

| PRODUCT SPECIFICATION                                                              |                                                                                                                     |                               |                      |                                    |   |                     |                      |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------|
| MPA1948 Series                                                                     |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Power Supply for LED                                                               |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
|                                                                                    |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Ordering Guide                                                                     |                                                                                                                     | Constant current power supply |                      |                                    |                                                                                                                                                                      |                     |                      |
| Model Name                                                                         | Max current(±5%)                                                                                                    |                               |                      | Output voltage range               |                                                                                                                                                                      |                     |                      |
| MPA1948A                                                                           | 700mA                                                                                                               |                               |                      | 30~50V                             |                                                                                                                                                                      |                     |                      |
| MPA1948B                                                                           | 600mA                                                                                                               |                               |                      | 30~50V                             |                                                                                                                                                                      |                     |                      |
| MPA1948C                                                                           | 500mA                                                                                                               |                               |                      | 30~50V                             |                                                                                                                                                                      |                     |                      |
| MPA1948D                                                                           | 425mA                                                                                                               |                               |                      | 30~50V                             |                                                                                                                                                                      |                     |                      |
| MPA1948E                                                                           | 540mA                                                                                                               |                               |                      | 30~50V                             |                                                                                                                                                                      |                     |                      |
|                                                                                    |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Input Characteristics: (Ta=25℃)                                                    |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
|                                                                                    |                                                                                                                     |                               |                      | Min                                | Typ                                                                                                                                                                  | Max Units           |                      |
| Input Voltage Operating Range                                                      |                                                                                                                     |                               |                      | 90                                 | 100/242                                                                                                                                                              | 267 Vac             |                      |
| Input Frequency                                                                    |                                                                                                                     |                               |                      | 47                                 | 50/60                                                                                                                                                                | 63 Hz               |                      |
| Inrush Current                                                                     | AC100V (25℃ Cold start)                                                                                             |                               |                      | 10 A                               |                                                                                                                                                                      |                     |                      |
|                                                                                    | AC242V (25℃ Cold start)                                                                                             |                               |                      | 20 A                               |                                                                                                                                                                      |                     |                      |
| Model Name                                                                         | Input current(Typ)                                                                                                  |                               | Power Factor (Typ)   |                                    | Input Power(Typ)                                                                                                                                                     |                     | Input rated capacity |
|                                                                                    | At max current                                                                                                      |                               | At max current       |                                    | At max current                                                                                                                                                       |                     |                      |
|                                                                                    | Output Voltage: 50V                                                                                                 |                               | Output Voltage: 50V  |                                    | Output Voltage: 50V                                                                                                                                                  |                     | Output Voltage: 50V  |
|                                                                                    | AC90V                                                                                                               | AC267V                        | AC100V               | AC242V                             | AC100V                                                                                                                                                               | AC242V              |                      |
| MPA1948A                                                                           | 0.49A                                                                                                               | 0.18A                         | 0.994                | 0.939                              | 43.2W                                                                                                                                                                | 42.2W               | 40VA                 |
| MPA1948B                                                                           | 0.42A                                                                                                               | 0.16A                         | 0.991                | 0.916                              | 37.0W                                                                                                                                                                | 36.4W               | 38VA                 |
| MPA1948C                                                                           | 0.35A                                                                                                               | 0.14A                         | 0.989                | 0.887                              | 31.1W                                                                                                                                                                | 31.0W               | 33VA                 |
| MPA1948D                                                                           | 0.30A                                                                                                               | 0.13A                         | 0.983                | 0.853                              | 26.5W                                                                                                                                                                | 26.8W               | 31VA                 |
| MPA1948E                                                                           | 0.39A                                                                                                               | 0.15A                         | 0.988                | 0.894                              | 33.2W                                                                                                                                                                | 32.9W               | 35VA                 |
| Stand-by Power                                                                     |                                                                                                                     | Non-communication state       |                      | AC100V: 0.13Wtyp, AC242V: 0.23Wtyp |                                                                                                                                                                      |                     |                      |
|                                                                                    |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Output Characteristics(*1): (Ta=25℃)                                               |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Model Name                                                                         | Output current (±5%)                                                                                                |                               |                      | Efficiency(Typ) At max current     |                                                                                                                                                                      |                     |                      |
|                                                                                    | Average current(Typ)                                                                                                |                               | Ripple current (p-p) | Output voltage: 30V                |                                                                                                                                                                      | Output voltage: 50V |                      |
|                                                                                    | Min (*2)                                                                                                            | Max                           | Typ (At max current) | AC100V                             | AC242V                                                                                                                                                               | AC100V              | AC242V               |
| MPA1948A                                                                           | 7~35mA                                                                                                              | 700mA                         | 108mA                | 77.9%                              | 77.3%                                                                                                                                                                | 81.8%               | 83.8%                |
