Product Features

- Input voltage range: 90~305 Vac;
- Constant power design, outputs programmable;
- Adjustable output current using PC via USB
- Multiple dimming capability (P types): 0~10Vdc / PWM / Step time dimming;
- Dim to Off;
- Surge protection: 4KV line-line, 4KV line-earth;
- Protections: SCP / OVP / OTP;
- IP67 design for indoor and outdoor applications;
- Suitable for dry / damp location applications
- 5 years warranty

c**RU**us HL   ℇℕ25   C E   CB   n.ECM 20 ATEX-B DW96
II 2G Ex mb IIC T4 Gb

Application

Hazardous Location Applications, Street Lighting, architecture lighting, industrial lighting, flood lighting, etc.

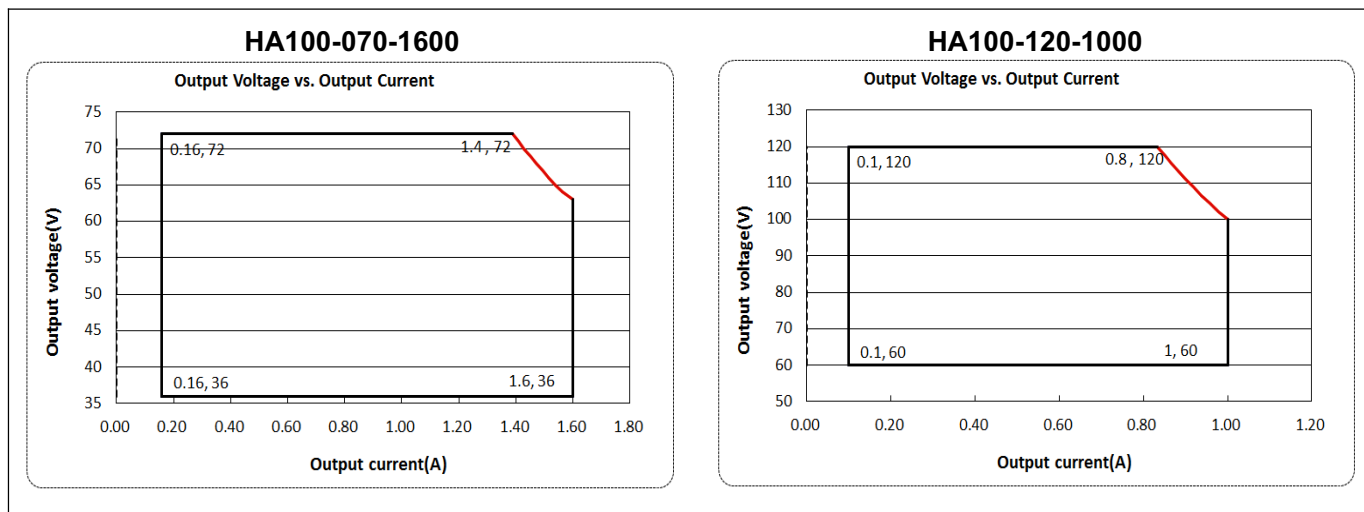| Specification			
Model HA100-XXX		072	120
Input	Efficiency (230Vac)(Typ.)	87%	88%
	Voltage Range (V) Note1	90~305Vac, OR 127~ 250Vdc	
	Rated Voltage (V)	100~277Vac	
	Frequency Range (Hz)	47~63	
	Power Factor	PF>0.99/120VAC, PF>0.95/230VAC, PF>0.92/277VAC at full load PF>0.90/277VAC at half load	
	THD	THD<15% when output loading≧50% at 120VAC/230VAC THD<20% when output loading≧50% at 277VAC (Take refer to THD vs. Load Curve for details)	
	AC Current (Max.)	1.18A MAX at 100Vac, 0.6A MAX at 230Vac	
	Inrush Current (Max.)	COLD START 20A(twidth=110µs measured at 50% Ipeak) at 230VAC, Per NEMA410	
	Leakage Current (Max.)	0.7mA at 277Vac/60Hz	
	MAX. No. of PSUs on 16A Circuit Breaker	3 units (circuit breaker of type B) / 6 units (circuit breaker of type C) at 230VAC	
	No Load / Standby Power Consumption	No load power consumption <10W	
Output	Rated Output Voltage (V)	36-72	60-120
	Output Voltage Range (V)	36-72	60-120
	Rated Current (A)	1.6	1

