

## Specification for Approval

**Product Name:** 130W Non-isolated LED driver

Product Model: MTN-120M260

Product Code: MS007008-U0

Rev. B.2

Sample Date:

| CUSTOMER AUTHORIZED SIGNATURE                                                   |            |             |
|---------------------------------------------------------------------------------|------------|-------------|
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## ECN History

[illegible]

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## 1 Scope

This document defines the electrical, mechanical and environmental specifications of a 130W Non-isolated LED driver. The LED driver shall meet the RoHS requirement.

This enclosure of LED driver is:

☒ With AL Case      ☐ With Plastic Case      ☐ Open Frame      ☐ Others

## 2 Input Characteristics

### 2.1 Input Voltage and Frequency

| Item            | Minimum | Rated Value | Maximum |
|-----------------|---------|-------------|---------|
| Input Voltage   | 90Vac   | 100-277Vac  | 305Vac  |
| Input Frequency | 47Hz    | 50/60 Hz    | 63Hz    |

### 2.2 AC Input Current

Under 25°C±10°C ambient temperature, rated input and output range, maximum AC input current is 1.6A.

### 2.3 Inrush Current ( Cold Start )

Under 25°C±10°C ambient temperature, 230Vac input, the peak value of the inrush current is less than 75A.

### 2.4 Power Factor

2.4.1 Under 25°C±10°C ambient temperature, 115Vac input, 100% load, the typical value of power factor is 0.99 , the minimum value is 0.97(reference Power Factor vs. Load Curve);

2.4.2 Under 25°C±10°C ambient temperature, 230Vac input, 100% load, the typical value of power factor is 0.95 , the minimum value is 0.93,(reference Power Factor vs. Load Curve);

2.4.3 Under 25°C±10°C ambient temperature, 277Vac input, 100% load, the typical value of power factor is 0.92 , the minimum value is 0.90(reference Power Factor vs. Load Curve).

### 2.5 Efficiency

2.5.1 Under 25°C±10°C ambient temperature, 115Vac input, 260 V output voltage, 100% load, the typical value of efficiency is 91 % , the minimum value is 89 %(reference Efficiency vs. Load Curve);

2.5.2 Under 25°C±10°C ambient temperature, 230Vac input, 260 V output voltage, 100% load, the typical value of efficiency is 94 % , the minimum value is 92 %(reference Efficiency vs. Load Curve).

### 2.6 THD

2.6.1 Under 25°C±10°C ambient temperature, 230Vac input, 80-100% load, THD is less than 15% (reference THD Curve);

2.6.2 Under 25°C±10°C ambient temperature, 277Vac input, 80-100% load, THD is less than 20% (reference THD Curve).

## 2.7 Standby power consumption

Under 25°C±10°C ambient temperature, rating input voltage, the average value of standby power consumption is less than 10W.

## 3 Output Characteristic

### 3.1 Output Power

Under full input voltage range, the maximum value of output power is 130 W.

### 3.2 Output Voltage and Current

| Item ( Unit )                                    | Value     | Test Condition<br>( Under 25°C±10°C Ambient Temperature )    |
|--------------------------------------------------|-----------|--------------------------------------------------------------|
| Output Current ( A )                             | 0.05-0.50 | full input voltage range                                     |
| Output Voltage Range( V )                        | 200~260   | full input voltage range                                     |
| Error of Output Current                          | ±5 %      | full input voltage range, full load range(the typical value) |
| No Load<br>Output Voltage ( V )                  | ≤295V     | full input voltage range                                     |
| Leave Factory<br>Default Output<br>Current ( A ) | 0.50      | full input voltage range                                     |

Note: the error of output current is less than ±8%

### 3.3 Output Current Ripple

Under 25°C±10°C ambient temperature, 230Vac input, 100% load, the ratio of output current ripple<sup>(1)</sup> peak-peak value and rated output current is less than 20 %.

**Note: load is LED, ripple is different with difference LED load. @ Measurement is done by 20MHz bandwidth oscilloscope.**

### 3.4 Cold Start Turn-On Delay Time

Under 25°C±10°C ambient temperature, 230Vac input, 100% load, turn-on delay time at cold start is less than 1.0s; 115Vac input, less than 3S.

### 3.5 Output Current Overshoot

Under 25°C±10°C ambient temperature, 100-277Vac input, LED full load, the ratio of output current overshoot and rated output current is less than 10 %.

