

Rev.	Date	Contents	ECO NO.	DWG	CHK	APPR
A0	2020/2/26	New release		Zhi Yang	Bilin Tu	Bilin Tu



- **Features**
- Input voltage: 176-305Vac
 - Built-in active PFC function 0.98 Typ.
 - High efficiency: up to 93% Typ.
 - Built-in Lightning protection
 - Three dimming in one operation modes(0-10V Dimming / Clock Dimming(CLK)/PWM Dimming)
 - Protection: OVP, SCP, OTP
 - Full Power at 65%I_omax~100%I_omax (Constant Power)
 - IP67 design for indoor or outdoor installations



Version: A0

■ **Specification**

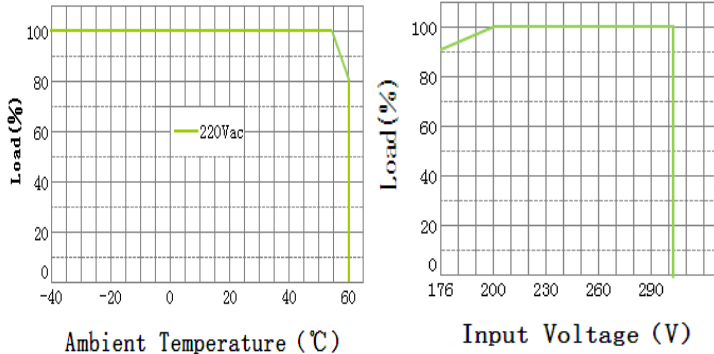
Model		ME250H150AQ_CP
Input	Efficiency(220Vac) Typ.	93%
	Voltage Range (Vac)	176 ~ 305
	Rated Input Voltage (Vac)	200-240
	Frequency Range (Hz)	47~63
	Power Factor(Typ.)	>0.95 with100% load,at 200Vac-277Vac
		>0.90 with 80%~100% load,at 200Vac-277Vac
	THD(Typ.)	<15% at 220VAC input 50Hz,80%~100% load
		<20% at 200Vac-277Vac input 60Hz,60%~100% load
	AC Current(Typ.)	1.5A
Output	Inrush Current(Typ.)	65A at 230Vac input 25°C cold start
	Leakage Current(max.)	0.75mA at 277Vac 50Hz input
	Rated Output Voltage (V)	250-167
	Output Voltage Range (V) ^{Note.1}	250-100
	Rated Current(mA)	1000-1500
	Output Current Range(mA)	100-1500
	Rated Power (W)	250(max)
	Output Current Set Range	6.5%I _o max~100%I _o max
	Constant Power Output Set Range	65%I _o max~100%I _o max
	Ripple Current(I _{dc} (pk-av)/av)	10% max. (I _{dc} (pk-av)/av) at 100% I _{out}
	Current Tolerance ^{Note.2}	±5%
	Line Regulation	±1%
	Load Regulation	±3%
	Setup, Rise Time	1s(typ.), measured at 230Vac input
	Hold Up Time	10ms at 230Vac 100% load
Dimming Control	12Vdc Output Voltage (Vdc)	10.8Vmin.~12Vtyp.~13.2Vmax.
	12Vdc Output Current(Vdc)	0mA~20mA max.
	0~10V/DM+ Voltage	Absolute maximum voltage -10Vmin~20Vmax
	0~10V/DM+ Short Current	280uA~450uA (DIM(+)=0)
	DIMMING FUNCTION	Default 0-10V dimming mode. Other dimming modes sets to PWM/Clock Dimming(CLK) by software configuration
Protection	Over Voltage(V)	320V max
	Short Circuit	No damage.The power supply shall be self-recovery when the fault is removed.
	Over Temperature	No damage.The power supply shall be self-recovery when the fault is removed.
	AC Brownout	Decrease output current .returning to normal after over temperature is removed.
Environment		V _{in} _on 150Vac typ.,V _{in} _off 140Vac typ.
	Operating Temp.	-40~+70°C(Refer to 'Derating Curve',-60°C can start up within 40 seconds,the output current should be stablized within 5 minutes) , (T _c ≤ 90°C)
	Operating Humidity	20~95%RH, non-condensing
	Storage Temp., Humidity	-40~+85°C, 5-100%RH
	Temp. Coefficient	0.03%/°C (0~50°C)
Safety & EMC	Vibration	10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes
	Safety Standard	EN61347-1, EN61347-2-13 ,EN60598-1,EN62384
	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 , EN61000-3-2 Class C, EN61000-3-3
Others	EMC Immunity	EN61000-4-2,3,4,5,6,8,11, EN61547 Line to FG:±10KV,Neutral to FG:±10KV,Line to Neutral :±10KV
	MTBF	250,000 hours, measured at full load, 25°C ambient temperature MIL-HDBK-217F(25°C)
	Dimension	234 x74.5 x 40mm (LxWxH)
	Weight	1.27kg(Typ.)