| MPA1948B                                                                           | 6~30mA                                                                                                              | 600mA                         | 102mA                | 76.8%                              | 76.2%                                                                                                                                                                | 80.9%               | 82.5%                |
| MPA1948C                                                                           | 5~25mA                                                                                                              | 500mA                         | 81mA                 | 76.2%                              | 75.1%                                                                                                                                                                | 81.1%               | 81.4%                |
| MPA1948D                                                                           | 4.2~21mA                                                                                                            | 425mA                         | 79mA                 | 75.3%                              | 72.6%                                                                                                                                                                | 80.7%               | 79.6%                |
| MPA1948E                                                                           | 5.4~27mA                                                                                                            | 540mA                         | 100mA                | 76.8%                              | 76.1%                                                                                                                                                                | 81.3%               | 82.1%                |
| (*1)Output characteristics are measured by LE-5150-2(KEISOKUGIKEN) as a LED-load . |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| (*2) Depend on Dimming method. Max current value × (1~5%)                          |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Environmental Characteristics:                                                     |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
|                                                                                    | Condition                                                                                                           |                               |                      | Min                                | Typ                                                                                                                                                                  | Max                 | Units                |
| Operating Temp. Range                                                              |                                                                                                                     |                               |                      | -10 (*)                            |                                                                                                                                                                      | 50                  | ℃                    |
| Operating Humidity                                                                 | Non-condensing                                                                                                      |                               |                      | 5                                  |                                                                                                                                                                      | 95                  | %                    |
| Storage Temp. Range                                                                |                                                                                                                     |                               |                      | -20                                |                                                                                                                                                                      | 55                  | ℃                    |
| Cooling condition                                                                  | Natural air cooling                                                                                                 |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| MTBF                                                                               | EIAJ RCR-9102B                                                                                                      |                               |                      | 10                                 |                                                                                                                                                                      |                     | year                 |
| Estimated life                                                                     | Ta=50℃, Max Voltage/Max load                                                                                        |                               |                      | 50000                              |                                                                                                                                                                      |                     | hour                 |
| Weight                                                                             |                                                                                                                     |                               |                      |                                    | 480                                                                                                                                                                  |                     | g                    |
| Sinusoidal Vibration                                                               | Vibration frequency: 10~55Hz、Vibration acceleration: 2G                                                             |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Shock                                                                              | 10G                                                                                                                 |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| RoHS                                                                               | compliant                                                                                                           |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Warranty                                                                           | 1 Year                                                                                                              |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Manufacturing Country                                                              | China                                                                                                               |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| (*) Start-up at -20℃                                                               |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
|                                                                                    |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Safety:                                                                            |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Safety standards                                                                   | Electrical Appliance Safety Low (1st clause)<br>EN61347-1, EN61347-2-13 (CB REPORT)                                 |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Harmonics                                                                          | EN61000-3-2 class C                                                                                                 |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Conducted emission                                                                 | PSE (1st clause)、EN55015 CLASS B, EN55022 CLASS B                                                                   |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Insulation resistance                                                              | 30MΩ or more (Input to Output-Reinforced、Input to Chassis-Basic)                                                    |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Withstand voltage                                                                  | AC4000V (60Hz Primary-Secondary)、Leak current: 10mA or less<br>AC1600V (60Hz Primary-FG)、Leak current: 10mA or less |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Leakage current                                                                    | 1 rms or less (AC242V 60Hz normal temperature/normal humidity)                                                      |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
|                                                                                    |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Protection Characteristics:                                                        |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
|                                                                                    | Operating                                                                                                           | Conditions                    |                      | Return method                      |                                                                                                                                                                      |                     |                      |
| Over Current Protection                                                            | 0.8A or more                                                                                                        | Latching                      |                      | AC re-input (*)                    |                                                                                                                                                                      |                     |                      |
| Over Voltage Protection                                                            | 60V or more                                                                                                         | ON/OFF Repeat                 |                      | Auto recovery (**)                 |                                                                                                                                                                      |                     |                      |
| Output Open Protection                                                             | —                                                                                                                   | ON/OFF Repeat                 |                      | Auto recovery (**)                 |                                                                                                                                                                      |                     |                      |
| (*)Input AC again 10 seconds later.                                                |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| (**)When LED is connected, be careful to be possible to flow rush current to LED.  |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Immunity:                                                                          |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Electrostatic discharge                                                            | IEC61000-4-2                                                                                                        |                               | Level 3              |                                    |                                                                                                                                                                      |                     |                      |
| Electrical fast transient burst                                                    | IEC61000-4-4                                                                                                        |                               | Level 3              |                                    |                                                                                                                                                                      |                     |                      |
| Surge                                                                              | IEC61000-4-5                                                                                                        |                               | Level 3              |                                    |                                                                                                                                                                      |                     |                      |
|                                                                                    |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| Product specification                                                              |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     |                      |
| MPA1948 Series                                                                     |                                                                                                                     |                               |                      |                                    |                                                                                                                                                                      |                     | 1/8                  |