### 3.6 Line Regulation (Input Voltage Regulation)

Under 25°C±10°C ambient temperature, 100% load, change input from 100Vac to 277Vac, the Line Regulation (Input Voltage Regulation) is less than ±1 %.

### 3.7 Load Regulation

Under 25°C±10°C ambient temperature, 100-277Vac input voltage, change load from 80% to 100%, Load Regulation is less than ±3 %.

## 4 Protect Function

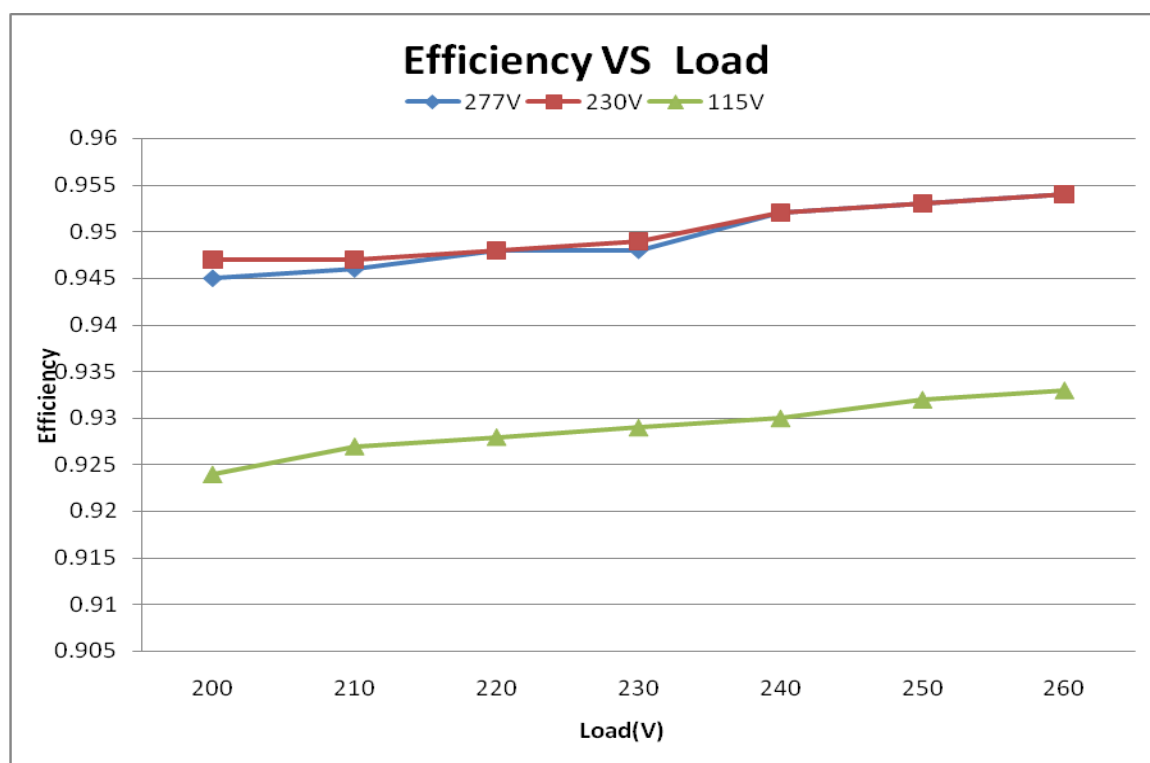
### 4.1 Short Circuit Protection

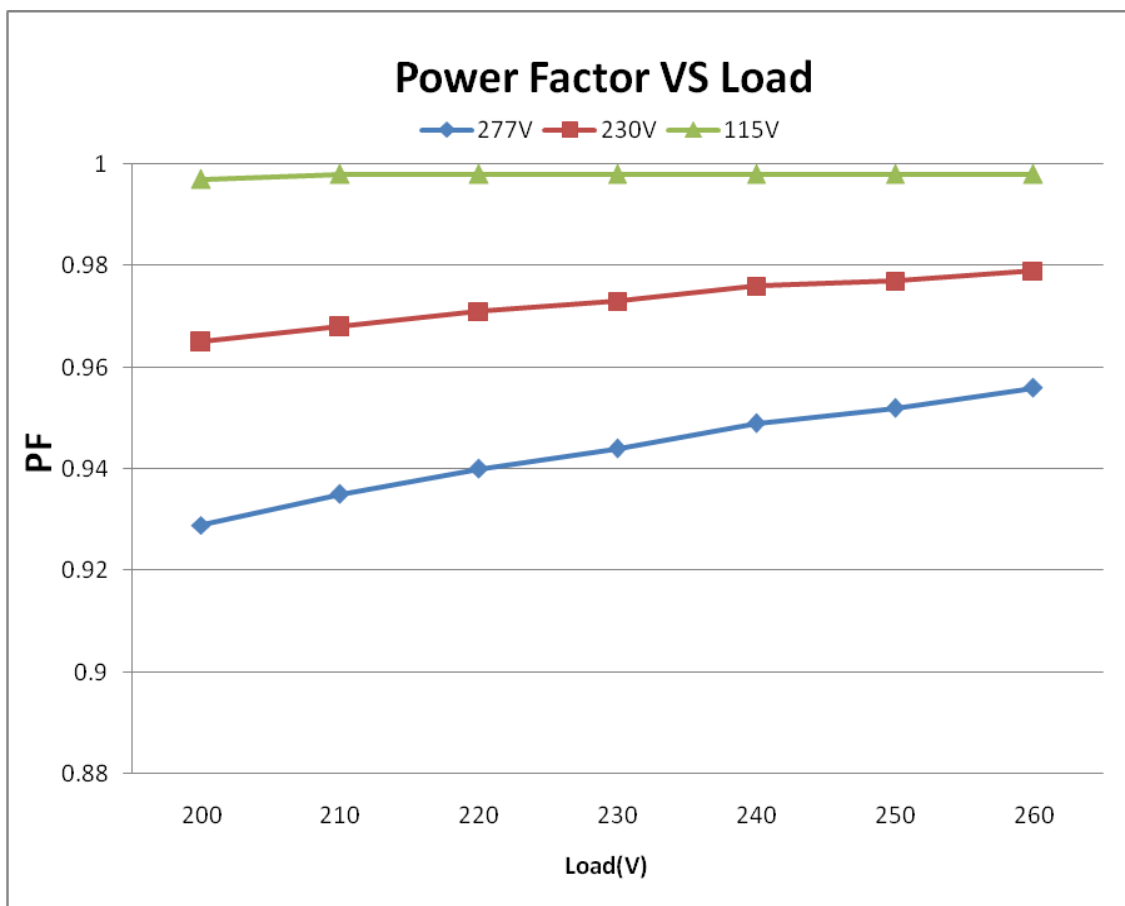
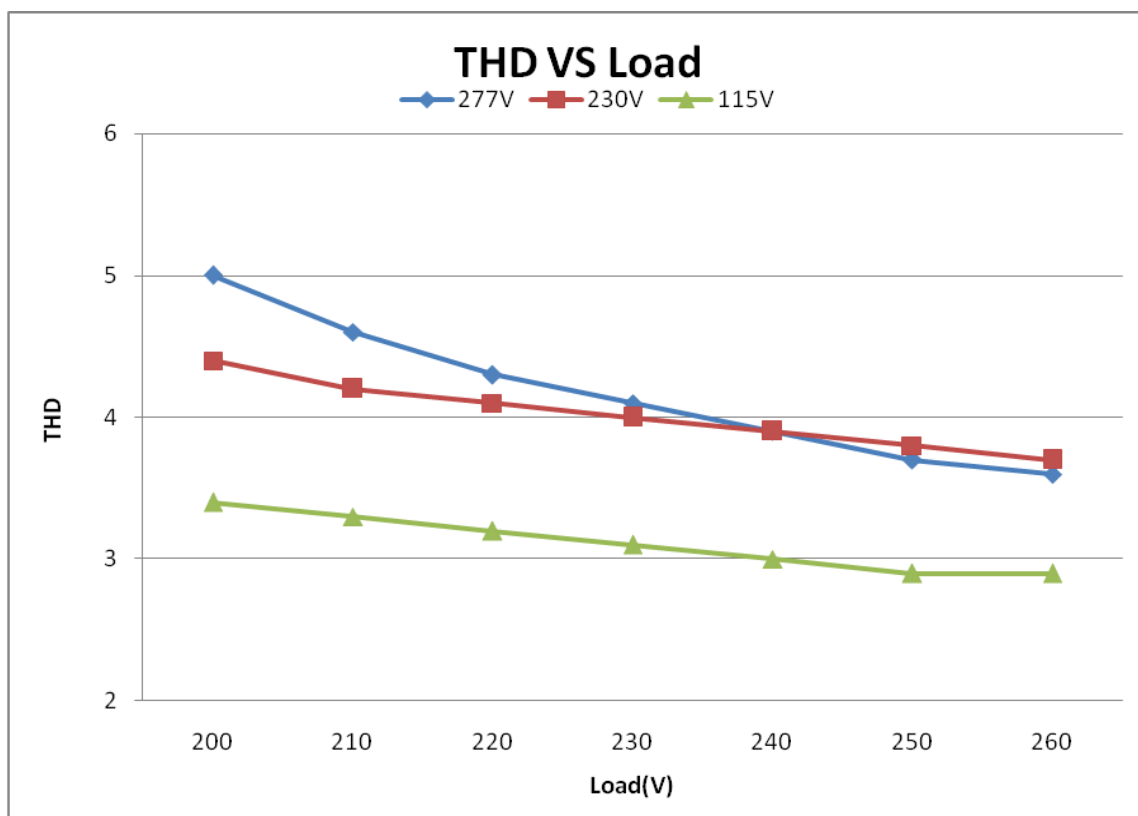
The average value of input power shall less than 10W when the output rail short, the power supply shall be self-recovery when the fault condition is removed.