Note.1: refer to V/I curve

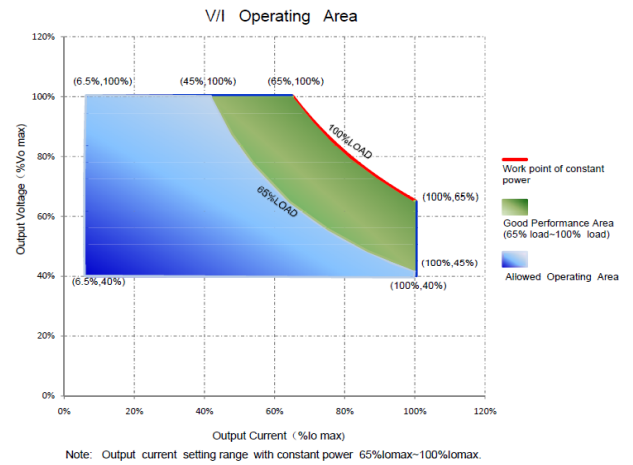
Note.2: At Rated Current ,Includes set up tolerance, line regulation and load regulation.

■ Curve

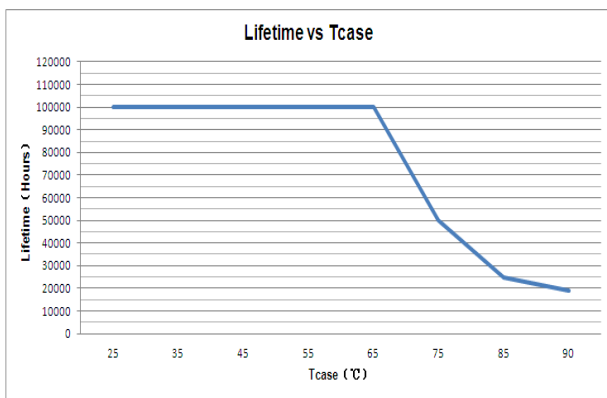
Derating Curve



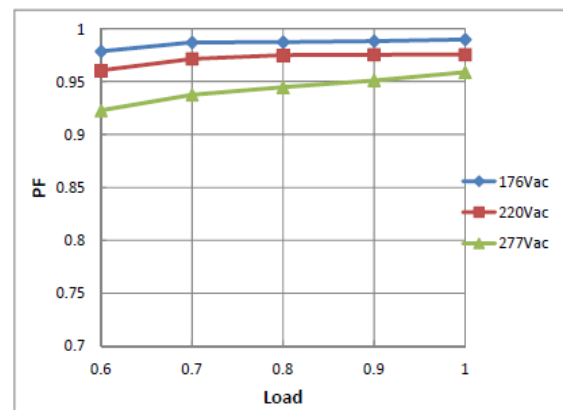
V/I Curve



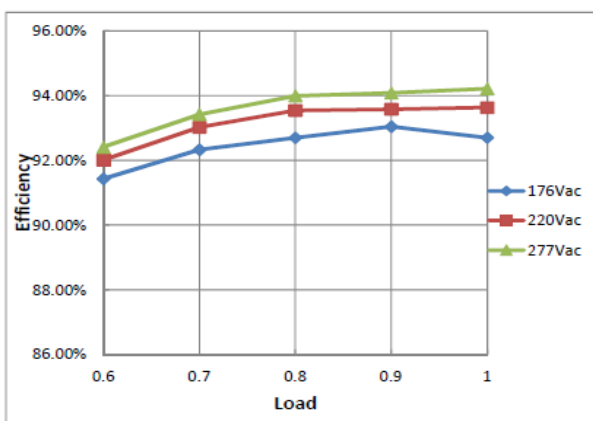
Lifetime vs. Case Temperature



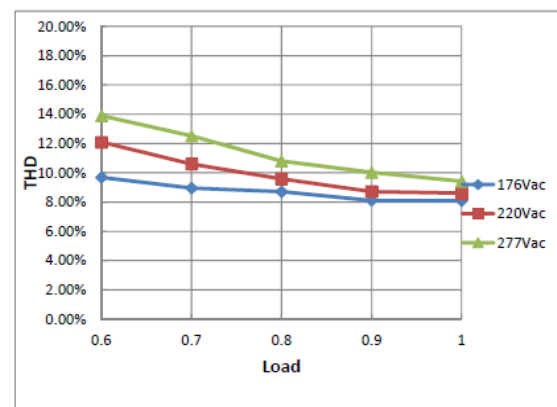
Power Factor Curve



Efficiency VS. Load Curve (Model 850mA)

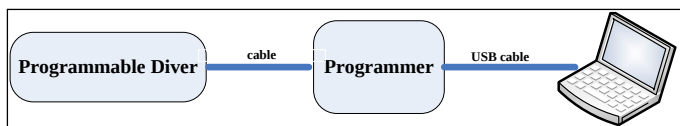


THD Curve



■ Instruction

1.Field Programmable Topology

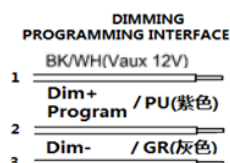


The programmable driver can be programmed by using special PC software and the programmer module.

2.Dimming Interface Description

Pin description

Pin	Name	Value	Description
1	Vaux 12V	10.8V-13.2V	Passive dimmers power supply