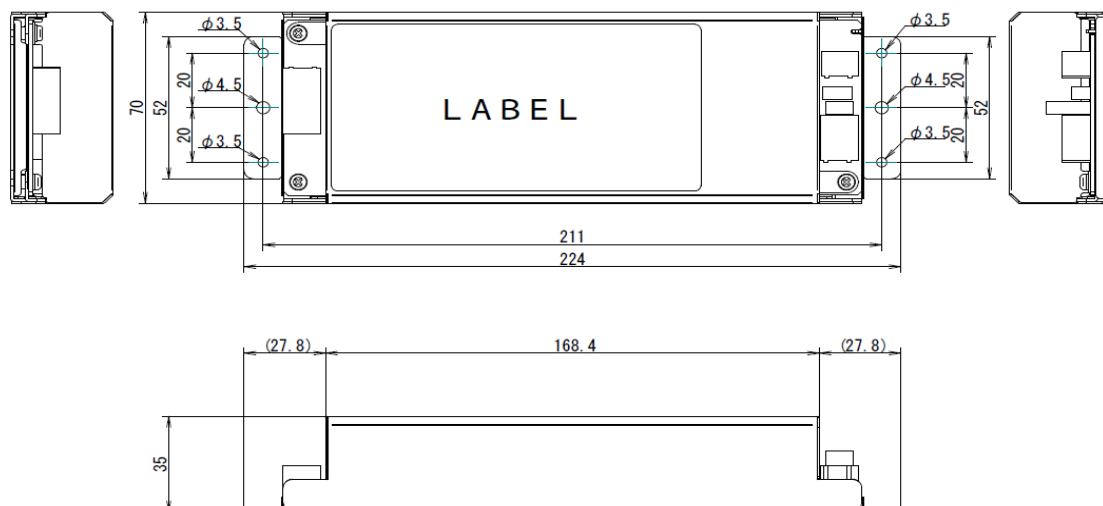
# PRODUCT SPECIFICATION

MPA1948 Series

Power Supply for LED

**muRata**

## Mechanical Dimensions・Label



| Tolerance of outline |           |
|----------------------|-----------|
| Range of dimension   | Tolerance |
| $0.5 < L \leq 6$     | $\pm 0.3$ |
| $6 < L \leq 10$      | $\pm 0.4$ |
| $10 < L \leq 50$     | $\pm 0.7$ |
| $50 < L \leq 180$    | $\pm 1.0$ |
| $180 < L \leq 500$   | $\pm 1.5$ |
| $500 < L \leq 1000$  | $\pm 2.0$ |

L: Dimension

Unit: mm

LABEL1 (Ex. MPA1948A)

入力側 INPUT

LED照明用電源 / Power Supply for LED Lighting

定電流出力タイプ / Constant current type

品名 / Model : MPA1948A

・推奨電線 / Recommended wire

入力 / INPUT :  $\phi 0.8-1.6\text{mm}$  0.5-2.5□

出力 / OUTPUT : DALI・PWM :  $\phi 0.8-1.2\text{mm}$  0.5-1.5□

The controlgear has mains-connected windings

屋内用 / Indoor type

MADE IN CHINA

SELV-equivalent controlgear

DALI / PWM

UART module

SW401

DALI PWM

LED module

・周囲温度 / Ta :  $-10 \sim 50^{\circ}\text{C}$

・入力 / INPUT : AC100-242V 50/60Hz 0.48Amax 40VA

・出力 / OUTPUT : 0.7A DC30-50V 35Wmax

UART 通信については指定モジュール以外使用しないでください

Use a special module about UART communication

Tc:  $72^{\circ}\text{C}$

PS E

UL Japan

**muRata**

株式会社 村田製作所

Murata Manufacturing Co., Ltd.

