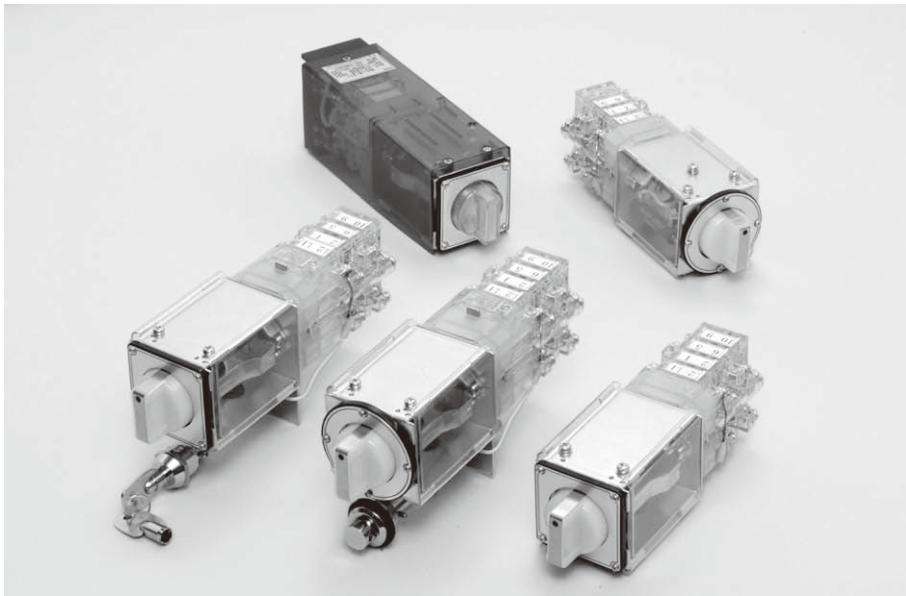




DISCREPANCY SWITCH

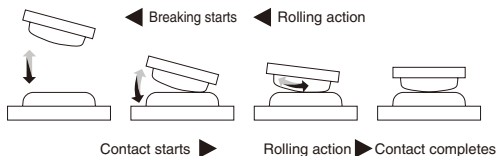
BHL TYPE



FEATURES

1

With the rolling action of the contact mechanism that minimizes the area exposed to arc, improved contact stability can be maintained for a long period.



2

The optimum design of cam shape and moving contact angle can improve the breaking capacity, enabling voltage and current value settings with a certain margin.

3

Round and square types of nameplates can be selected. Indication can be differentiated by the shape of nameplate, resulting in a panel design improvement.



Square (Y) type



Round (Z) type

4

Variations in lamp circuit voltage (24V, 48V, 110V, 125V and 220V)

5

A LED lamp type with built-in flicker circuit is available. With this type, the knob can be flickered.

* For the indication method, refer to "LXF" in the table ⑦ on F59.

6

The key lock mechanism can prevent erroneous operation.

A cylinder type (BHLC type) key and padlock type (BHLF type) key are available.

7

The back terminal type (BHL-B type) enables quick wiring.

8

A BHLFX type that conforms to the IP40 enclosure rating is available. Since the knob is fastened with a screw, the BHLF type can prevent entry of external foreign objects and accidental contact with live parts. A protective ground terminal is also provided.

SPECIFICATIONS (RATINGS, PERFORMANCE)

| Specification | Type | BHL·BHLS TYPE |
|---------------------------------------|------|---|
| Rated insulation voltage (Ui) | | 690V |
| Rated current-carrying capacity (Ith) | | 20A |
| Max. wire size | | 5.5mm ² |
| Screw size | | M4×9 |
| Withstand voltage | | 2,500V AC / 1 min. |
| Rated impulse withstand voltage | | 4kV |
| Contact resistance | | 50mΩ max. |
| Mechanical life | | 500,000 operations or more |
| Electrical life | | 100,000 operations or more |
| Shock resistance | | 500m/s ² or more (in 6 directions) (Contact part: 300m/s ²) |
| Vibration resistance | | Vibration range: 10 to 150Hz, Acceleration: 20m/s ² , Time: 1 hour (in 3 directions) |
| Min. applicable load | | 5V AC / 500mA, 5V DC / 100mA (in suitable operating conditions) |
| Operating temperature | | -20 to 60°C |
| Storing temperature | | -40 to 70°C |
| Altitude | | 2,000 m max. |