2	Dim+/Program	0-10V	Dimming/Programming input
3	Dim-	0V	DC Ground



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 7%*Max Current and 100%*Max Current.

■ Adjustable Startup Time(AST)

Adjustable Startup Time(AST)

Start Fadeup Time s

Set driver's "Start Fade up 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)

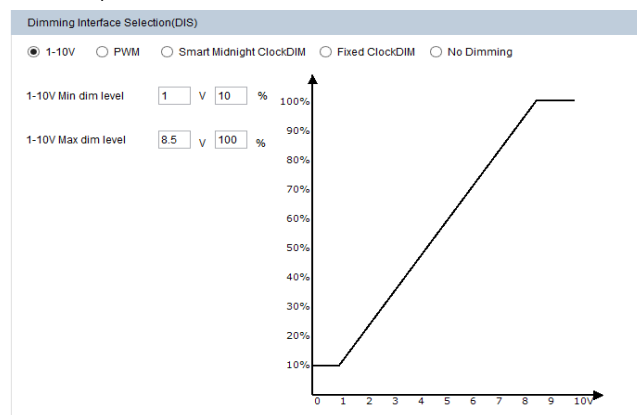
Fade Time(FT)

Fadeup Time s

Set driver's "Fade up 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 $\geq 8.5V$, output current 100%.



■ PWM

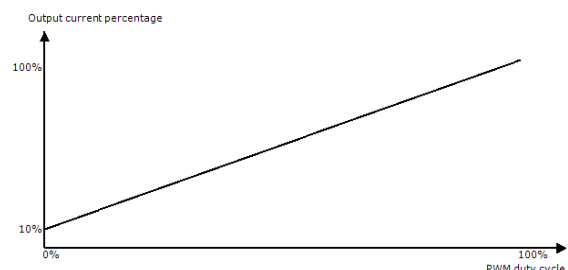
Input a PWM signal from the 2nd pin(Dim+/Program) of the dimming interface to change the output current. User can set "Positive Logic" or "Negative Logic" of the PWM signal. PWM duty circle: 1%~99%(it has both positive and negative logics), frequency: 500Hz~5kHz, 3V~10V is high, -0.3V~0.8V is low.

