

■ **Features**

- Input voltage: 90~305Vac
- Built-in active PFC function: 0.99 Typ.
- High efficiency:88% Typ.
- IP67 design for indoor or outdoor installations
- Surge protection: DM 4KV,CM 6KV
- Support Time-shared dimming function
- Compliance to worldwide safety regulations for lighting
- Suitable for dry/damp locations

**IP67**

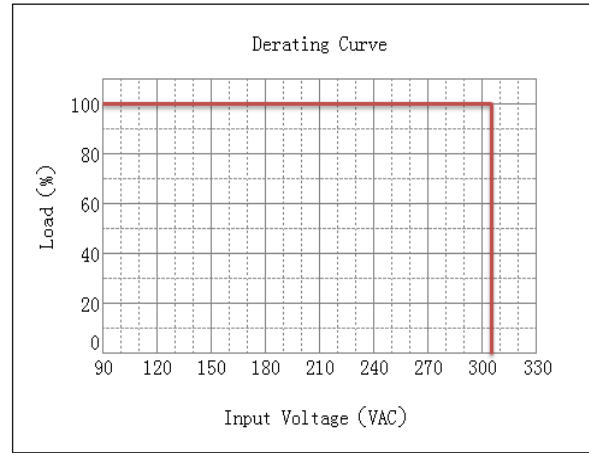
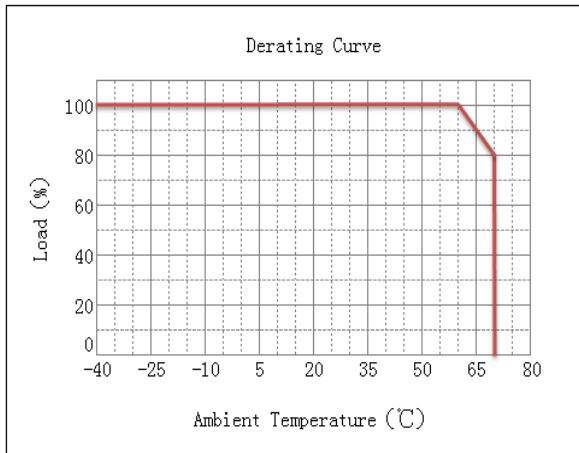
■ **Specification**

Model		MU035H070AQ_CLKS
Input	Efficiency(110Vac)	87%(Typ.) , 85% (Min.) full load
	Efficiency(220Vac)	88%(Typ.) , 86% (Min.) full load
	Voltage Range (Vac)	90~305
	Frequency Range (Hz)	47~63
	Power Factor	0.99 Typical (>0.90, at 100~277Vac input, with 85%~100% load conditions)
	THD	< 20%, at 100-277Vac input, with 80%~100% load conditions
	AC Current	<0.5A at 100Vac input; <0.25A at 200Vac input
	Inrush Current	50A(MAX) at 230Vac input 25°C cold start
	Leakage Current(Max)	0.75mA at 277Vac 60Hz input
Output	DC Voltage (V)	50
	Rated Current(mA)	700
	Rated Power (W)	35.00
	Ripple Current( (PK-AV)/AV) with LED default mode full load(Typ.)	≤25%
	Voltage Range (V)	25~50
	Current Tolerance <sup>Note.1</sup>	5%
	Line Regulation	5%
	Load Regulation	5%
	Current ADJ. Range	-
	Turn-on Delay Time	1.5s, measured at 120Vac input; 0.75s, measured at 220Vac input(When the light begins to shine)
Protection	Over Voltage(V) Typ.	<60 Protection type : Limit the output voltage , recovers automatically after fault condition is removed
	Short Circuit	Hiccup mode, recovers automatically after fault condition is removed.
	Over Temperature	When the Tc of PSU rise to 110°C(Typ.),the PSU will shutdown. The power supply should resume its normal operation when the inside temperature of PSU drop to normal temperature
Environment	Operating Temp.	-40~+70°C
	Operating Humidity	20~95%RH
	Storage Temp., Humidity	-40~+80°C, 10-95%RH
	Vibration	10~500Hz, 5G 12min/cycle, period for 72min each along X、 Y、 Z axes
Safety & EMC	Safety Standard	UL8750, UL1310,CSA C22.2 No.223-M91, EN61347-1,EN61347-2-13
	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°C/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°C ambient temperature MIL-HDBK-217F(25°C)
	Dimension	193 x 42.5 x 34.5 mm ( LxWxH )
	Weight(Typ.)	0.55kg

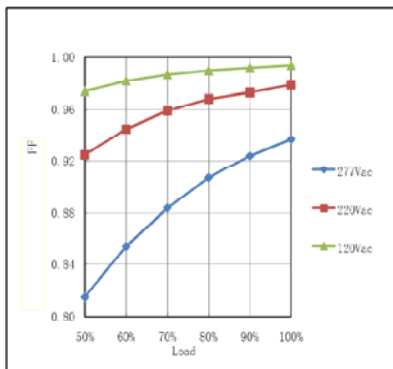
Note.1: Includes set up tolerance, line regulation and load regulation.

