LEDs used, heat sinking and driver current, it is possible to estimate the depreciation of light output for specific LEDs and this information can be entered into the driver. The driver counts the number of light source working hours and will increase output current based on this input to enable CLO.

When the CLO feature is enabled, the driver nominal output current will be defined by the CLO percentage as shown by the equation below:

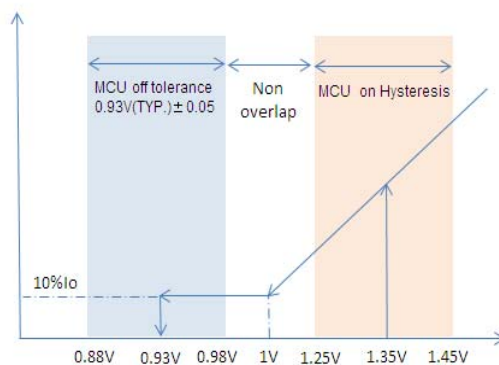
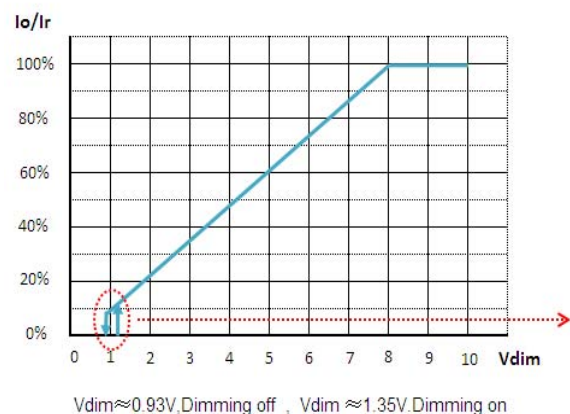
$$\text{Driver target nominal output current} = \text{CLO percentage} \times \text{AOC}$$
For example, in the CLO profile shown in Figure, between 52,000-60,000 working hours, the CLO percentage is set at 98%. Assuming the nominal AOC is set to 500mA, the driver output current with CLO enabled will be $0.98 \times 500 = 490 \text{ mA}$.
The CLO percentage can be set to a value between 85%-100%, in increments of 1%. The LED module working hours can be set at any value between (0-100,000 hours).

■ Dimming Plan

■ Module Current=900mA

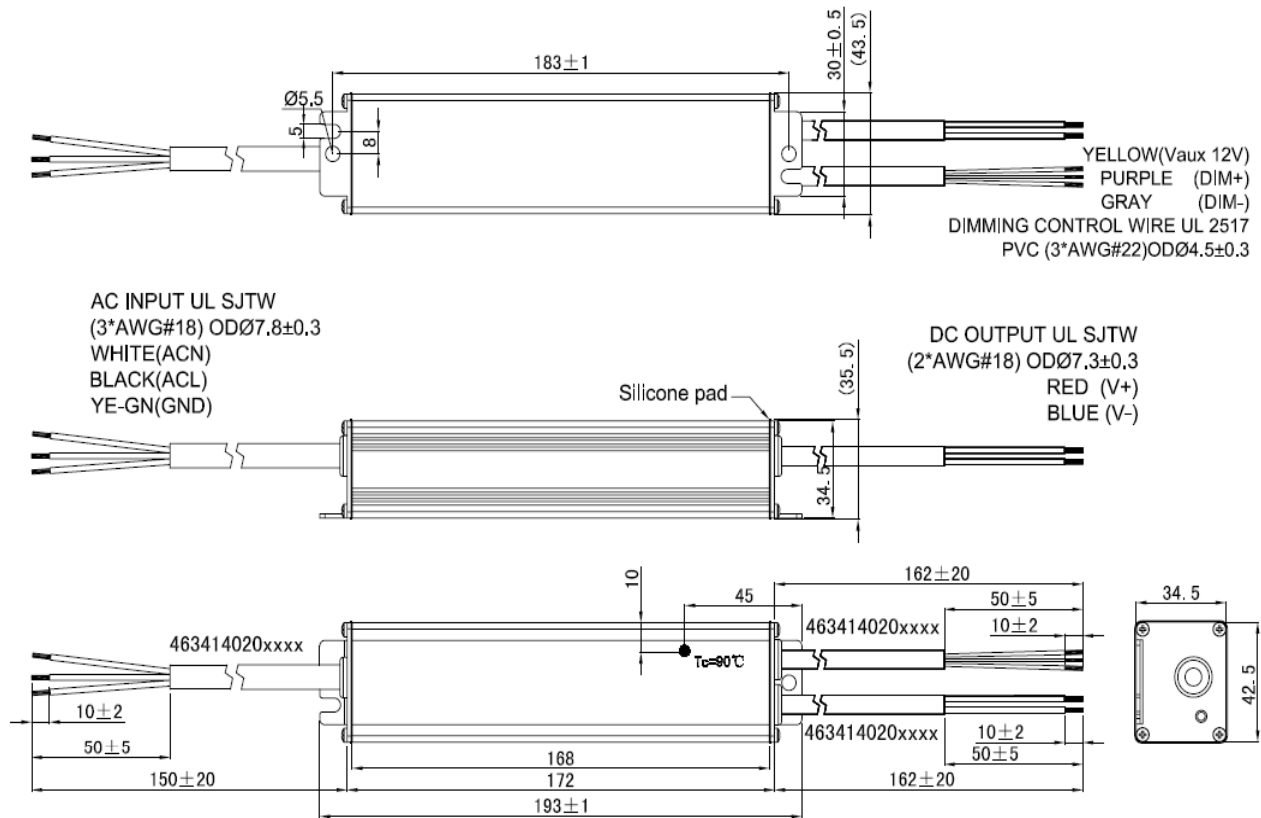
Adjustable Output Current(AOC)		
Module Current	900	mA
Max Current	1050	mA Power 35 W

■ 1-10V dimming



■ Mechanical Specification

1. Dimensions (Unit: mm)



2. Terminal wire Type

Products	AC Input			DC output			Dimming control		
	Wire Type	Assignment	Description	Wire Type	Assignment	Description	Wire Type	Assignment	Description
UL approval	UL SJTW PVC	BLACK/L	3*AWG#18	UL SJTW PVC	RED/+	2*AWG#18	UL2517 PV COD $\varnothing 4.5 \pm 0.3$ mm	YE/12V	3*AWG#22
		WHITE/N			BLUE/-			PU/DIM+	
		YE-GN/GND						GR/DIM-	

3. Nameplate

RoHS Compliance:

Our products comply with the European Directive 2002/95/EC, calling for the elimination of lead and other hazardous substances from electronic products.