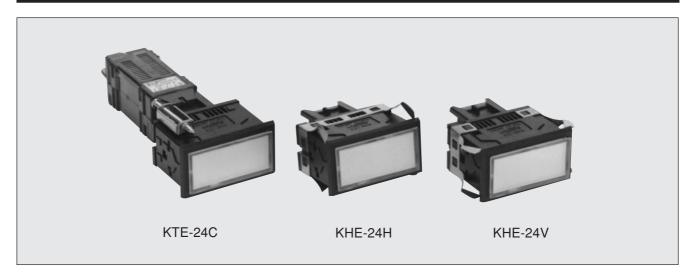
# **LED Square Lights**

# KHE/KTE/KRE/KBE-24



#### ■ Features

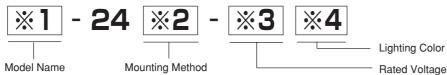
- Full voltage (24V DC), transformer, resistor, and rectification bridge types are available for various power supplies.
- An even lighting surface provided by bright LEDs (equivalent brightness of an incandescent lamp).
- Five vivid lighting colors available: milky white, red, green, orange, and yellow.
- Snap-on or clamp mounting is available.
- A built-in protective diode efficiently resists reverse voltage.
- LED units can be easily replaced from the front surface.
- RoHS directive compliant.

## ■ Model Designation

Bridge (EB-7)

Resistor and

bridge (EB-7)



**%2**|

| Model Name | Converter Type                           | Rated Voltage Code                       |             | Mounting Method   |  |
|------------|--|--|-------------|---|--|
| KHE        | Full voltage<br>(Converter not required) | 24V DC                                   | C<br>H<br>V | Clamp type with screw clamp C<br>Snap-on type with snap clamp H (for<br>vertical mount)<br>Snap-on type with snap clamp V (for<br>horizontal mount) |  |
| KTE        | Transformer and bridge (ET-7)            | 100V AC<br>110V AC<br>200V AC<br>220V AC |             |   |  |
| KRE        | Resistor (ER-7)                          | 48V DC<br>100V DC<br>110V DC             | С           | Clamp type with screw clamp C   |  |

24V AC 48V AC/DC

100V AC/DC

110V AC/DC

| Code | Voltage |  |  |
|------|---------|--|--|
| 4    | 24V     |  |  |
| 6    | 48V     |  |  |
| 7    | 100V    |  |  |
| 8    | 110V    |  |  |

200V 220V

**※3**|

| <del></del> |                       |  |  |  |
|-------------|-----------------------|--|--|--|
| Code        | <b>Lighting Color</b> |  |  |  |
| W           | Milky white           |  |  |  |
| R           | Red                   |  |  |  |
| G           | Green                 |  |  |  |
| 0           | Orange                |  |  |  |
| Υ           | Yellow                |  |  |  |

**%4** 

Note: The bezel color is black.



**KBE** 

**※** 1

## **■** Specifications

| Item Model            | KHE-24   | KTE-24                                |                              | KRE-24                                      | KBE-24   |  |
|-----------------------|--|---------------------------------------|------------------------------|---|--|--|
| Rated Voltage         | 24V DC ±10%  | 100V AC ±10%<br>110V AC ±10%          | 200V AC ±10%<br>220V AC ±10% | 48V DC ±10%<br>100V DC ±10%<br>110V DC ±10% | 24V AC ±10%*<br>48V AC/DC ±10%<br>100V AC/DC ±10%<br>110V AC/DC ±10% |  |
| Rated Current         | 20mA   | 25mA                                  | 13mA                         | 18mA  | 18mA   |  |
| Insulation Resistance | sulation Resistance 100MΩ or more between live parts and ground (unit display box) measured by 500V DC megohmmeter         |                                       |                              |   |  |  |
| Withstand Voltage     | Withstand Voltage 2000V AC for 1 minute between live parts and ground (unit - display box)                                 |                                       |                              |   |  |  |
| Heat Resistance       | For 2 hours at -25 ±3°C and 2 hours at 55 ±3°C   |                                       |                              |   |  |  |
| Humidity Resistance   | For 96 hours at 40 ±2°C and 95% RH   |                                       |                              |   |  |  |
| Vibration Resistance  | 3-dimensional vibration for 1 hour with a sweep time of 1 minute (amplitude: 0.4mm, frequency: 50Hz, and acceleration: 2G) |                                       |                              |   |  |  |
| Reverse Voltage       | 400V   |                                       |                              |   |  |  |
| Operating Environment | Temperature: -10~40°C, Humidity: 45~85% RH (No freezing or condensation)   |                                       |                              |   |  |  |
| Shock Resistance      | 3-dimensional shock of 500m/s <sup>2</sup> to 6 surfaces, 5 times  |                                       |                              |   |  |  |
| Lighting Color        | Milky White (W), Red (R), Green (G), Orange (O), Yellow (Y)  |                                       |                              |   |  |  |
| Panel Thickness       | 1~5mm: Screw clamp C 3~5mm: Snap clamp H·V   |                                       |                              |   |  |  |
| Wiring                | $3 \times 6$ screws (torue: 0.6~0.9N·m)  | M3.5 × 10 screws (torque: 1.0~1.3N⋅m) |                              |   |  |  |
| Weight                | 48g  | 11                                    | 6g                           | 86g   | 86g  |  |

<sup>\*</sup>Only a bridge circuit is possible for the 24V AC circuit configuration.