■ Test Curve

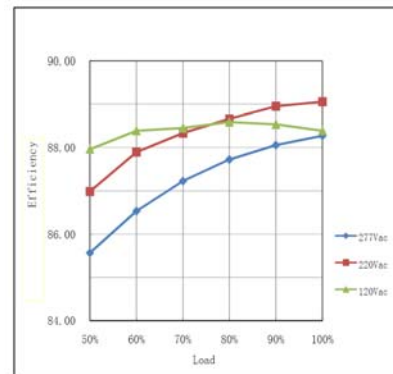
Derating Curve



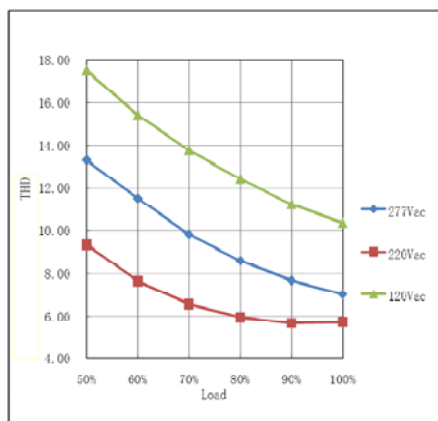
Power Factor Curve



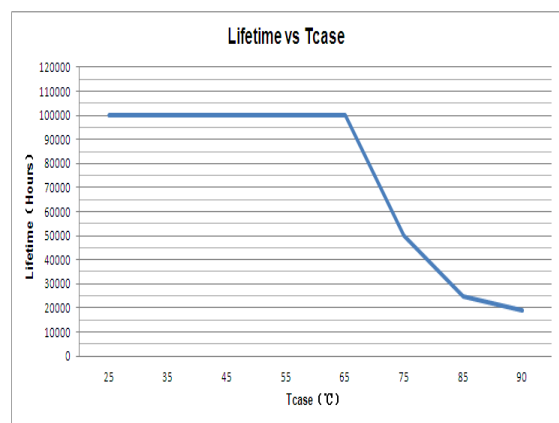
Efficiency VS. Load Curve



THD Curve

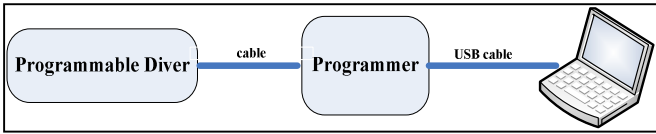


Life Time VS. Tcase (Ref.)



■ **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	Value	Description
1	Vaux 12V	9V-13.2V	Passive dimmers power supply
2	Dim+/Program	0-10V	Dimming/Programming input
3	Dim-	0V	DC Ground



**3.Dimming Software Function Instruction**

v 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.

v 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.

v 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.

v 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 ≤1V, output current 10%; input ≥8.5V, output current 100%.

Dimming Interface Selection(DIS)

1-10V  PWM  Smart Midnight ClockDIM  Fixed ClockDIM  No Dimming

1-10V Min dim level  V  %

1-10V Max dim level  V  %

■ 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~5kHz, 3V~10V is high, 0.3V~0.8V is low.

Dimming Interface Selection(DIS)

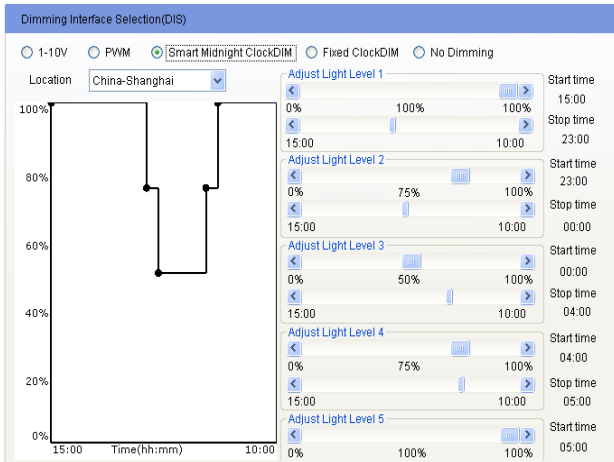
1-10V  PWM  Smart Midnight ClockDIM  Fixed ClockDIM  No Dimming

