

## LED Driver

# Outdoor 55W Driver

SL-LU1425501US (UL Type TL)

SL-LU1425502US (UL Class P)



## Constant Current LED Driver

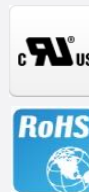
### High Efficiency Constant Current LED Driver With Active Power Factor Correction

#### Features & Benefits

- Output Current Range: 1400 mA Fixed
- Output Voltage Range: 30 ~ 39 Vdc
- Output Power Range: Max. 55 W
- Dimming Control: 0 - 10 Vdc
- Input Voltage: 120 ~ 277 Vac, 50 / 60 Hz
- Safety: UL / cUL (UL 8750, CSA C22.2 No.223-M91)
- EMI: FCC Part 15 Class B
- Protections: Short Circuit, Open Load Voltage, Over Temperature
- $t_a$  Range: -40 ~ +70 °C
- Expected lifetime: 50,000 hours at  $t_c < 75$  °C
- Environmental Compliance: RoHS
- Long lasting & high reliability
- Metal housing

#### Applications

- LED Street/Tunnel Lighting and Outdoor LED Lighting



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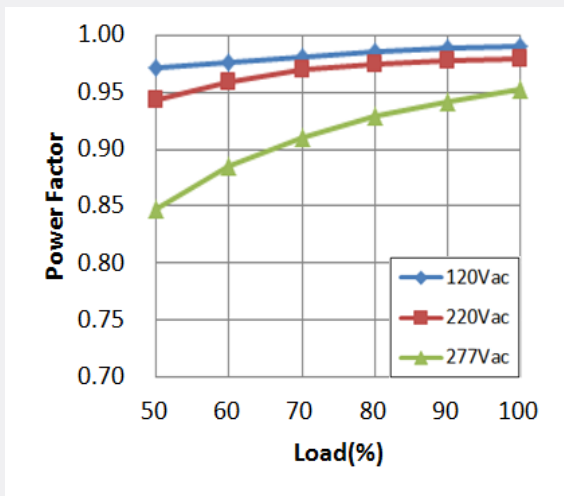
## 1. Characteristics

| Article                   | Symbol  | Specification |      |      | Unit            | Note                                                             |
|---------------------------|---------|---------------|------|------|-----------------|------------------------------------------------------------------|
|                           |         | Min.          | Typ. | Max. |                 |                                                                  |
| INPUT SPECIFICATIONS      |         |               |      |      |                 |                                                                  |
| Nominal Voltage           | Vin     | 120~277       |      |      | Vac             |                                                                  |
| Voltage Range             |         | 108           |      | 305  |                 |                                                                  |
| Nominal Frequency         | Fin     | 50 / 60       |      |      | Hz              |                                                                  |
| Frequency Range           |         | 47            |      | 63   |                 |                                                                  |
| Input Power               | Pin     |               |      | 75   | W               | Vin = 120 ~ 277Vac, 100% load                                    |
| Input Current             | Iin     |               |      | 0.8  | A               | Vin = 120Vac, 100% load                                          |
|                           |         |               |      | 0.4  | A               | Vin = 277Vac, 100% load                                          |
| Total Harmonic Distortion | THD     |               |      | 20   | %               | Vin = 120 ~ 277Vac, 80 ~ 100% load                               |
| Power Factor              | PF      | 0.9           |      |      | -               |                                                                  |
| Efficiency                | η       | 85            | 87   |      | %               | Vin = 120 ~ 277Vac, 100% load                                    |
| In-rush Current           |         |               |      | 65   | A <sub>pk</sub> | Vin = 300Vac, 25°C Cold start<br>Twidth=500us measured at 50%Ipk |
| Leakage Current           |         |               |      | 0.7  | mA              | Vin = 300Vac                                                     |
| OUTPUT SPECIFICATIONS     |         |               |      |      |                 |                                                                  |
| Output Voltage            | Vo      | 30            |      | 39   | Vdc             |                                                                  |
| Max. Voltage              | Vp      |               |      | 48   |                 |                                                                  |
| Output Current            | Io      |               | 1400 |      | mA              | Tolerance = ±5%Io                                                |
| Output Peak Current       | Ip      |               |      | 1970 | mA              |                                                                  |
| Output Ripple Current     | Iripple |               |      | 500  | mA              | Vin = 120~277Vac, 100% load                                      |
| Line Regulation           |         | -3            |      | +3   | %               | Vin = 120 ~ 277Vac                                               |
| Load Regulation           |         | -3            |      | +3   | %               | Vin = 120 ~ 277Vac                                               |
| Temperature Drift         |         | -2            |      | +2   | %               | Vin = 120Vac, Vout = 36Vdc,<br>Run after 3hours                  |
| Aux. Output Voltage       | Vaux    |               | 12   |      | Vdc             |                                                                  |
| Aux. Output Current       | Iaux    |               | 100  | 150  | mA              |                                                                  |
| Nominal Power             | Po      |               |      | 55   | W               |                                                                  |
| Turn-on Delay Time        | Td      |               |      | 1    | s               | Vin = 120Vac, 100% load                                          |