|	Rated Power (W)	90	90
	Output Current Setting Range/ Dimming Range (A)	0.16-1.60	0.10-1.00
	Ripple Current (Typ.)	20% of Io_max. ((PK-AV) /AV) with LED loading mode and full load)	
	Current Tolerance	<5%	
	Line Regulation	<5%	
	Load Regulation	<5%	
	Setup Time	<0.5s, at 230Vac	
	DC AUX Power	12V; Output Current: 200mA; Max Output Power：2.4W	
	Dim to Off	yes	
	DIM+ Short/Source Current	150uA~350uA	
Protection	Short Circuit Protect (SCP)	Hiccup mode, recover automatically with short circuit removed.	
	Over Voltage Protect (OVP)	Voltage limiting. Output current is decreased if the required loading voltage is higher than MAX. output voltage.	
	Over Temperature Protect (OTP)	Decrease the output current, but not less than 20% of rated output current, recover automatically once the fault condition is removed.	
Environmental	Working Temperature	-40~+70°C(Refer to 'Derating Curve')	
	Max. Case Temperature (Tc)	90°C max	
	Working Humidity	20~95%RH	
	Storage Temp., Humidity	-40~+85°C，10-95%RH	
	Vibration	10-500Hz, 5G 12min/cycle, period for 72min each along X、Y、Z axes	
Safety & EMC	Safety Standard	UL8750, CSA C22.2 No. 250.13-12; ENEC EN61347-1, EN61347-2-13 independent, EN62384; GB19510.1,GB19510.14	
	Withstand Voltage	I/P-O/P: 3.75kVac, I/P-FG:1.65kVac, O/P-FG:1.5kVac	
	Isolation Resistance	I/P-O/P, I/P-FG, O/P-FG: 100M Ohms (500VDC / 25°C/ 70% RH)	
	EMC Emission	FCC Part 15 Class B/ EN55015, 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-FG: ±4kV)	
Others	MTBF	120000Hrs @25℃±10℃ ambient temperature, 230Vac,80% load (MIL-HDBK-217F)	
	Lifetime	50000Hrs@80℃ case temperature (Refer to 'Lifetime Curve')	
	Dimension	L*W*H: 190mm*63.8mm*37mm	
	Weight (Typ.)	900±100g	
Reliability	Screen test（1）	336Hrs aging test @95℃ & full load without temperature protection	

Notes:

1. The test results are based on 14 samples with OTP moved

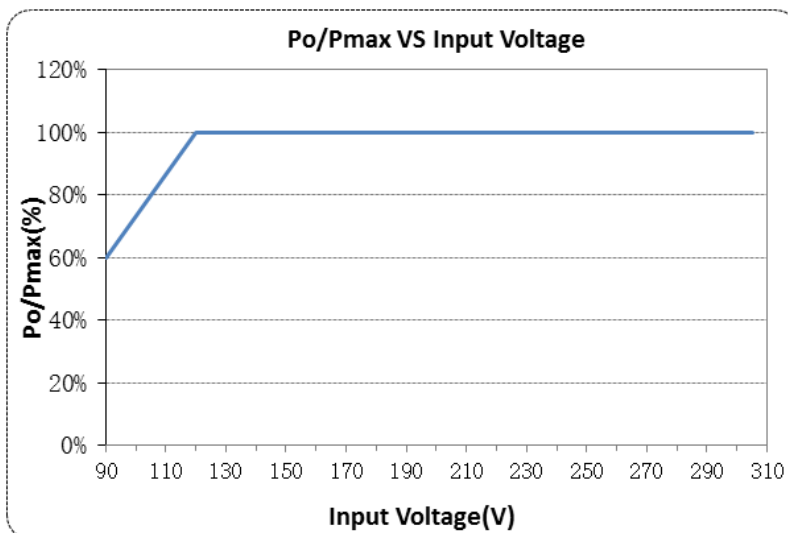2. All the data are measured under room temperature if not specified.