## PRODUCT SPECIFICATION

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### Input/Output Terminal

#### AC Input wire

| Parts Name | Maker Type Name           | Terminal No. | Description |
|------------|---------------------------|--------------|-------------|
| CN1        | 235-503/342-325<br>(WAGO) | 1            | AC Neutral  |
|            |                           | 2            | AC LIVE     |
|            |                           | 3            | FG          |

#### Output Connector

| Connector No. | Maker Type Name           | Terminal No. | Description           |
|---------------|---------------------------|--------------|-----------------------|
| CN101         | 235-104/330-000<br>(WAGO) | 1            | LED Output- (Cathode) |
|               |                           | 2            | LED Output- (Cathode) |
|               |                           | 3            | LED Output+ (Anode)   |
|               |                           | 4            | LED Output+ (Anode)   |

\* Terminal 1 and 2 are same voltage. Terminal 3 and 4 are same voltage.

#### Signal Connector

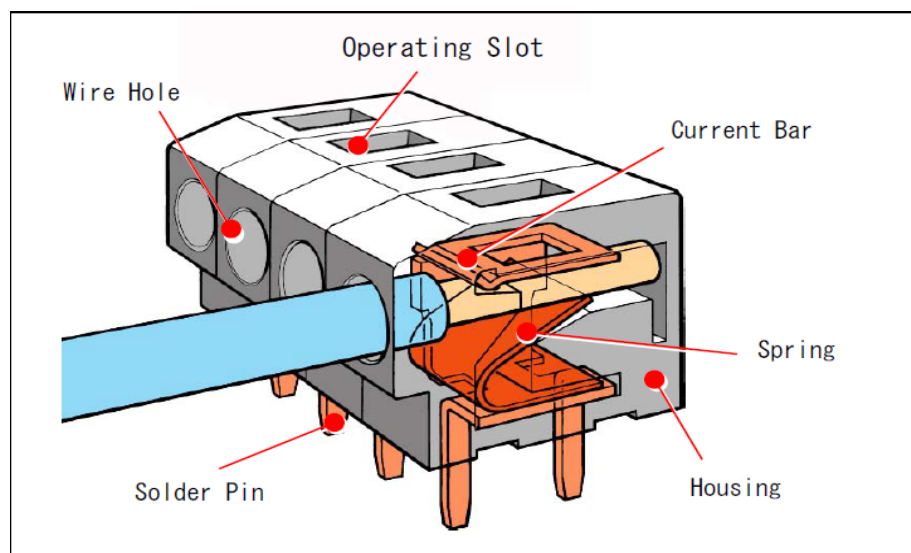
| Connector No. | Maker Type Name           | Terminal No. | Description            |
|---------------|---------------------------|--------------|------------------------|
| CN201         | B4B-PH-K-S<br>(JST)       | 1            | 3.3V                   |
|               |                           | 2            | UART_RX (Reception)    |
|               |                           | 3            | UART_TX (Transmission) |
|               |                           | 4            | GND                    |
| CN301         | 235-102/330-000<br>(WAGO) | 1            | DALI or PWM SIGNAL     |
|               |                           | 2            | DALI or PWM SIGNAL     |

\* CN301 No polarity

### Instruction for Connecting Conductor



■ Structure : Part name and structure of terminal block.



## PRODUCT SPECIFICATION

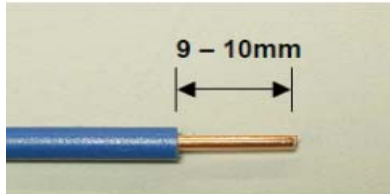
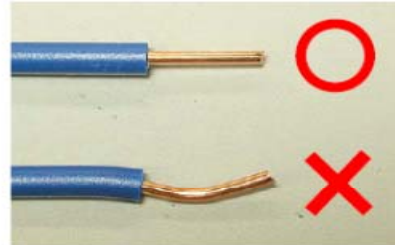
MPA1948 Series

Power Supply for LED

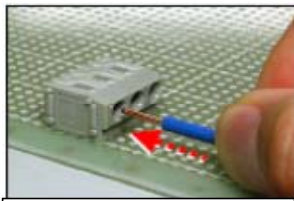
*muRata*

### ■ Stripping of Wire

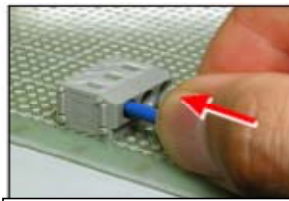
Please strip a conductor's stripped length related as drawings.  
Please fix splayed, bent or twisted wire.



