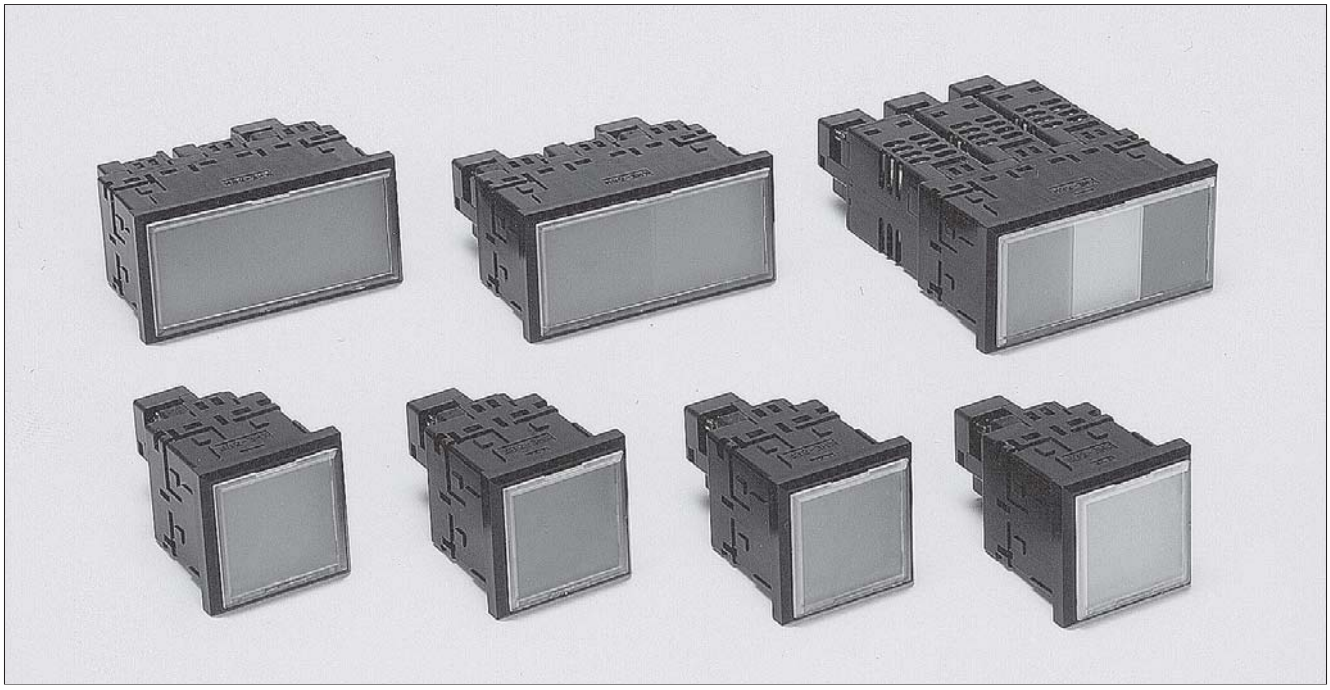
DIN Size LED Square Lights

KHE-36F/H Series



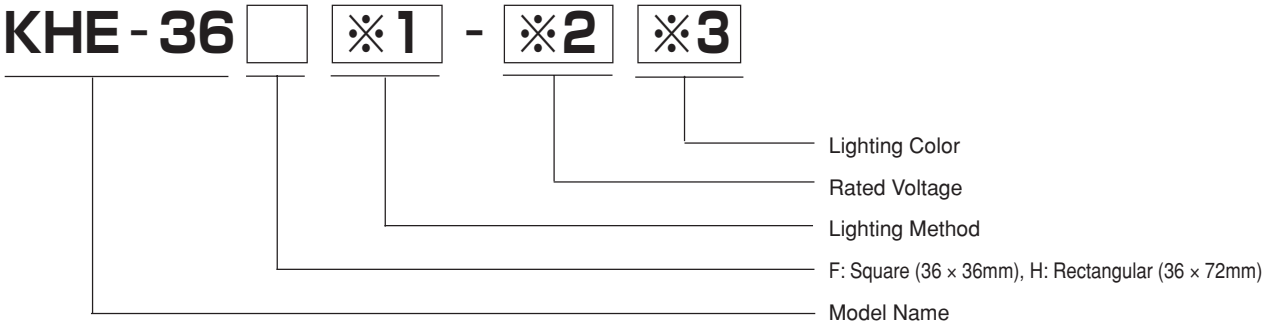
■ Features

- Significant saving in wiring is realized by employing the terminal screws of screwing-up type.
- The finger-protection structure needs no terminal protection cover.
- The LED unit is commonly used under AC and DC, which enables compatibility with various kinds of power sources.
- Full window lighting, one two-split window lighting, and one three-split window lighting are available.
- Employed AlGaInP GaN LED offers vivid color and highly bright lighting as well as power savings.
- Protection circuit against erroneous lighting which may be caused by induced voltage.
- The LED unit is of the detachable structure and can be easily replaced from the front surface.
- Multiple lights can be collectively mounted on the panel by using the cross-shaped frame.
- RoHS directive compliant.

NOTICE

- The LED works on a few mill amperes. Measures are taken to this product against induction problems, however, be aware that the LED may be unintentionally lit if used in a circuit with significant induced or leakage current.
- The mounting clamp (CA-13) must be used at the opposing corners. (Recommended torque: 0.15 ~ 0.2N·m)
- LED unit of the 110V and 220V specification lights works on 48V and should be combined with the special resistor unit (for 110V or 220V).
- Unless otherwise mentioned, all dimensions are indicated in “mm” in this book.

■ Model Designation



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	Code	Lighting method
36F	A	Single-color lighting for one full window

	Code	Lighting method
36H	A	Single-color lighting for one full window
	B	Two-split single-color lighting on one full window with a separator
	E	Three-split single-color lighting on one full window with a separator

※2

Code	Rated Voltage	Remark
4	24V AC/DC	All-voltage type
6	48V AC/DC	
8	100V/110V AC/DC	Resistor unit type (LED unit voltage is 48V)
U	200V/220V AC/DC	

※3

Code	Lighting Color