OPERATING AREA I-V

HA100-070-1600

Output Voltage vs. Output Current

Output voltage(V) vs Output current(A)

0.16, 72   1.4, 72
0.16, 36   1.6, 36

HA100-120-1000

Output Voltage vs. Output Current

Output voltage(V) vs Output current(A)

0.1, 120   0.8, 120
0.1, 60   1, 60

Notes：X=N is suitable for the right area of the dotted line；X=P is suitable for the solid line contain area.

DERATING CURVE

Derating Curve

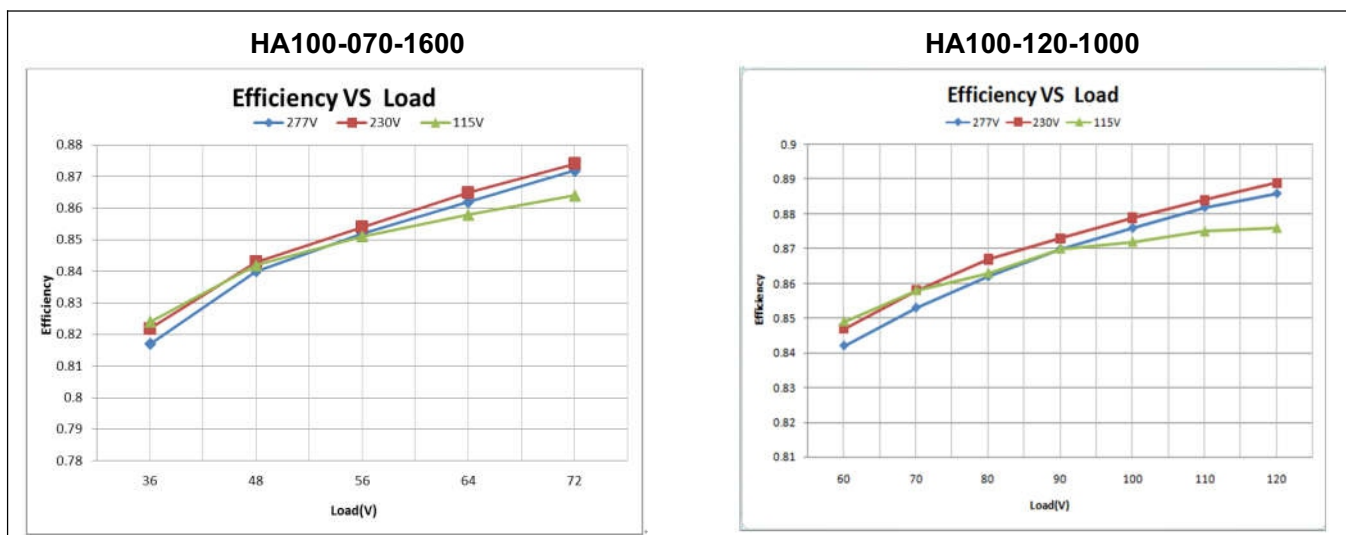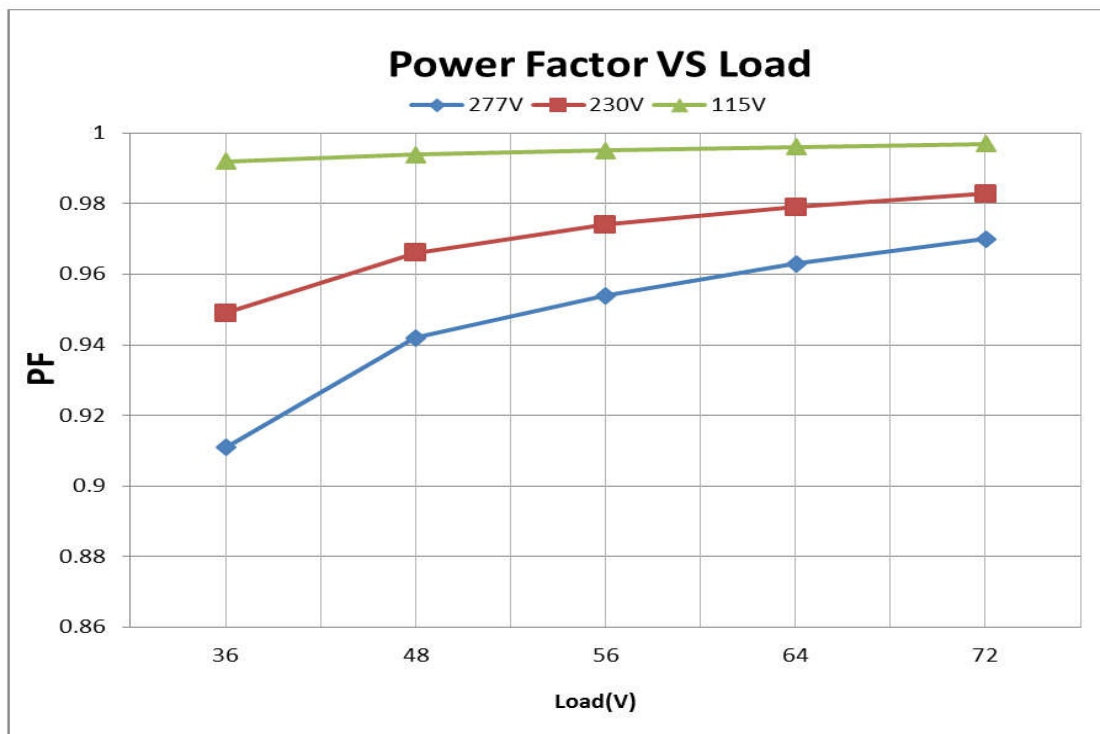Load (%) vs Ambient Temperature (℃)