PWM Logic(PWML)

Positive Or Negative Logic

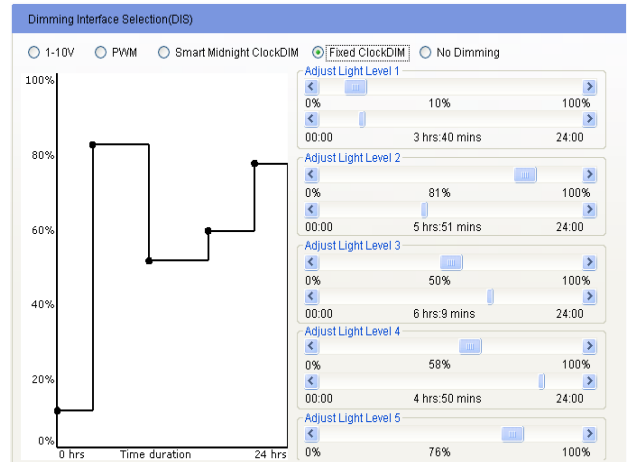
■ **Instruction**

v **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  $\geq 4$  hours to  $\leq 24$  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.

v **Fixed ClockDIM**



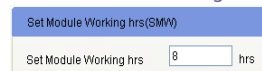
Allow users to separate 24hrs into 5 sections and corresponding output current.

v **No Dimming**

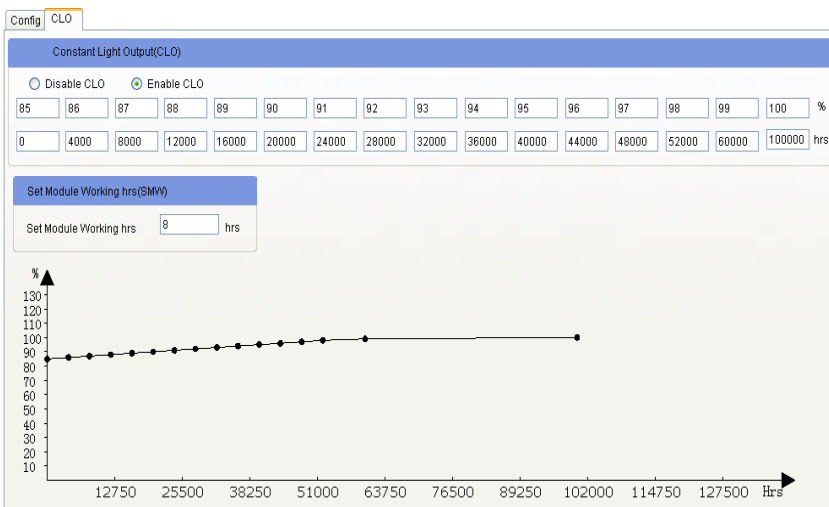


The driver will be in constant output mode.

v **Set Module Working hrs(SMW)**



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

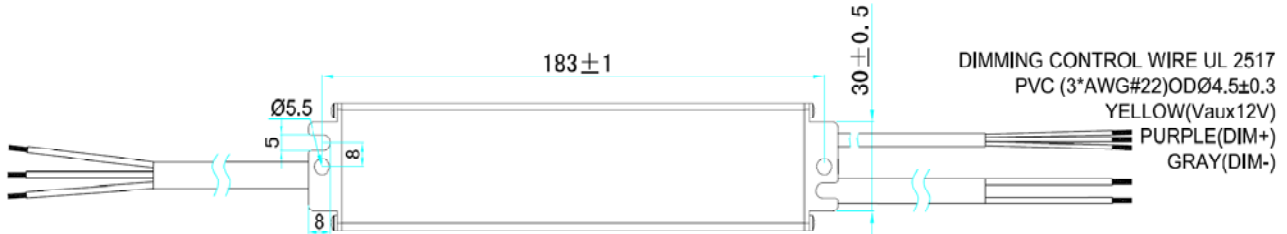


Traditional light sources suffer from depreciation in light output over time. This applies to LED light sources as well. The CLO feature enables LED solutions to deliver constant lumen output through the life of the light engine. Based on the type of LEDs used, heat sinking and driver current, it is 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:  

$$\text{Driver target nominal output current} = \text{CLO percentage} * \text{AOC}$$
 For example, in the CLO profile shown in Figure, between 52,000-60,000 working hours, the CLO percentage is set to 98%. Assuming the nominal AOC is set to 500mA, the driver output current with CLO enabled will be  $0.98 \times 500 = 600$  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).