W	Milky white
R	Red
G	Green
O	Orange
B	Blue
PW	White
Y	Yellow

□ Production on orders

● Designating lighting colors

Lighting method A: Designate (by **W**, **R**, **G**, **O**, **B** or **PW**) for the lighting color.

Lighting method B: **W+R**

Designate in the order from "left side color", +, to "right side color" as viewed from the lighting window.
(Left side: **W**, and right side: **R** in the example above.)

Lighting method E: **W+O+G**

Designate in the order from "left side color", +, "center color", +, to "right side color" as viewed from the lighting window. (Left side: **W**, center: **O**, right side: **G** in the example above.)

■ Ratings

Rated Voltage			24V AC/DC	48V AC/DC	100V110V AC/DC (With resistor converter)	200V220V AC/DC (With resistor converter)
Operating Voltage Range			21.6 ~ 26.4V	43.2 ~ 52.8V	90V ~ 121V	180V ~ 242V
Rated Current	36H	Full Window	26mA	13mA		
		Two-split	13mA+13mA			
		Three-split	13mA+13mA+13mA			
	36F	Full Window	13mA			

■ Specifications

Insulation Resistance	100MΩ or more between live parts and ground measured by 500V DC megohmmeter
Withstand Voltage	2000V AC for 1 minute between live parts and ground
Temperature Resistance	For 1 hour at normal temperatures after 2 hours at -40°C, and 1 hour at normal temperatures after 2 hours at 70 ± 3°C
Humidity Resistance	Normal insulation resistance and withstand voltage after being left for 24 hours in a cycle of 55 ± 2°C and 25 ± 3°C under 95%RH
Vibration Resistance	3-dimensional vibration of amplitude 1.5mm and frequency ranging 10 ~ 55Hz for 1 hour with a sweep time of 1 minute
Shock Resistance	3-dimensional shock of 500m/s^2 to 6 surfaces, 5 times
Operating Environment	Temperature: -10 ~ 40°C, humidity: 45 ~ 85%RH (No freezing or condensation)
Lighting Method	Full window, 2-split and 3-split lighting by LED
Lighting Color	Milky white (W), red (R), green (G), orange (O), blue (B), yellow (Y) and white (PW)
Panel Thickness	1 ~ 6mm
Wiring	M3.5 × 8 screws (recommended torque: 0.7 ~ 1.0N·m)