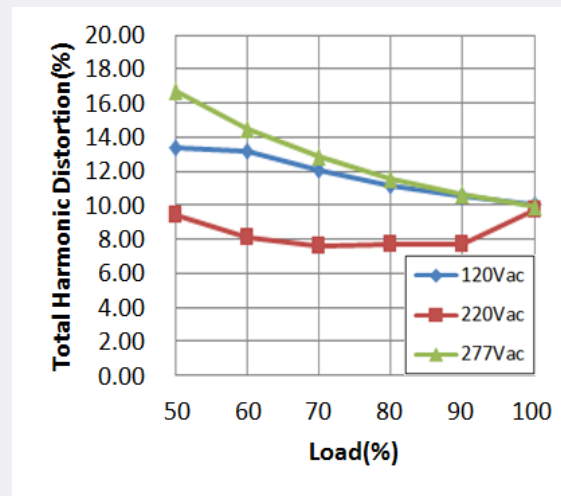
| Article                      | Symbol         | Specification |                 |      | Unit | Note                                |
|------------------------------|----------------|---------------|-----------------|------|------|-------------------------------------|
|                              |                | Min.          | Typ.            | Max. |      |                                     |
| DIMMING SPECIFICATIONS       |                |               |                 |      |      |                                     |
| Dimming Rangel               |                | 0             |                 | 100  | %    | See 4)Dimming Specification section |
| Dim. Off                     |                |               | 0.93            |      | Vdc  | ± 0.05Vdc                           |
| Dim. Min                     |                |               | 1               |      |      | 10%Io                               |
| Dim. On                      |                |               | 1.35            |      |      | ± 0.1Vdc                            |
| Dim. Max                     |                | 8             |                 | 10   |      | 100%Io                              |
| I <sub>SOURCE</sub>          |                | 0             |                 | 0.5  | mA   |                                     |
| ENVIRONMENTAL SPECIFICATIONS |                |               |                 |      |      |                                     |
| Ambient Temperature          | t <sub>a</sub> | -40           |                 | 70   | °C   |                                     |
| Case Temperature             | t <sub>c</sub> |               |                 | 90   |      |                                     |
| Storage Temperature          | t <sub>s</sub> | -40           |                 | 80   |      |                                     |
| Ambient Humidity             |                | 20            |                 | 95   | %    | Not condensing                      |
| Storage Humidity             |                | 10            |                 | 95   | %    | Not condensing                      |
| Lightning Surge              | L / N          | ±4            |                 |      | kV   | IEC/EN 61000-4-5                    |
|                              | L-N / F.G      | ±6            |                 |      |      |                                     |
| IP Rating                    |                |               | 67              |      | -    |                                     |
| Expected Lifetime (e-cap)    |                | 50,000        |                 |      | h    | At t <sub>c</sub> < 75°C            |
| MTBF                         |                |               | 300,000         |      |      | At t <sub>a</sub> = 25°C            |
| Dimensions                   | L x W x H      |               | 173 x 67.5 x 40 |      | mm   |                                     |
| Net Weight                   |                |               | 795             |      | g    |                                     |