100Vac
230Vac
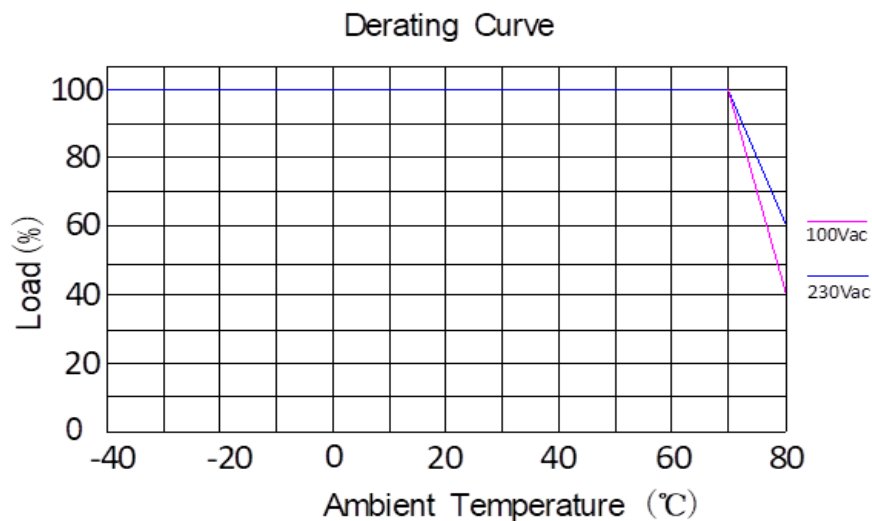
OUTPUT POWER VS INPUT VOLTAGE

Po/Pmax VS Input Voltage

Po/Pmax(%) vs Input Voltage(V)