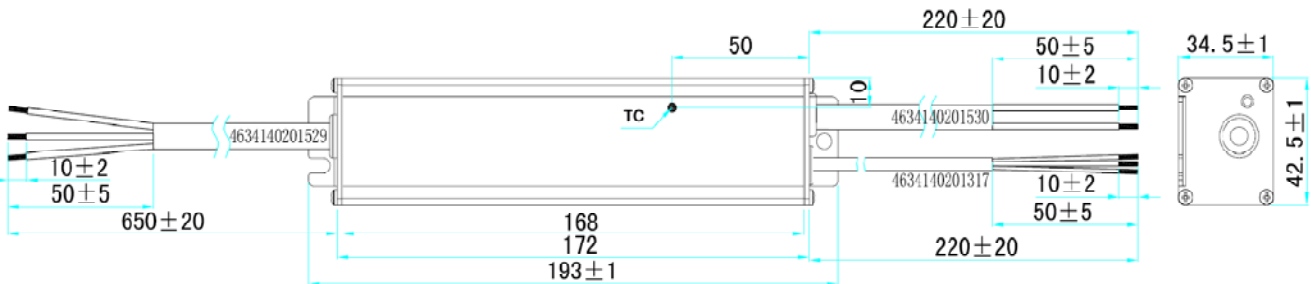
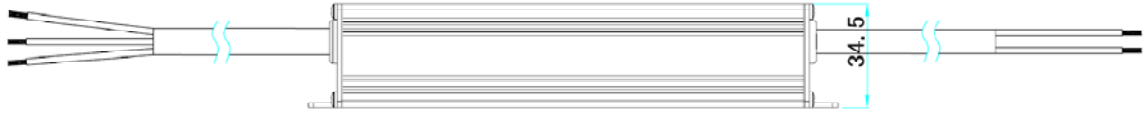
■ **Mechanical Specification**

Dimensions(Unit:mm)



RUBBER LINE CCC 60245 IEC 57 (YZW) /VDE H05RN-F  
AC INPUT (3\*1.0mm<sup>2</sup>) OD 7.3 ± 0.3mm  
BROWN/L BLUE/N YE-GN/GND

RUBBER LINE CCC 60245 IEC57 (YZW) /VDE H05RN-F  
DC OUTPUT (2\*1.0mm<sup>2</sup>) OD 6.8 ± 0.3mm  
BROWN/V+ BLUE/V-



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.

■ **Nameplate**

<p>● AC/L BROWN (棕色)</p> <p>● AC/N BLUE (蓝色)</p> <p>● YE-GN (黄绿色)</p> <p style="text-align: center;"><b>INPUT (输入)</b></p>	<p style="text-align: center;"><b>MOONS'</b></p> <p style="text-align: center;"><b>LED Driver (LED控制装置)</b> <b>Energy Saving Solutions</b></p> <p>Http://www.moons.com.cn Http://www.moonsindustries.com</p> <p style="font-size: small;">SHANGHAI MOONS' AUTOMATION CONTROL CO.,LTD (上海皓志自动控制设备有限公司) MADE IN CHINA(中国制造)</p> <p style="text-align: center;"><b>MU035H070AQ_CLKS</b></p> <p>P/N:</p> <p>Input Voltage (输入电压): 100-240Vac 50/60Hz Input Current (输入电流): 0.50A@100Vac Output Voltage (输出电压): 25-50Vdc Output Voltage (输出电压): 60Vdc Max Output Current (输出电流): 700mA Output Power (输出功率): 35W ta:70°C tc:90°C</p> <div style="display: flex; justify-content: space-around; align-items: center;"> </div>	<p>● V-BLUE (蓝色)</p> <p>● V+ BROWN (棕色)</p> <p>Vaux 12V YE (黄色)</p> <p>Dim+ Program PU (紫色)</p> <p>Dim- GR (灰色)</p> <p style="text-align: center;"><b>OUTPUT (输出)</b></p> <p style="text-align: center;"><b>Dimming (调光)</b></p>