## 2. Typical Characteristics Graphs

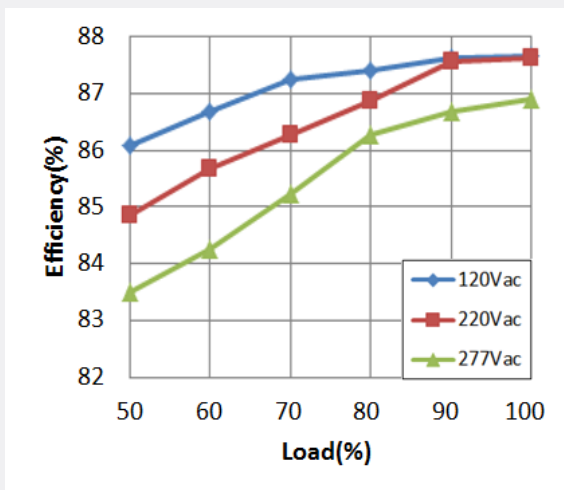
a) PF vs. Load



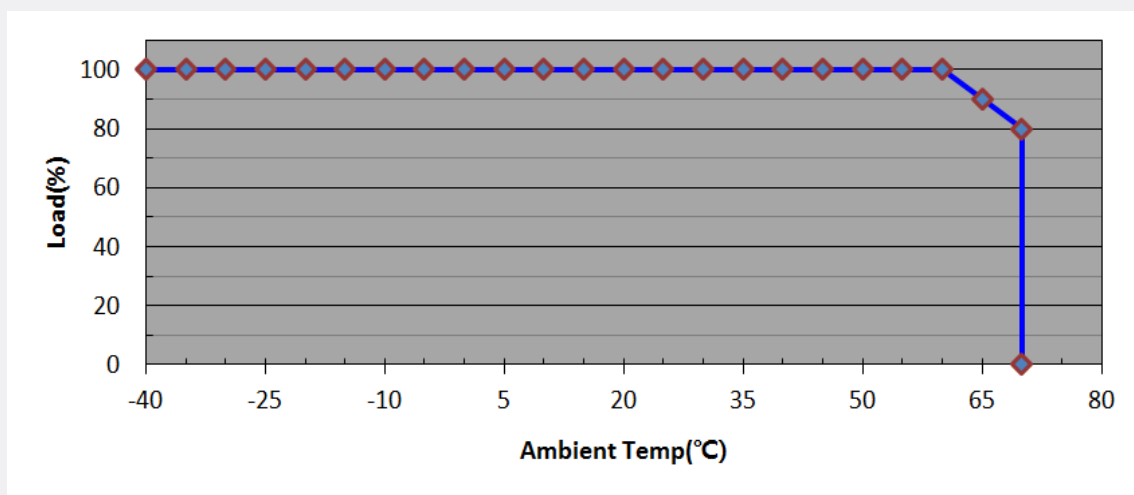