LIFETIME VS CASE TEMPERATURE

EFFICIENCY VS LOAD

HA100-070-1600

HA100-120-1000
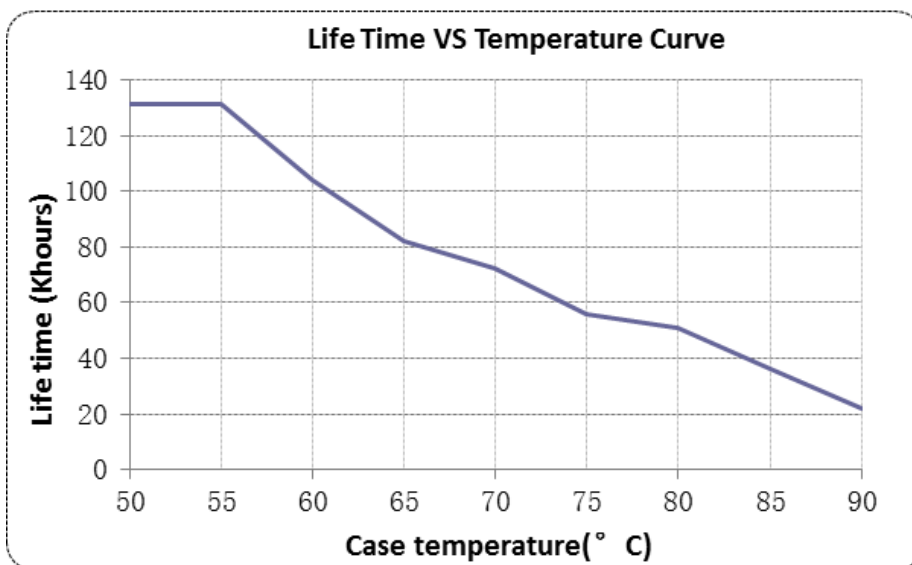
POWER FACTOR VS LOAD

Power Factor VS Load

TOTAL HARMONIC DISTORTION

THD VS Load
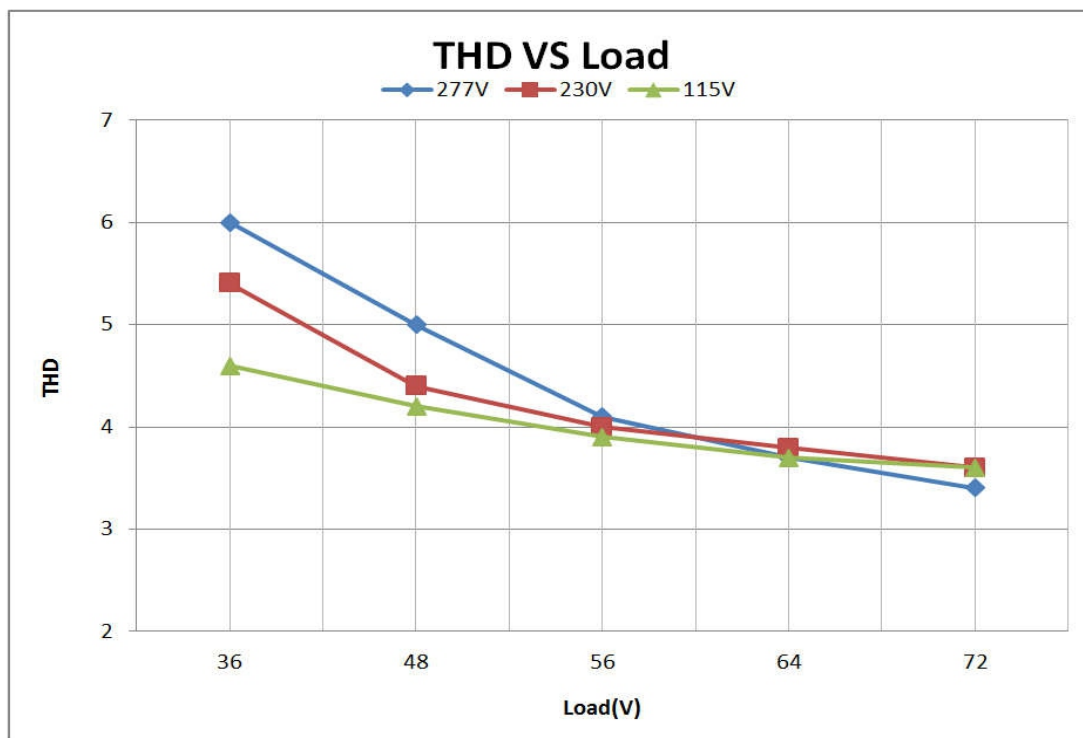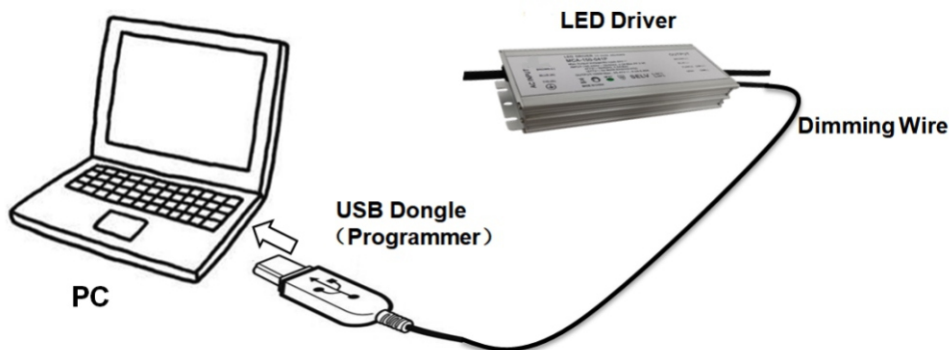
◆ **Instruction**