### 4.2 Over Voltage Protection

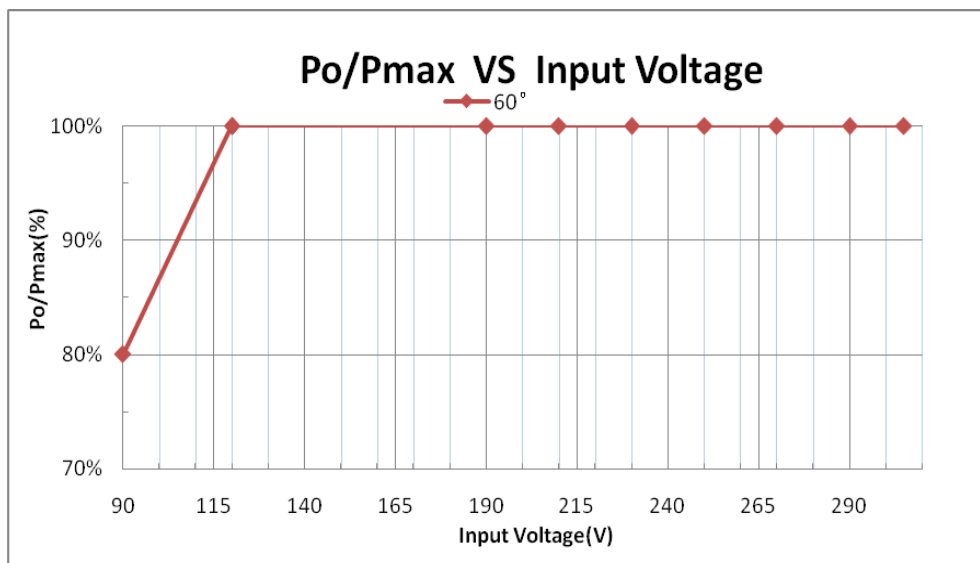
When the output voltage is 1.02-1.2 Rated Load Voltage, the driver enters protection status, the driver will work normally after fault condition removed.