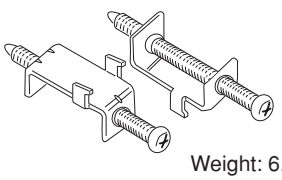
■ Materials

Lens	Polycarbonate resin	Transparent	UL94V-2
Lens Frame	Polycarbonate resin	Black	
Legend Plate	Methacryl resin	Milky white	
Filter	Methacryl resin	Each color (transparent, red, green orange, blue, yellow)	
Separator	Polycarbonate resin	White	
Reflector	Polycarbonate resin	White	
Case	Polycarbonate resin	Black	UL94V-2
Socket	Polycarbonate resin	Black	UL94V-2
Terminal Protection Cover	Polycarbonate resin	Black	UL94V-2
Terminal Screw	Carbon steel		

● Installation

Insert the main body through the front panel surface, and fix with the mounting clamp at the rear face. (Recommended torque: 0.15 ~ 0.2N·m)

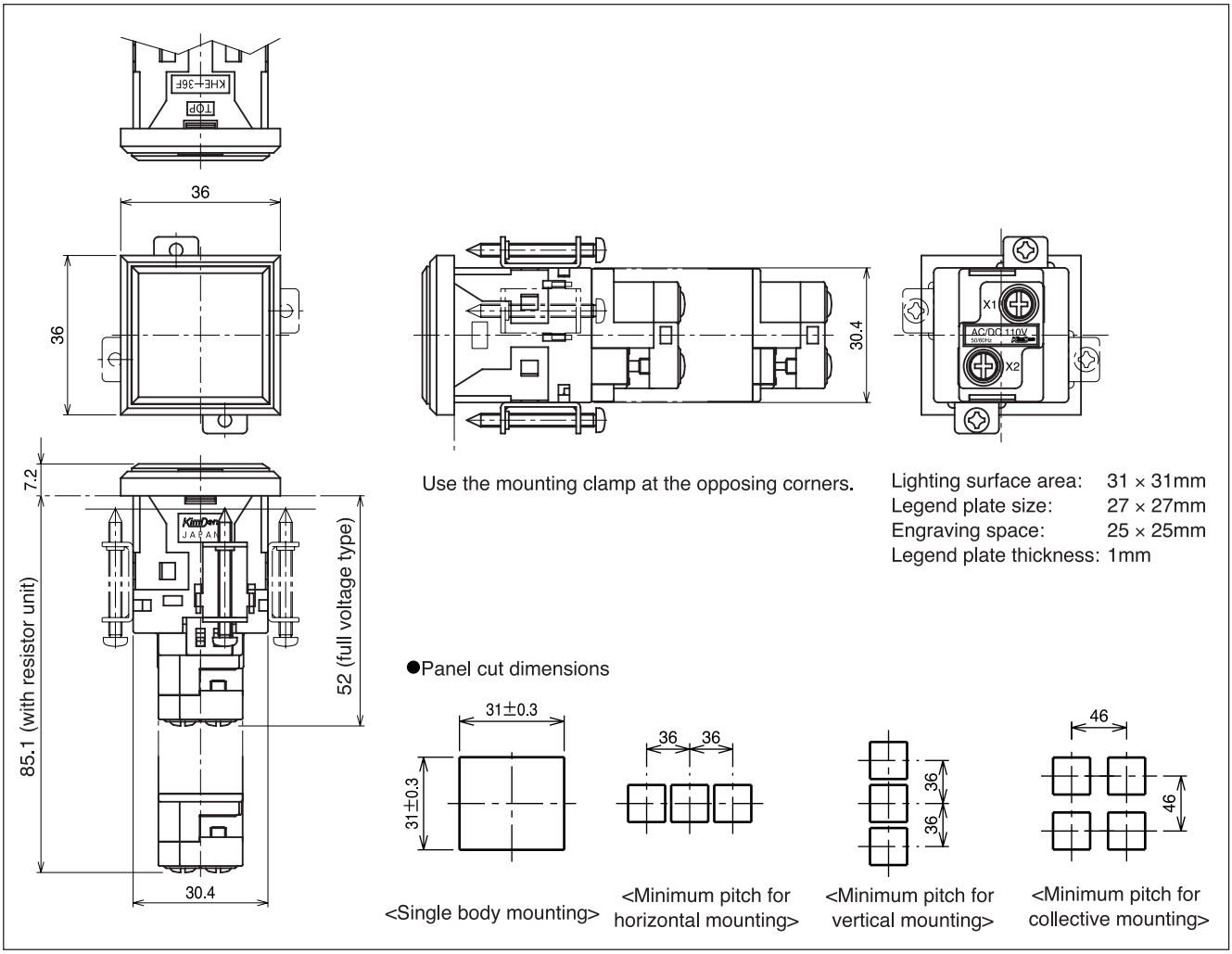
▼ CA-13



Weight: 6.2g

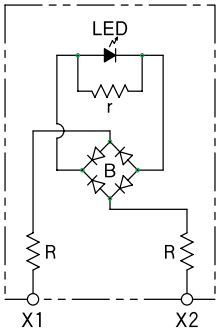
■ Dimensions

● KHE-36F



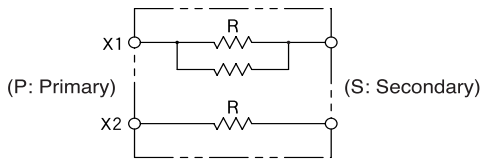
● Weight Approx. 31 ~ 47g

● LED unit circuit diagram