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	Colors
1	Vaux 12V	10.8V-13.2V	Auxiliary DC power supply	WHT/BLK
2	Dim+/Prog+	0-10V	Dimming/Programming input	PURPLE
3	Dim-/Com	0V	Common terminal of Dim/Prog./Aux	GRAY

3. **Dimming Software Function Instruction**

◆ **Communication Setup**

Click "Connect" to set up the link between the computer and the USB dongle.

◆ **Driver Identification**

Click "Read" to identify the driver, then fill in the part number and max current automatically.

◆ **Adjustable Output Current (AOC)**

Click ON "☑" to activate the output current configuration, I.Max(Spec) is filled in automatically during identify driver, I.Set can be filled in any value lower than I.Max(spec).

◆ **Dimming Selection and Setting**

Click ON "☑" to activate the dimming selection and setting, or else no update during current setting. Choose one of the control method listed below to go with, then the related setting interface will appear.

◆ **Turn-Off signal setting**

☑ Turn-off Setting

◉ Enable ○ Disable

Off Signal Level [5] %

On Signal Level [7] %

Click ON "☑" to active the turn-off function configuration. Choose "enable" or "disable", and set the turn on and off dimming signal when "enable" selected. In turn off status, the driver will output minimum output voltage, please make sure the LED lamp can be turned off when applied with this level voltage.

◆ **Dimming Logic**

☑ Dimming Logic

◉ Positive

○ Negative

Click ON "☑" to activate the dimming logic configuration, default setting is "Positive" logic, it means the output current will increase with the dimming signal level up; and "Negative" logic will decrease the output current with dimming signal level up.

◆ **Set Minimum Dimming Level**

☑ Set Min. Dimming Level

Min. Dimming Level [10] %

Set the minimum dimming output current, default setting is 10%

◆ **Dimming Signal Configuration**

☑ Configure Dimming Signal

Signal Voltage setting:

[0—10V ∨]

Compliant with analog and PWM signal:
1) Analog: 0-10V
2) PWM: Low level-0V, High Level-10V

Dim level %

100%

0.7

10%

0   0.5   1   10   V
0%   100% PWM
        Dimming Signal

Click ON "☑"to activate dimming signal configuration, the dimming signal can be analog or PWM signal, here to set the value of the high level of these two signals, the setting can be:

0-3.3V, 0-5V, 0-9V, 0-10V

For example, if 0-10V is selected, the dimming signal will be:

1)   Analog: 0-10V.

2)   PWM: Low level-0V, High Level-10V.