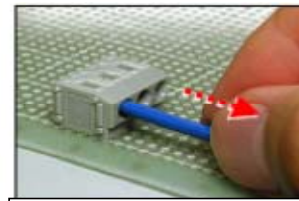
### ■ Connecting Please follow the instructions



① Insert a wire to the wire hole.

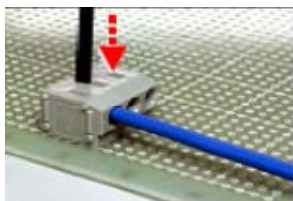


② A wire must be inserted to a stop position.

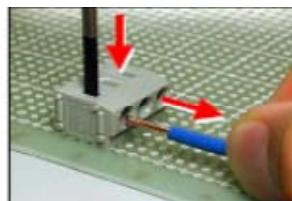


③ Pull a wire slightly to check if connecting has been done completely.

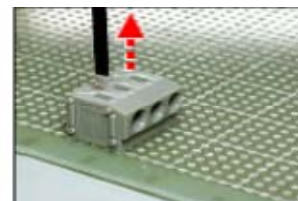
### ■ Removal Please follow the instructions



① Put a screwdriver to the operating slot.



② Hold down a screwdriver, a conductor can be released



③ Put off a screwdriver.

## PRODUCT SPECIFICATION

MPA1948 Series

Power Supply for LED

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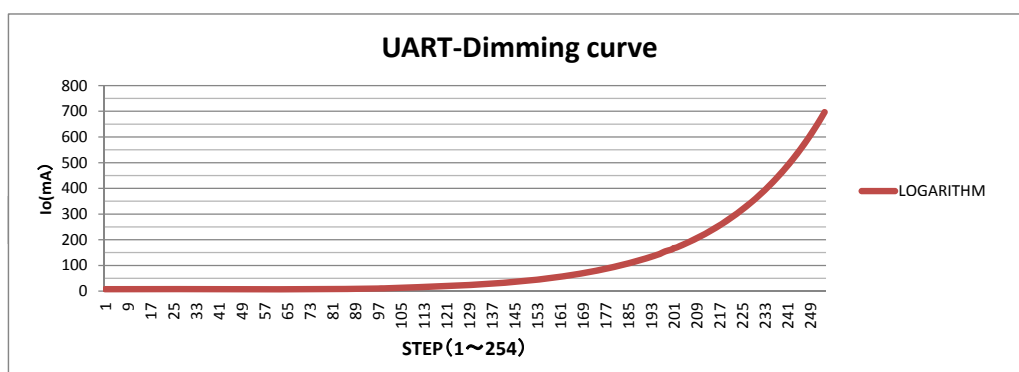
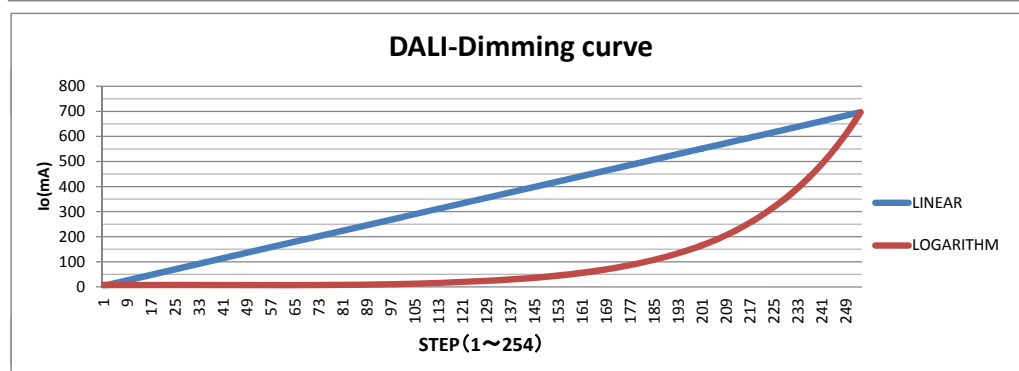
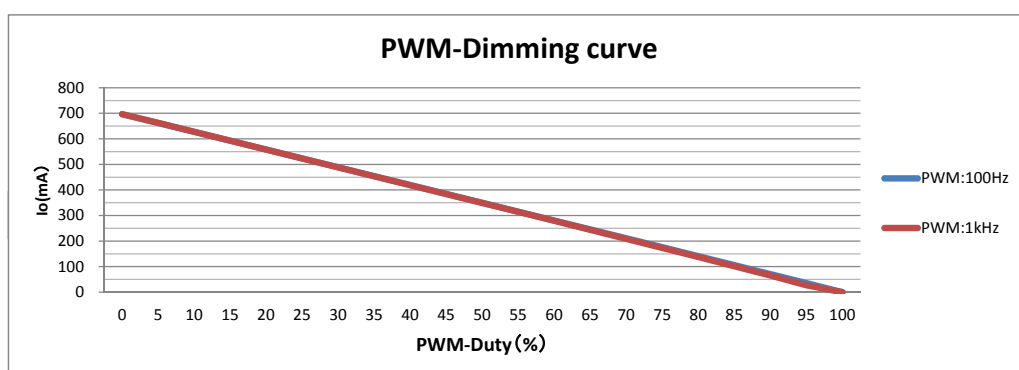
### 【Dimming Specifications】