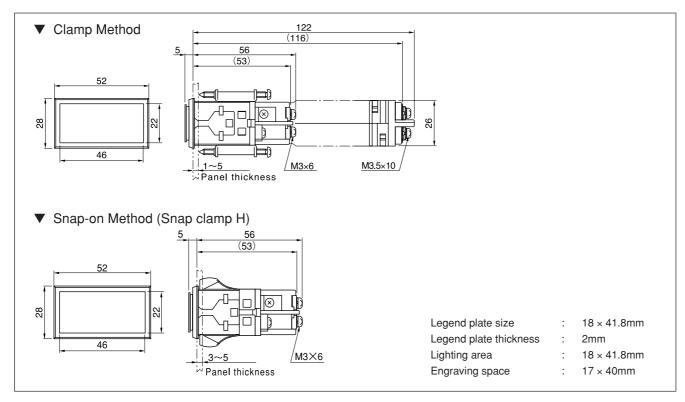
### ■ Materials

| Item Model      | KHE-24              | KTE-24                | KRE-2            | 24              | KBE-24             |
|-----------------|---------------------|-----------------------|------------------|-----------------|--------------------|
| Lens            | Polycarbonate resin | (transparent)         |                  | UL94            | V-2                |
| Legend Plate    | Acrylic resin       | (milky white)         |                  | thickn          | ess: 2mm           |
| Filter          | Acrylic resin       | (transparent, red, gi | een, orange, yel | low) thickn     | ess: 1mm           |
| Case            | Polycarbonate resin | (black)               |                  | UL94            | V-2                |
| Reflecter       | Polycarbonate resin | (white)               |                  |                 |                    |
| Terminal Screws | Carbon steel        | (zinc plated with chi | ome treatment)   | M3.5 × 10 (M3 × | 6 only for KHE-24) |
| Screw Clamp C   | Steel sheet         | (zinc plated with chi | ome treatment)   |                 |                    |
| Fixing Screws   | Carbon steel        | (zinc plated with chi | ome treatment)   | M3.5            | × 40               |
| Snap Clamp H·V  | Stainless steel     |                       |                  |                 |                    |

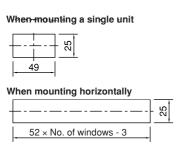


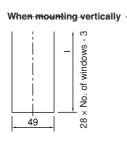
- When used in a circuit with induced or leakage current, the LED may unintentionally light. To prevent this malfunction, insert a resistor parallel to the indicator terminal.
- Use ET/ER/EB-7-2 adaptors for KTE/KRE/KBE.
- When using models with a transformer, resistor, or bridge, use the Screw Clamp C.
- Lighting colors can not be changed by replacing only the color filter. Please order the complete LED Unit (LED unit, lens, legend plate, and color filter).
- Unless otherwise mentioned, all dimensions are indicated in "mm" in this book.

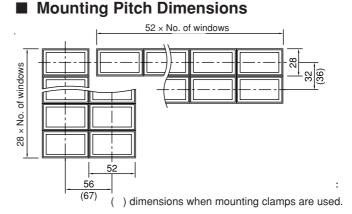
#### Dimensions



#### ■ Panel Cut Dimensions







## **■** Mounting

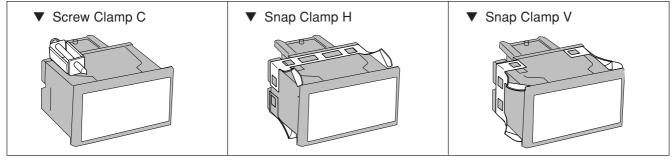
#### Clamp

Use this method (with screw clamp C) when mounting transformer/resistor types.

- Always remove transformer/resistor from the unit before mounting onto the control panel.
- Insert the unit from the front of the control panel. From the back, screw tightly by using mounting clamp C. Recommended torque is 0.15~0.2N·m.

#### Snap-On

Insert the unit from front side of control panel. The unit will snap into position.



# **Accessories & Replacement Parts**

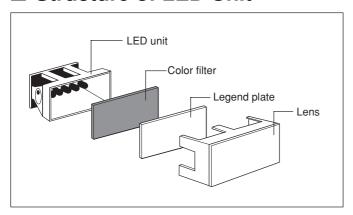
# **LED Units**

## **■** Model Designation





### ■ Structure of LED Unit



### ■ LED Unit Circuit Diagram