This graph presents how the output current will react to the dimming signal, including analog and PWM dimming signal.
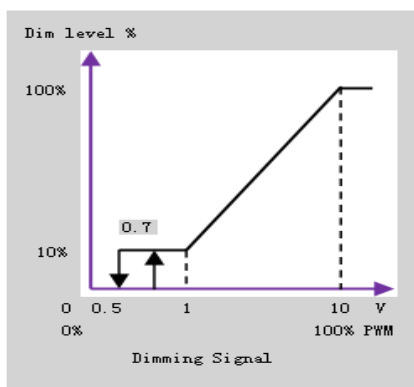
◆ **Configure Time Step Dimming (TSD)**

☑ Configure Time Step Dimming

Click ON "☑" to activate Time Step Dimming configuration

(0) ☑ 10 Second(Soft Start)

	Hour	Minute	Power	
(1) ☑	4	0	100	%
(2) ☑	1	0	80	%
(3) ☑	2	0	60	%
(4) ☑	1	0	80	%
(5) ☑	3	0	100	%
(6) ☐	0	0	10	%
(7) ☐	0	0	10	%

Step（0）: Setting the fading time of soft start, maximum value can be 10 seconds.

Step (1)-(7): Maximum time step number is 7, and the output current can be set according to the customer requirements to save energy.

Cable Dimming Setting	Time Step Dimming	System Param
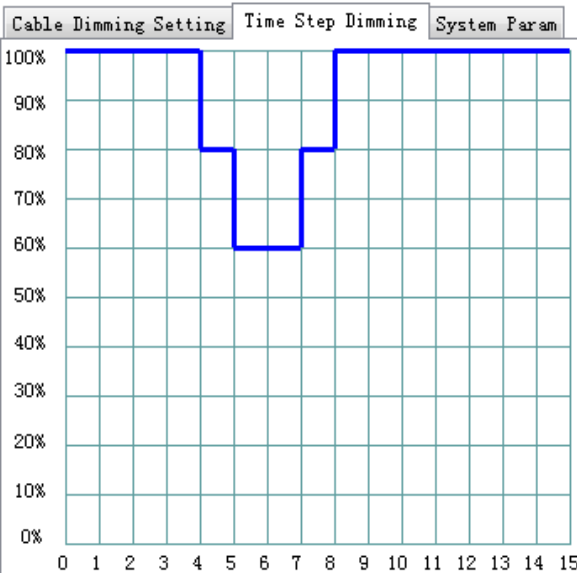
The graph presents how the output current will react to the setting of time step dimming.

◆ **Configure NTC Protection**

☑ Configure NTC Protection

○ Enabel ◉ Disable

NTC Value: [90] ℃

Click ON "☑" to activate NTC configuration Choose "enable" or "disable", and set NTC value when "enable" selected.

◆ **LED Lumen Compensation (LLC)**

☑ LED Lumen Compensation

○ Enabel ◉ Disable

	Time (kHour)	Compensation(%)
1		
14		

Click ON "☑" to activate NTC configuration Choose "enable" or "disable", and set Time VS Compensation value when "enable" selected.