This product supports UART, DALI and PWM mode.

In the case of UART, DALI and PWM Dimming mode, change a dip switch (SW401) to each mode before AC input. (Refer as follows)

| Dimming | Input Connector | Communication standard・Dimming Specifications                                                                                                                                                         |
|---------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UART    | CN201           | IEEE802.15.4Product Description<br>SW401 posision:DALI side<br>(Use a Murata special module about UART.)                                                                                              |
| DALI    | CN301           | IEC62386<br>SW401 posision:DALI side                                                                                                                                                                  |
| PWM     | CN301           | Input pulse 10-16Vo-p<br>Frequency 100Hz-1KHz<br>DUTY 0-95%typ<br>Ex.) Output current:Duty 0%...700mA、95%...OFF、f:1KHz<br>Output current:Duty 0%...700mA、98%...OFF、f:100Hz<br>SW401 posision:PWM side |

#### Dimming characteristics (Masterpiece)



## PRODUCT SPECIFICATION

MPA1948 Series

Power Supply for LED



### 【Instruction Manual】

Before using the Power Supply Unit

Pay attention to all warnings and cautions before using the PSU.

Incorrect usage could lead to an electrical shock, damage to the PSU or a fire hazard.

#### ★Warning & Caution

- Do not modify and remove the cover.
- If any failure or trouble occurs because of utilizing the power supply unit without reflecting the described contents on this specification, Murata cannot assure such trouble.
- Do not touch the internal components, they may have high voltage or high temperature.  
You may get electrical shock or burned.
- Definitely avoid to use the power supply unit by the excessive input voltage, output voltage, output current and ambient temperature as defined on this specification.  
The excessive current, voltage and temperature will cause the deterioration of the components or abnormal heat, both of which may affect not only to shorten the unit's life-long but also to damage and break the unit.  
In a case of LED VF 30V or less because of LED chip dispersion, please make sure to evaluate and confirm the quality upon mounting the power supply unit to your product.  
But don't use it under the LED VF 25V or less.
- Use the PSU after confirm the correct connection of input and output.
- Be sure not to scratch and damage the input leads. Never transfer the unit by holding and pulling any lead wire.
- If PSU is dropped, absolutely not to use it any more.
- Make sure not to install and/or store the unit under the environment as stated below because such will cause the insulation deterioration.
  - ① Make sure to avoid storing the unit under the condition of high temperature, high humidity or direct sunlight which are out of the standard on this specification.
  - ② Ambient air containing the corrosive gas. (Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, NO<sub>x</sub>, etc.)
  - ③ Places which have the fear to be splashed with water, oil, organic solvent, etc.
  - ④ Places with a high concentration of dusty places.
  - ⑤ Other environment correspondingly mentioned above.
- Make sure not to install and/or store the unit under the environment as stated below because such will cause the insulation deterioration.
  - ① If any alien substance attached on terminals, it may cause the contact failure or insertion deterioration.
  - ② The use of the silicon rubber or silicon bond which contain a high percentage of dimethylpolysiloxane may cause to trigger the contact failure of volume, potentiometer volume or switch. Make sure to use such rubber or bond with the percentage of dimethylpolysiloxane 0.1% or less.
- PSU can not be used under the condition of the series operation.
- Rust may occur in the chassis because of use environment.
- This specification regulates the quality of the power unit, if nothing specially defined. When using the power supply unit, make sure to evaluate and confirm the quality upon mounting the power supply unit to your product.