b) THD vs. Load



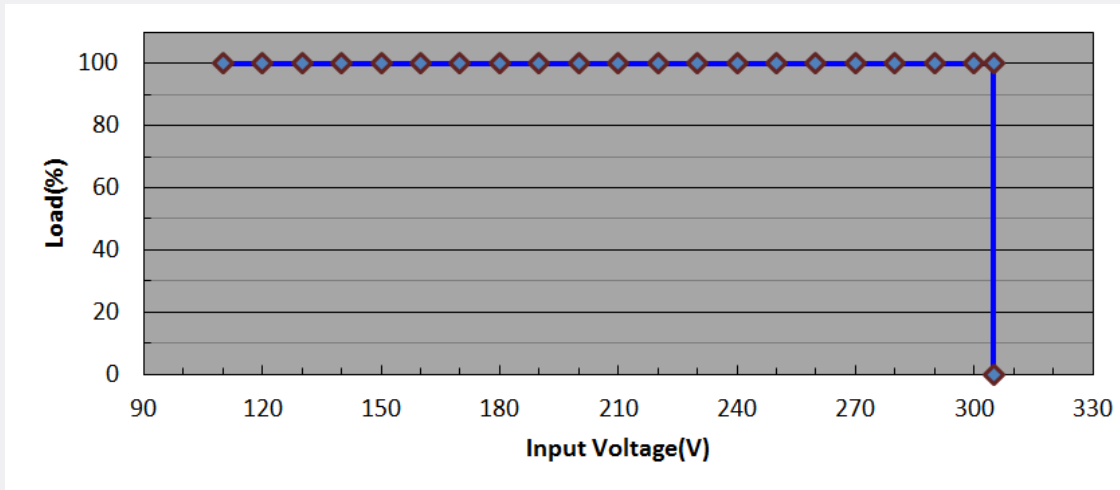
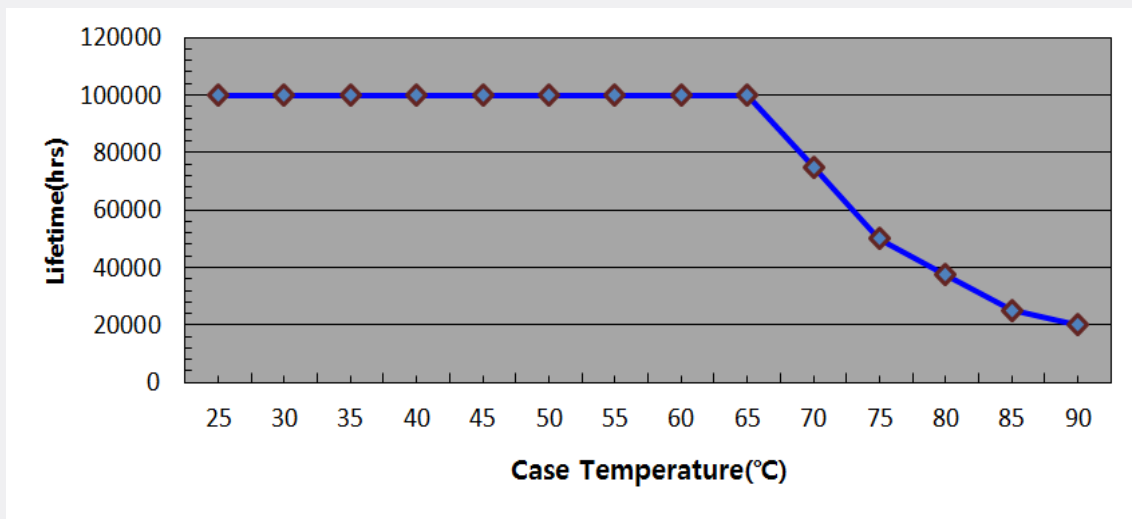
c) Efficiency vs. Load