LED: Light emitting diode
R: Resistor
B: Rectifier bridge
r: Resistor

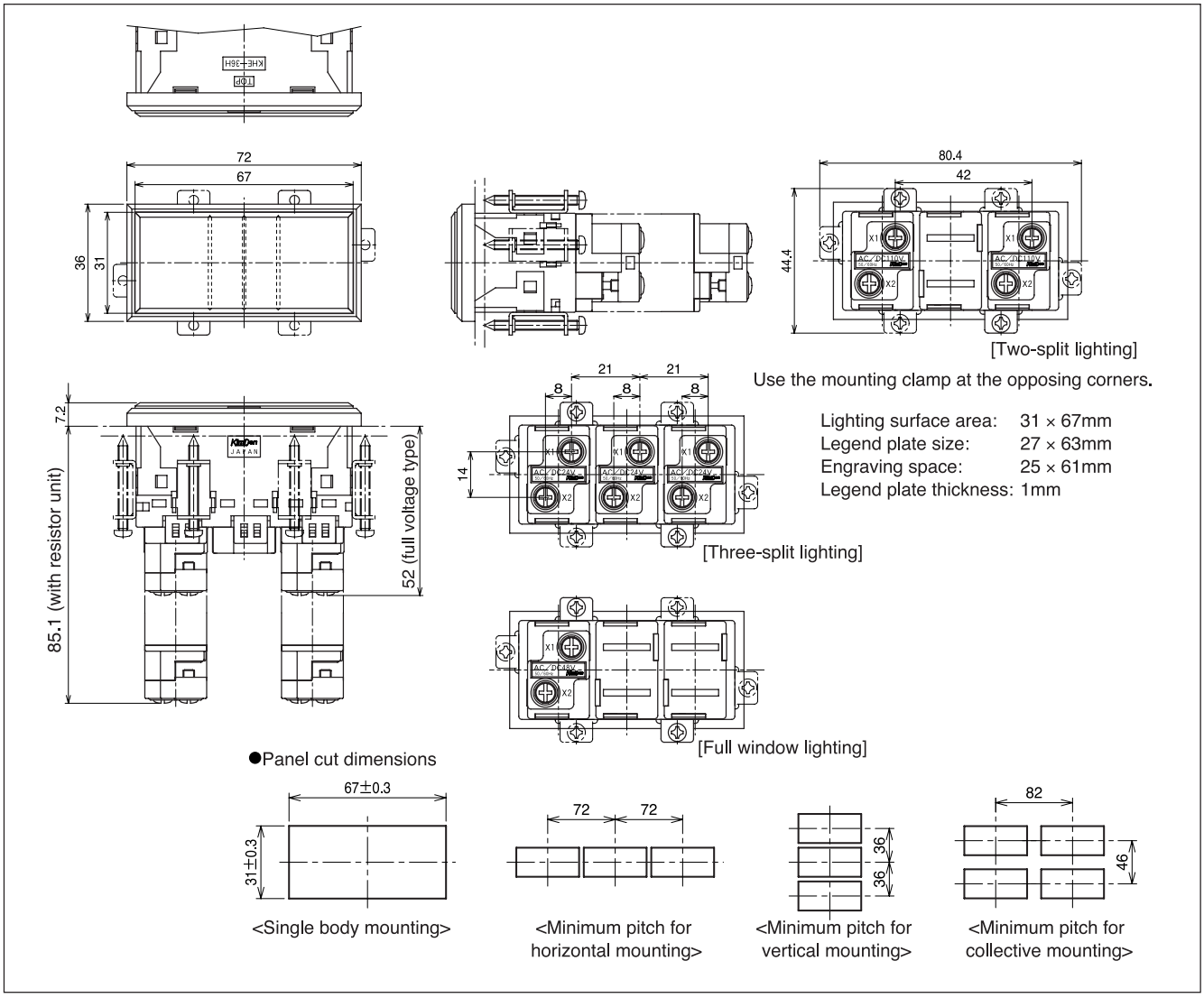
● Resistor unit circuit diagram



R: Resistor

■ Dimensions

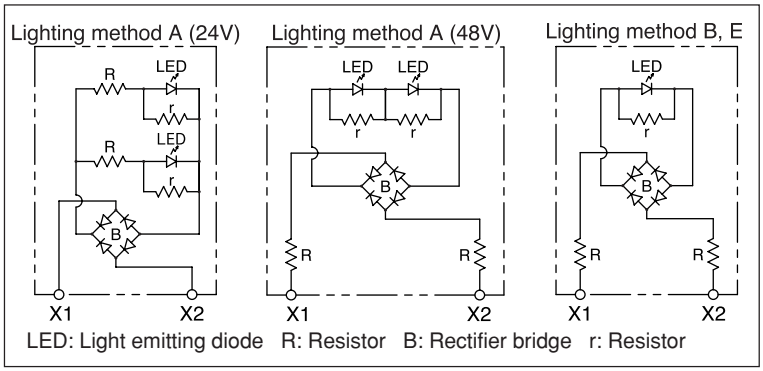
● KHE-36H



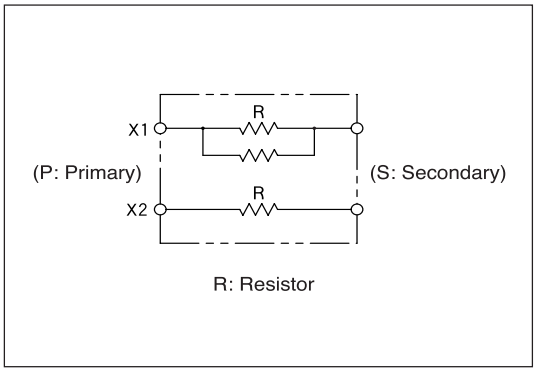
● Weight

Model	Lighting Method	Weight
KHE-36H	Single-color for full window	Approx. 55 ~ 71g
	Two-split lighting	Approx. 65 ~ 96g
	Three-splits lighting	Approx. 75 ~ 122g