## PRODUCT SPECIFICATION

**MPA1948 Series**

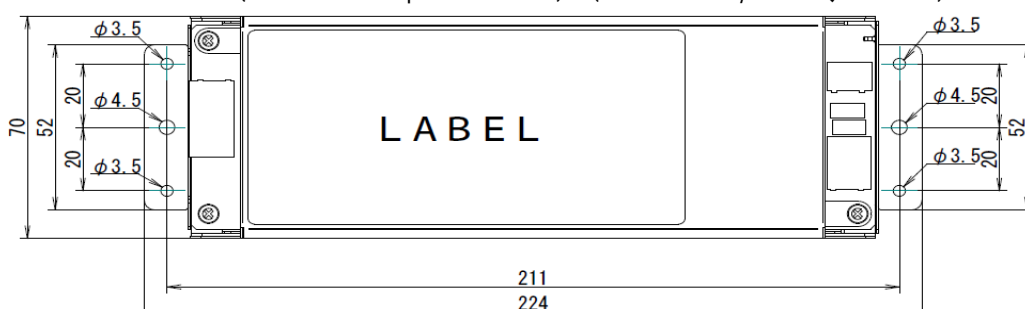
Power Supply for LED

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### 【Mounting】

Mounting method

- Please use the place at 50°C or less around the PSU ambient.
- Please connect the thick and short wire to the FG terminal for safety and EMI.
- Please separate Input wire and Output wire surely.
- Please refer as follows about the recommended Wire for input, output and dimming.  
AC-input wire:  $\phi 0.8\text{--}1.6\text{mm}$ ,  $0.5\text{--}2.5\text{mm}^2$  single wire (Strip length 9–10mm)  
LED Output wire/Dimming wire for DALI and PWM:  
 $\phi 0.8\text{--}1.2\text{mm}$ ,  $0.5\text{--}1.5\text{mm}^2$  single wire (Strip length 9–10mm)
- Please fix a screw about the installation of the power supply more than one place of one side. (more than two places in total) (Screw hole:  $\phi 3.5 \times 4$ ,  $\phi 4.5 \times 2$ )



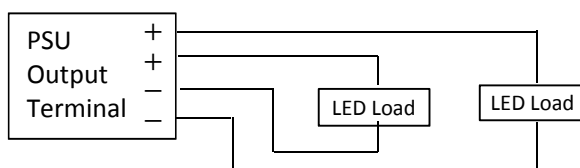
### 【Parallel Operation】

- Series Operation is not possible.
- For parallel operation, either method (1) or (2) is possible. But please caution as follows.  
\*) PSU output [ + ] and [ + ] are connected in PSU. [ - ] are the same.  
Therefore this PSU are not 2 output.

**Parallel 1: In a case of operating the plural LEDs for one power supply.**

If LED Vf voltage are different, the current may be partial.

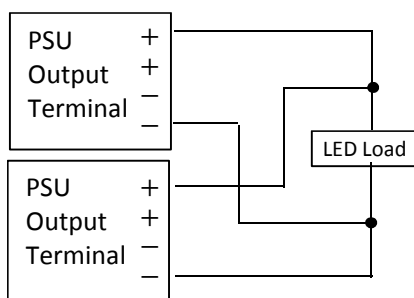
Please add a balance circuit not to become so.



**Parallel 2: In a case of operating two Power supplies for one LED.**

The total current of two power supplies pass through in the LED.

And please confirm the leakage current as the system.



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**MPA1948 Series**  
Power Supply for LED

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## PACKING SPECIFICATION

Use for the Model MPA1948 series.

| NO. | PARTS NAME      | Q'TY  |
|-----|-----------------|-------|
| 1   | PACKING BOX     | 1/12  |
| 2   | BASE PAD        | 2/12  |
| 3   | PARTITION BOARD | 1/12  |
| 4   | Small PE Bag    | 12/12 |

### PACKING PROCESS :

Note: 1. It contains 12 pieces of product in every box.