d) Ta vs. Load



e) Input Voltage vs. Load

f) Lifetime vs.  $t_c$ 

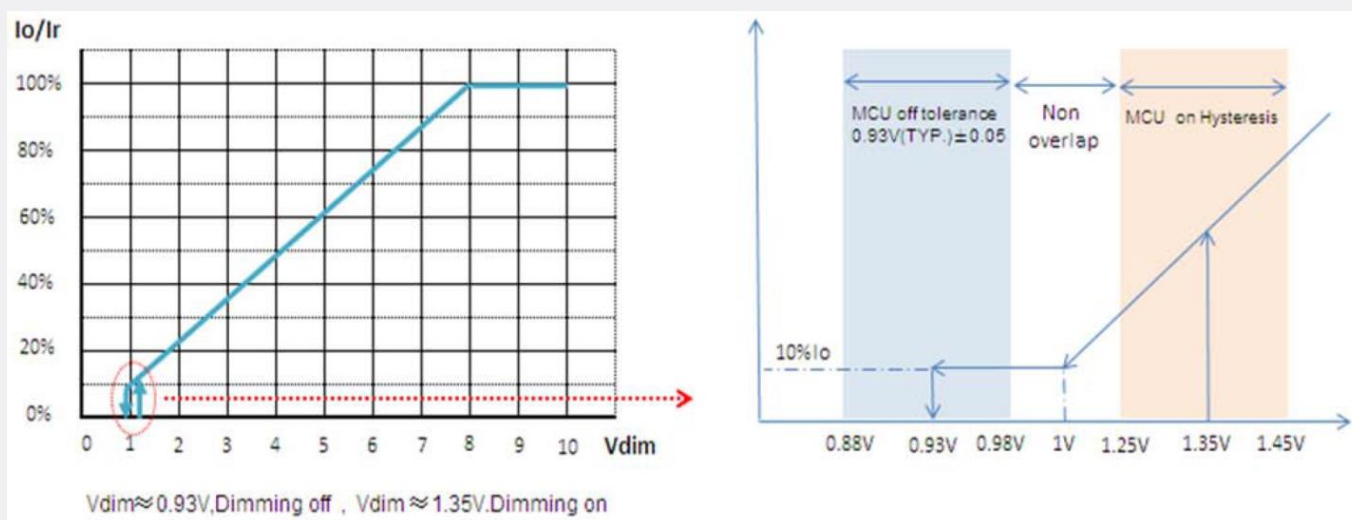
### 3. Protection

| Protection Specification      | Protection Mode                     | Condition                                                            |
|-------------------------------|-------------------------------------|----------------------------------------------------------------------|
| Output Short Protection       | Auto-Recovery                       | (1) AC turn on then output short<br>(2) Output short then AC turn on |
| Output Open Protection        | Clamp Open Load Voltage under 48Vdc | (1) AC turn on then output open<br>(2) Output open then AC turn on   |
| Output Temperature Protection | Current Reduction to 50%Io          | Vin = Rated Voltage, tc point : 110°C, 100% load                     |

### 4. Dimming Specification

The unit has Analog Dimming (AD) function, using 0-10 Vdc.

The typical dimming curve is shown below.



## 5. Reliability& Standards

### a) Safety and EMC

| International Standard                                                          | Certification                                            |
|---------------------------------------------------------------------------------|----------------------------------------------------------|
| UL Safety Standards (Class 2 Output)                                            | UL 8750                                                  |
|                                                                                 | CAN/CSA-C22.2 No. 250.13-12<br>CAN/CSA-C22.2 No.107.1-01 |
| Electro Magnetic Compatibility                                                  | FCC Part 15 Class B                                      |
| IEC/EN Safety Standards for LED Lighting                                        | IEC/EN 61347-1<br>IEC/EN 61347-2-13                      |
| Conducted and Radiated Emission Test                                            | IEC/EN 55015                                             |
| Harmonic current emissions: Class C                                             | IEC/EN 61000-3-2                                         |
| Voltage Fluctuations and Flicker                                                | IEC/EN 61000-3-3                                         |
| Electrostatic Discharge (ESD): Contact $\pm 8\text{kV}$ , Air $\pm 15\text{kV}$ | IEC/EN 61000-4-2                                         |
| Radio-frequency Electromagnetic Fields                                          | IEC/EN 61000-4-3                                         |
| Electrical Fast Transients (EFT)                                                | IEC/EN 61000-4-4                                         |
| Surge: Differential mode $\pm 4\text{kV}$ , Common mode $\pm 6\text{kV}$        | IEC/EN 61000-4-5                                         |
| Injected Currents, Conducted disturbances induced by Radio-Frequency fields     | IEC/EN 61000-4-6                                         |
| Power Frequency Magnetic Fields                                                 | IEC/EN 61000-4-8                                         |
| Voltage Dips and Short Interruptions                                            | IEC/EN 61000-4-11                                        |



## b) Wiring

### Input harness

| Wire | Symbol  | Color        | Description       | Cable           |
|------|---------|--------------|-------------------|-----------------|
| 1    | Live    | Black        | AC Input          | SJTW PVC, 18AWG |
| 2    | Neutral | White        |                   |                 |
| 3    | F.G     | Yellow-Green | Protective Ground |                 |

### Output harness

| Wire | Symbol | Color  | Description                        | Cable           |
|------|--------|--------|------------------------------------|-----------------|
| 1    | V+     | Red    | Positive(Anode) LED Output(LED+)   | SJTW PVC, 18AWG |
| 2    | V-     | Blue   | Negative(Cathode) LED Output(LED-) |                 |
| 3    | DIM+   | Purple | External 0-10V Dimming Input       | UL 2517, 22AWG  |
| 4    | 12V    | Yellow | External 12V Power Supply Output   |                 |
| 5    | DIM-   | Gray   | Dimming Signal Ground              |                 |