## 5 Efficiency vs. Load Curve

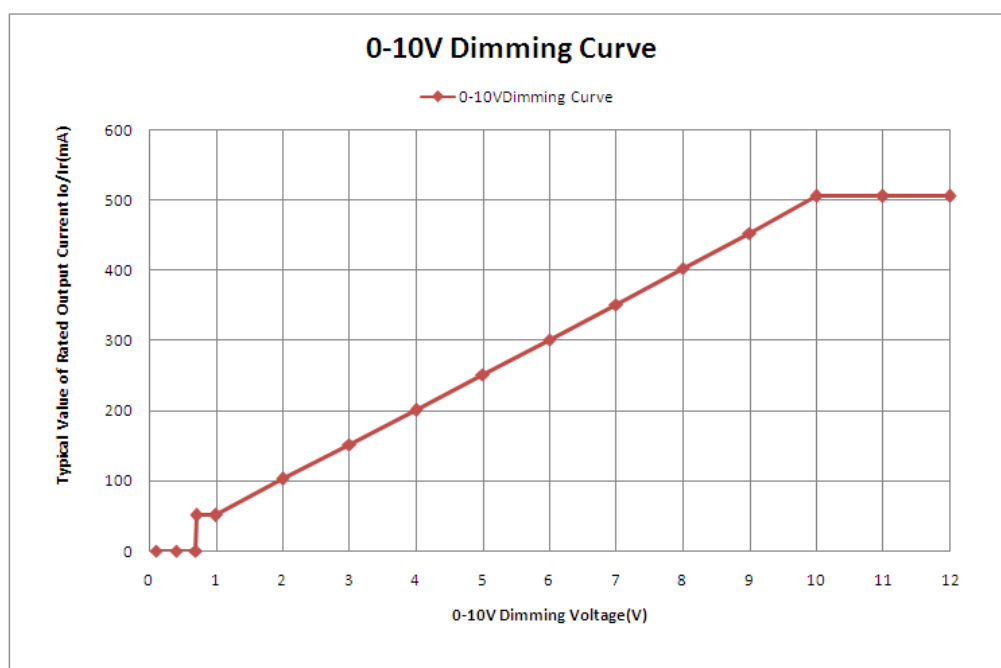


**6 Power Factor vs Load Curve****7 THD Curve**

## 8 Output Power vs. Input Voltage Curve



## 9 0-10V Dimming Curve



When switched off, the voltage of the positive and negative electrode of the non-isolated driver is zero. There is parasitic capacitance between the lamp bead and the ground. The AC input may form a loop between the lamp bead and the ground by the coupling effect of parasitic capacitance, resulting in weak current flowing through lamp bead and generating weak light.

## 10 Safety and Electromagnetic Compatibility

### 10.1 Safety Standards

| Safety Certification | Country and region | Standards                                                                    | Whether have Certification |
|----------------------|--------------------|------------------------------------------------------------------------------|----------------------------|
| CCC                  | China              | GB19510.1                                                                    | √                          |
|                      |                    | GB19510.14                                                                   |                            |
| CE                   | Europe             | EN61347-1                                                                    | √                          |
|                      |                    | EN61347-2-13                                                                 |                            |
| CB                   | CB member          | IEC61347-1                                                                   | √                          |
|                      |                    | IEC61347-2-13                                                                |                            |
| UL                   | America            | UL 8750                                                                      | √                          |
|                      |                    | UL 1310 (Class 2 Power Units)                                                |                            |
|                      |                    | UL 1012                                                                      |                            |
| cUL                  | Canada             | CSA C22.2 No.250.13-12                                                       |                            |
|                      |                    | CSA C22.2 No.223-M91 (Power Supplies With Extra-Low-Voltage Class 2 Outputs) |                            |
|                      |                    | AS/NZS 61347.1                                                               |                            |
| KC                   | Korea              | K61347-1                                                                     |                            |
|                      |                    | K61347-2-13                                                                  |                            |
|                      |                    | K62384                                                                       |                            |
| PSE                  | Japan              | J61347-1                                                                     |                            |
|                      |                    | J61347-2-13                                                                  |                            |
| SAA                  | Australia          | AS/NZS IEC 61347-2-13                                                        |                            |
|                      |                    | AS/NZS 61347.1                                                               |                            |

### 10.2 Electromagnetic Compatibility Standards

| EMC Certification | Country and region | Standards    | Whether have Certification |
|-------------------|--------------------|--------------|----------------------------|
| CCC               | China              | GB 17743     | √                          |
|                   |                    | GB 17625.1   |                            |
| CE                | Europe             | EN 55015     | √                          |
|                   |                    | EN 61000-3-2 |                            |
|                   |                    | EN 61000-3-3 |                            |
|                   |                    | EN 61547     |                            |
| KC                | Korea              | K61547       |                            |
|                   |                    | K00015       |                            |
| PSE               | Japan              | J55015       |                            |
| FCC               | America            | FCC part 15  |                            |

## 11 Details Of Safety Specifications

### 11.1 Dielectric Strength

11.1.1 input to earth : 1650Vac, 60s, current is less than 10mA;

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**Note:** 25°C±10°C ambient temperature, I/P: L, N Line; O/P: Vo+, Vo-.

## 11.2 Grounding Resistance

Under 25°C±10°C ambient temperature, pass 25A current for 60s, the measured grounding resistance is less than 0.1Ω.

## 11.3 Leakage Current

Leakage Current is defined as the current flowing through the ground wire. Under 25°C±10°C ambient temperature and 240Vac/50Hz input, the leakage current shall be less than 0.75mA.