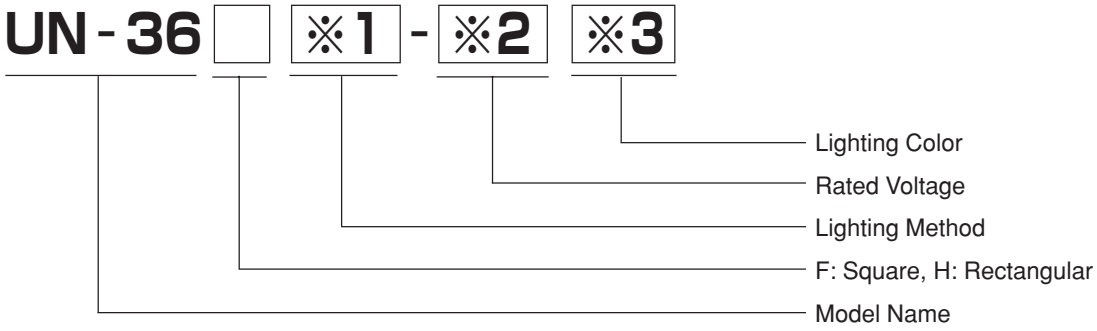
● LED unit circuit diagram (for one unit)



● Resistor unit circuit diagram (for one unit)



■ LED Unit Model Designation



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	Code	Lighting method
36F	**A**	Single-color lighting for one full window

	Code	Lighting method
36H	**1**	Single-color lighting for one full window
	2	Two-split single-color lighting
	3	Three-sprit single-color lighting

※2

Code	Rated Voltage
4	24V AC/DC
6	48V AC/DC

※3

Code	Lighting Color
W	Milky white
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Production on orders

● Designating lighting colors

Lighting method A: Designate (by **W**, **R**, **G**, **O**, **B** or **PW**) for the lighting color.

Lighting method B: **W+R**

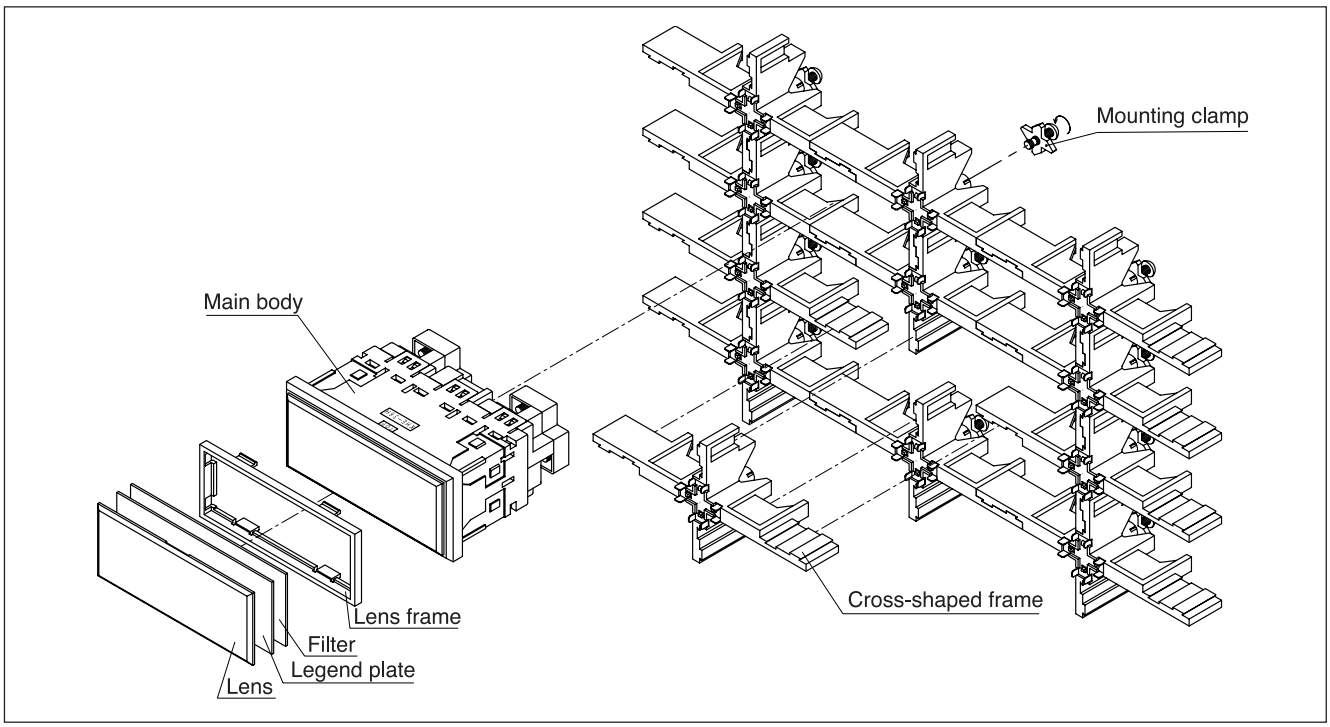
Designate in the order from "left side color", +, to "right side color" as viewed from the lighting surface. (Left side: **W**, and right side: **R** in the example above.)