Dimming Interface Selection(DIS)

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

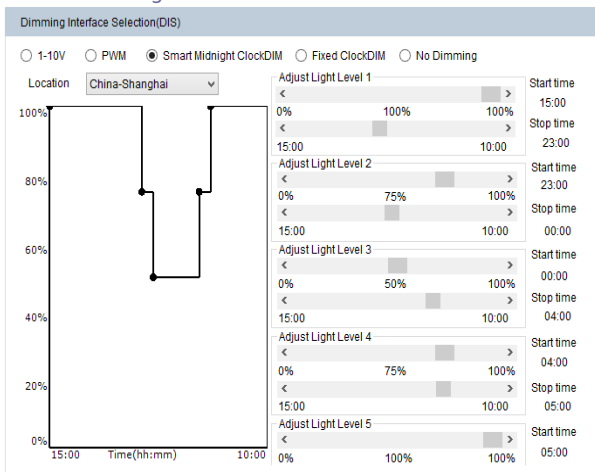
PWM Logic(PWML)

Positive Or Negative Logic



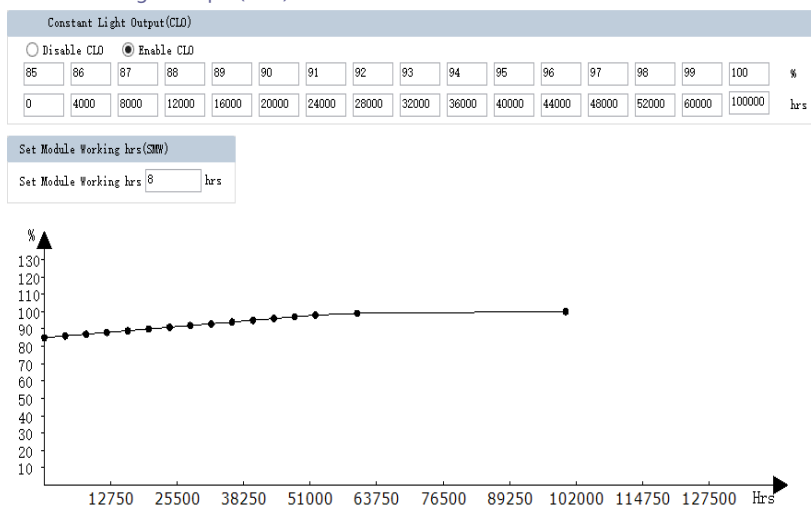
■ Instruction

■ Smart Midnight ClockDIM

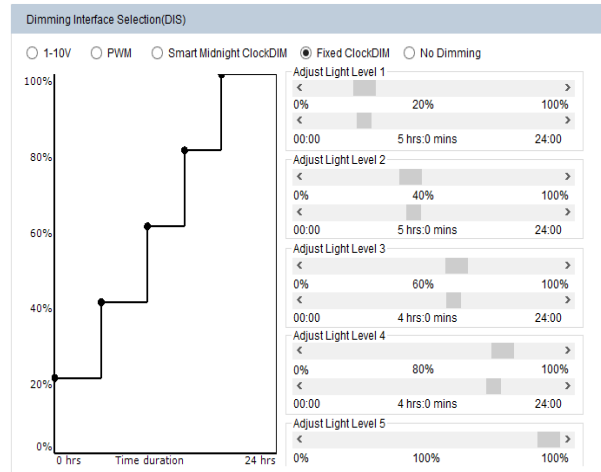


Smart Midnight ClockDIM allows dimming to predefined light levels based on the nightly operating time. With flexibility in setting time and light levels, the user can configure the driver for specific locations and application needs. Using Smart Midnight ClockDIM, it is possible to set up to 5 dim levels 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



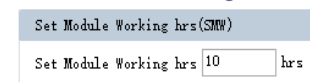
Allow users to separate 24hrs into 5 sections and corresponding output current.

■ 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).