## 11.4 Insulation Resistance

Under 25°C±10°C ambient temperature and less than 70% relative humidity, apply 500V dc voltage to each port of input to GND last 60s, the insulation resistance at least 50MΩ.

## 11.5 Surge Immunity Test

Under 25°C±10°C ambient temperature, L line to N line is 4000V; L line to earth is 6000V; N line to earth is 6000V.

# 12 Environmental Specifications

## 12.1 Operated Temperature and Humidity

12.1.1 Temperature: -40°C to +60°C;

12.1.2 Relative Humidity: 20% to 95%, non-condensing.

## 12.2 Storage Temperature and Humidity

12.2.1 Temperature: -40°C to +85°C;

12.2.2 Relative Humidity: 20% to 95%, non-condensing.

## 12.3 Degrees of Protection

IP65

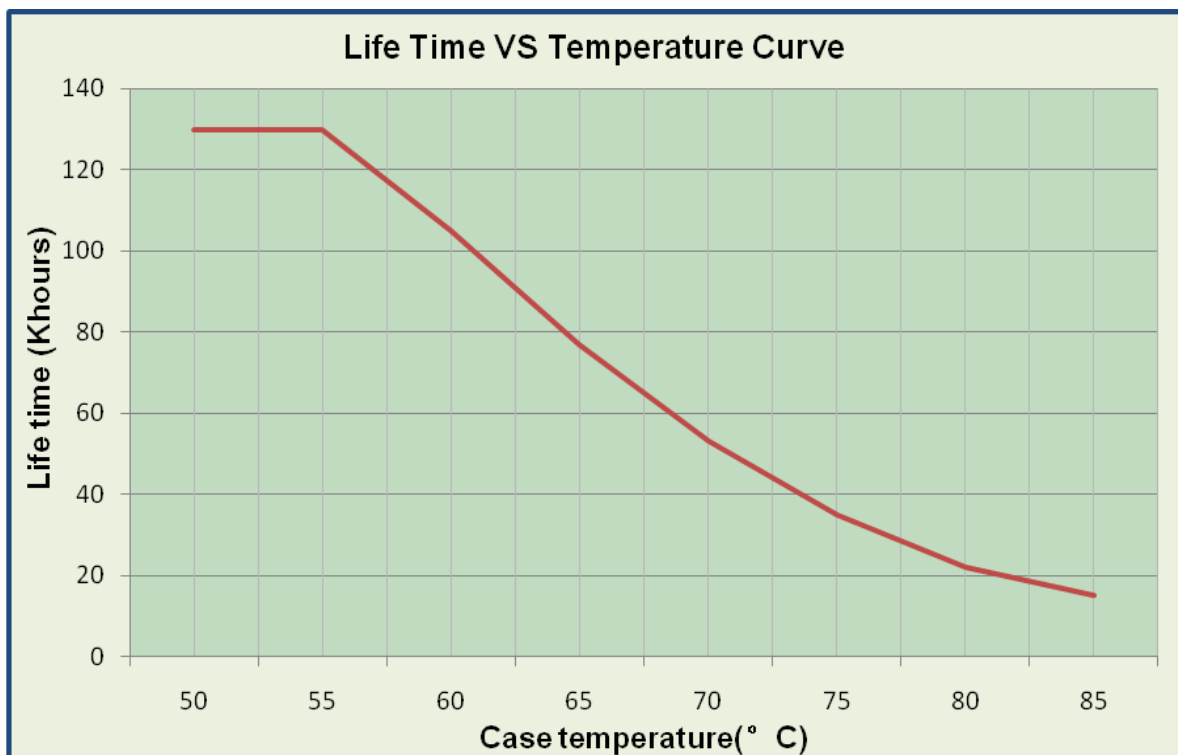
# 13 Reliability

## 13.1 Mean Time Between Failure (MTBF) Qualification (According to MIL-HDBK-217F Standards)

Mean time between failure is at least 200,000 hours under 25°C ambient temperature, 230Vac input, and 80% load.

## 13.2 Life Time Qualification

The life time is at least 50,000 hours, under 70°C case temperature, 230Vac input, and 100% load.