## 7. Driver Label

SL-LU1425501US

|       |                                                                                                                |                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                        |                                                                                                                                         |  |
|-------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--|
|       |                                                                                                                |                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                        | 145 mm                                                                                                                                  |  |
| 20 mm | <div><div><div>● AC/L<br/>BLACK</div><div>● AC/N<br/>WHITE</div><div>● YE-GN</div></div><div>INPUT</div></div> | <div>SAMSUNG</div> <div>LED Driver<br/>Model: SL-LU1425501US<br/>Input Voltage: 120-277 Vac 50/60Hz<br/>Input Current: 0.8A<br/>Output Voltage: 30-39Vdc<br/>Output Current: 1400mA<br/>Output Power: 55W</div> | <div><div></div><div>IP67<br/>RoHS</div></div> <div>Aux Output: 12V---150mA<br/>Suitable for use in Dry &amp; Damp Locations<br/>Type TL 90/68°C<br/>Class 2 Output</div> <div>MADE IN CHINA</div> | <div>DIM</div> <div>12V<br/>0-10V<br/>NEG</div> <div>Yellow<br/>Purple<br/>Gray</div> <div>OUTPUT</div> <div>V-: BLUE<br/>V+: RED</div> |  |

SL-LU1425502US

|                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                                                               |  |                                                                                                                                                                                                                                                                                                           |  |                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                        |  | 145 mm                                                                                                                                                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                           |  |                                                                                                |
| 20 mm                                                                                                                                                                                                  |  |                                                                                                                                                                                                                                                                                                                                               |  |                                                                                                                                                                                                                                                                                                           |  |                                                                                                |
|                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                                                               |  |                                                                                                                                                                                                                                                                                                           |  |                                                                                                |
| <div><div><div>● AC/L<br/>BLACK</div><div>● AC/N<br/>WHITE</div><div>● <br/>YE-GN</div></div><div>INPUT</div></div> |  | <div><div>SAMSUNG</div><div>LED Driver<br/>Model: SL-LU1425502US</div><div>Input Voltage: 120-277 Vac 50/60Hz<br/>Input Current: 0.8A<br/>Output Voltage: 30-39Vdc<br/>Output Current: 1400mA<br/>Output Power: 55W<br/>Aux Output: 12V  150mA</div></div> |  | <div><div><div>IP67<br/>RoHS</div></div><div>Suitable for use in Dry &amp; Damp Locations<br/>For Connections Use Wire Rated for at<br/>Least 90°C(194°F)<br/>Type HL<br/>Class P</div><div>MADE IN CHINA</div></div> |  | <div><div>DIM</div><div>12V<br/>0-10V<br/>NEG</div><div>Yellow<br/>Purple<br/>Gray</div></div> |
|                                                                                                                                                                                                        |  |                                                                                                                                                                                                                                                                                                                                               |  | <div><div>OUTPUT</div><div>V-: BLUE</div><div>V+: RED</div></div>                                                                                                                                                                                                                                         |  |                                                                                                |

## 8. Packing Structure

| Packing material | Driver Quantity | Dimension (mm) |       |        |
|------------------|-----------------|----------------|-------|--------|
|                  |                 | Length         | Width | Height |
| Outer Box        | 10              | 340            | 200   | 265    |
| Pallet           | 320             | 850            | 820   | 1185   |

## 9. Precautions in Handling & Use

- 1) To prevent the LED Driver from any defect, please handle and store it with care
  - Do not drop or give shock
  - Do not store in very humid location or at extreme temperature
  - Do not open or disassemble the product
- 2) Static electricity or surge voltage may damage the components inside LED Driver, as such please observe proper anti-electrostatic working process
  - People handling the Driver should be well grounded (e.g. using ESD wrist band) and wear anti-static working clothes and gloves
  - All related devices and instruments in the production line should be well grounded (e.g. working table, measuring equipment, assembly jigs)
- 3) Observe the correct polarity of output terminal
- 4) Avoid input voltage exceeds the maximum rating, which will cause damage to the circuit and result in malfunction

# Legal and additional information.

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