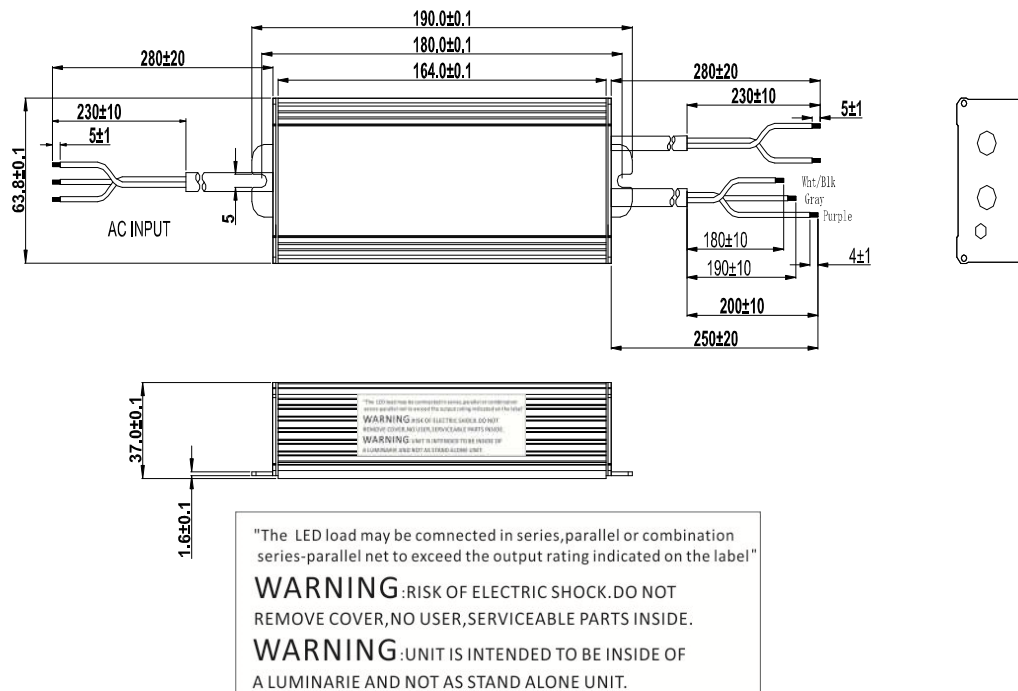The compensation can be set for maximum 14 periods, "Time" Colum define the working hours for the defined "Compensation" ratio. For example, if "compensation" is set to 1%, and the corresponding "Time" is set to 10, that means the output current will be set to 101% of rated current for 10K hours at this interval.

◆ **Program**

Program

Click "Program" button to burn the setting into drivers.

Mechanical Outline

HA-100W

"The LED load may be connected in series,parallel or combination
series-parallel net to exceed the output rating indicated on the label"

WARNING:RISK OF ELECTRIC SHOCK.DO NOT
REMOVE COVER,NO USER,SERVICEABLE PARTS INSIDE.

WARNING:UNIT IS INTENDED TO BE INSIDE OF
A LUMINARIE AND NOT AS STAND ALONE UNIT.

Notes: The word"WARNING"shall be in letters not less than 3.2mm tall,remalningletters not less than 1.6mmtall.

Wire	Specification	Note
AC Input	UL SJTW 18AWG /3C L=280mm	UL
	L（BLACK） N（WHITE） G（GREEN）	
DC Output	UL SJTW 18AWG /2C L=280mm	UL
	+（RED）-（BLACK）	
Dimming	22# 3C L=250mm	UL
	+（WHT/BLK）-（GRAY）DIM+（PURPLE）	

LABEL

HA100-070-1600

Initial current : 1.6A

HA100-120-1000

160.00 mm

40.00 mm

Magtech Industries Corp
5625-A S. Arville St., Las Vegas, NV 89118, USA
Constant Current, Programmable LED driver
MODEL: HA100-120-1000
INPUT: { 100-277Vac ~, 1.18-0.43A, 50/60Hz, PF > 0.9
{ 127-250Vdc ⎓, 0.95-0.50A
OUTPUT1: 1.0A max, 120V max, 100W max, CC
OUTPUT2: 12V, 200mA, CV   Short Circuit Current<4A

ECM 20 ATEX-B DW96

CE ... 〈Ex〉 II 2G Ex mb IIC T4 Gb

MAGTECH
www.magtechind.com

AC INPUT
BLACK (L)
WHITE (N)
GREEN ⏚

P/N: 20-5704
REV A

Tc: 85℃

Type HL

IP67
RoHS

OUTPUT 1   RED (+LED)
BLACK (-LED)

OUTPUT 2   WHT/BLK (+)
GRAY (-)
DIM CTRL   PURPLE (DIM+)

For Dry and Damp Locations
MADE IN CHINA

c𝐔Lus
E357847

Initial current : 1.0A

REVISION HISTORY

Version	Description of Change		Date	Notes
	Before	Now		
A.1	—	Datasheets Release	2020-05-28	