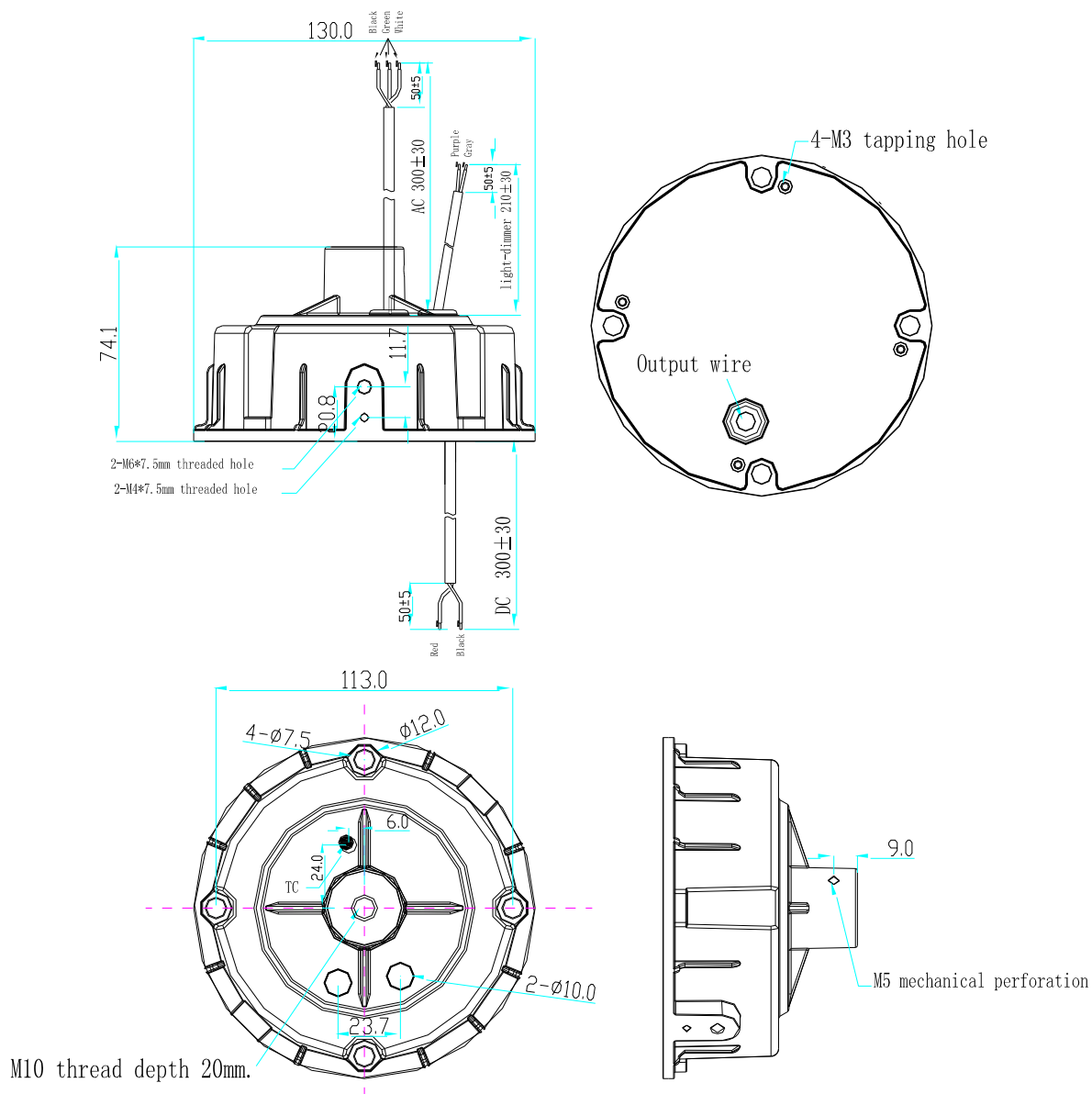
### 13.3 Vibration

10 to 500HZ Sweep at constant acceleration of 1.0G (depth: 3.5mm) for 1 Hour for each of the perpendicular axes X, Y, Z.

### 13.4 Drop Test

Ten times 60cm drop test with one angle three edges and six face of complete package, package shall not damage, product function and dielectric strength should meet the requirement.

## 14 Mechanical Outline



| Wire      | Specification |         |
|-----------|---------------|---------|
| AC Input  | 18AWG/3C      | L=300mm |
| DC Output | 18AWG/2C      | L=300mm |
| Dimming   | 22AWG/2C      | L=210mm |

## 15 Label



## 16 Weight

900±150g