Lighting method E: **W+O+G**

Designate in the order from "left side color", +, "center color", +, to "right side color" as viewed from the lighting surface. (Left side: **W**, center: **O**, right side: **G** in the example above.)

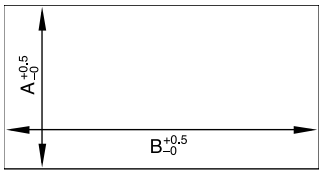
■ Collective Mounting by Cross-shaped Frame

- Fit the wedges of the cross-shaped frames to assemble the structure for the collective light mounting. When assembling, place the frames with its back downward to make the frames flat. If trying to assemble the frames with the front side downward, the clamps legs may turn improperly.
- As the frames are assembled in the structure, mount the mounting clamps at each frame center on the back.
- To assemble the lights, insert a light unit first into the two levels × two rows from the front side, and fasten the screws of the clamps at the back ensuring that the four front edges of the clamps are fit in the holes of the main frame. Afterwards, insert and fix the two light units at a time in the next level or row in the same manner.
  Note: When assembling the light units, ensure that the front edges of the clamps on the frame front are fit in the slots of the light units (a gap of 2mm or more if exiting between the light unit and the frame front shows that these do not fit properly).
- When installing the assembled structure into the panel, use a mounting clamp for a light unit at the outer circumference.



■ Panel Cut Dimensions and Required Frames for Multiple Light Mounting

- Panel cut dimensions
  - KHE-36F
    A= (Number of levels d × 36) - 5 B= (Number of rows r × 36) - 5
  - KHE-36H
    A= (Number of levels d × 36) - 5 B= (Number of rows r × 72) - 5



- Number of required cross-shaped frames
  (Number of levels d - 1) × (Number of rows r - 1)

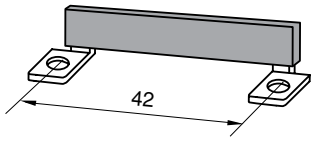
NOTICE

- The cross-shaped frame is not required for mounting by the single unit, multiple units in a vertical line or horizontal line.
- Fasten the M3 screws at the mounting clamp to mount each light unit with the recommended torque 0.2 ~ 0.3N·m.
- Fasten the M3 screws at the mounting clamp to install the collective light units into the panel with the recommended torque 0.2 ~ 0.3N·m.
- Maximum number of light units to be mounted on a cross-shaped frame is 6 levels × 20 rows with the 36F, or 6 levels × 10 rows with the 36H. For more number than those to mount, divide in multiple places of panel cuts.
- Lighting may be limited in consideration for a continuous lighting among close up light units. Consult with us for the details.
- Unless otherwise mentioned, all dimensions are indicated in “mm” in this book.

Options

■ Short-circuiting Bar

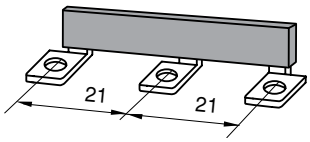
▼ J-42AP



KHE-36HB
(For two-split lighting on one window)

Weight: 2.0g

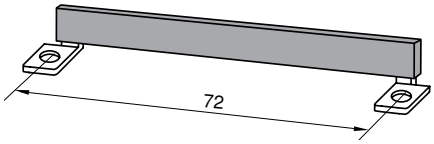
▼ J-42BP



KHE-36HE
(For three-split lighting on one window)

Weight: 2.3g

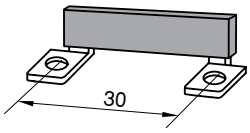
▼ J-72AP



KHE-36HA (For collective mounting)
Purpose of use: Horizontal cross-over wiring

Weight: 2.4g

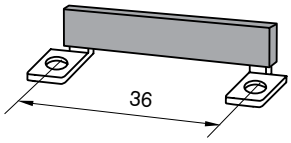
▼ J-30FP-2



KHE-36HB/E (For collective mounting)
Purpose of use: Horizontal cross-over wiring

Weight: 2.2g

▼ J-36AP

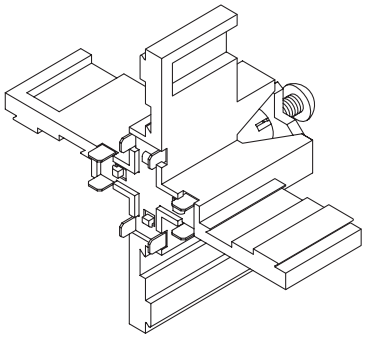


KHE-36F/H (For collective mounting)
Purpose of use: KHE-36F vertical and horizontal cross-over wiring,
KHE-36H vertical cross-over wiring.

Weight: 1.8g

■ Cross-shaped Frame

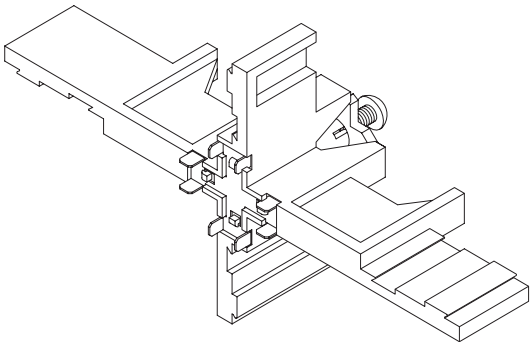
▼ MJ-36F



(KHE-36F)

Weight: 5.4g

▼ MJ-36H



(KHE-36H)

Weight: 7.3g

■ Legend Film

KHE-36 series DIN size LED Square Light

● **Use of the dedicated legend film**

Item / Model	Matching Model	Dimensions (mm) A	Dimensions (mm) B	Number of print windows	Size	Thickness (mm)	Package *	Materials
NF-27FD8J	KHE-36F	26.7	26.7	48	A4	0.1	10 sheets	PET resin (specially processed for printing)
NF-36HJ	KHE-36H	63.0	27.0	24				

*: Minimum 10 sheets for a pack.

Information for Handling

1. The template for legend film is prepared under the same model name.
2. The films can be printed by the ink-jet printer which is commercialized in the market.
   Printers manufactured by EPSON or Canon are recommended.
3. When printing with the printer, supply the film one by one to prevent displacement of the prints.
4. The films are already cut in the size except a part which can easily be cut manually.
   In this process, using a pair of thin gloves is recommended to avoid finger prints on the film.
5. The legend films are heat and weather resistant to the excellent levels.
6. The films are only for printing with an ink-jet printer. Do not print with the laser printer or other types of printer.

*Please contact the sales representative for any requirements.