■ Breaking capacity (Electrical life: 500,000 operations or more)

| AC | | | DC | | | | |
|-----------------------------|---|--|-----------------------------|---|--|---|--|
| Rated operating voltage (V) | Rated operating current Resistance load (A) | Rated operating current Inductive load (A) | Rated operating voltage (V) | Rated operating current Resistance load (A) | Rated operating current Inductive load (A) | 2 contacts in series connection Rated operating current Resistance load (A) | 2 contacts in series connection Rated operating current Inductive load (A) |
| 110 | 20 | 15 | 24 | 15 | 10 | 20 | 20 |
| 220 | 15 | 10 | 48 | 10 | 6 | 18 | 15 |
| 440 | 4 | 3 | 110 | 3 | 1.5 | 4.5 | 4 |
| — | — | — | 220 | 1.2 | 0.8 | 2 | 1.5 |

*Inductive load AC: power factor 0.6 to 0.7
DC: Time constant 40±6ms

OVERSEAS STANDARD CONFORMABLE RATINGS (EN60947 / IEC60947)

(1) Standard operating conditions

| No. | Item | Condition | Remarks |
|-----|---------------------|--|------------------|
| 1 | Ambient temperature | -5 to 40°C | IEC60947-1 6.1.1 |
| 2 | Humidity | 50% (at maximum temperature 40°C), Less than 90% (at other temperature 20°C) | IEC60947-1 6.1.3 |
| 3 | Altitude | 2000 m max. | IEC60947-1 6.1.2 |

(2) Rating

| No. | Item | Rating | | | | Remarks |
|-----|---|----------------------------|----------------------|-----------------------------|--------|-----------------------|
| 1 | Overvoltage class | III | | | | IEC60664-1 2.2.2.1.1 |
| 2 | Pollution degree | Level 3 | | | | IEC60947-5-1 6.1.3.2 |
| 3 | Rated insulation voltage (Ui) | 690V | | | | IEC60947-1 4.3.1.2 |
| 4 | Rated impulse withstand voltage (Uimp) | 4kV | | | | IEC60947-1 4.3.1.3 |
| 5 | Operating load class | Name | Operating load class | Ue (V) | Ie (A) | IEC60947-5-1 Annex A |
| | Rated operating current (Ie) | A600 | AC-15 | 240 | 3 | |
| | Rated operating voltage (Ue) | | | 100,000 operations or more* | | |
| | * Electrical durability | P600 | DC-13 | 250 | 0.55 | |
| | | | | 20,000 operations or more* | | |
| 6 | Rated frequency | 50 / 60Hz | | | | IEC60947-5-1 4.3.3 |
| 7 | Customary free air heat current (Ith) | 20A | | | | IEC60947-1 4.3.2.1 |
| 8 | Maximum rating of short-circuit protection device | 20A | | | | IEC60947-5-1 8.3.4.3 |
| 9 | Short-circuit current under rated conditions | 1,000A (cos φ=1) | | | | IEC60947-5-1 4.3.6.4 |
| 10 | Mechanical durability | 100,000 operations or more | | | | 60947-5-1 Annex C C.2 |

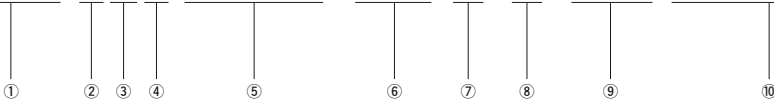


DISCREPANCY SWITCH

BHL TYPE

HOW TO ORDER

BHL-3B3 **-110 H-W-Y-B L54-Y00**



① Basic type

| Code | Description |
|-------|---|
| BHL | Standard type |
| BHLS | Small knob type |
| BHLC | Cylinder key type |
| BHLP | Padlock type |
| BHL-B | Rear terminal type |
| BHLFX | Fixed knob + housing protection ground terminal |

② Operation method

| Code | Description |
|------|--|
| 1 | 2-position chageover |
| 2 | Push after 2-position chageover |
| 3 | Push and turn to right / left after 2-position chageover |

③ Operating position

| Code | Description |
|------|-------------|
| A | |
| B | |
| C | |
| D | |
| E | |

④ Number of units

| Code | Description |
|--------|-----------------------------|
| 1 to 6 | Up to 6 units (12 contacts) |

* Lamp unit is not included.

⑤ Circuit number

| Code | Description |
|--------------------|--|
| 3-digit indication | Check the model identification table (on F65 to F66). For details, contact Fuji Electric Industry. |

⑥ Lamp voltage

| Code | Description |
|------|-------------|
| 024 | 24V DC |
| 048 | 48V DC |
| 110 | 110V DC |
| 125 | 125V DC |
| 220 | 220V DC |

⑦ Indication method (with built-in resistor)

| Code | Description | BHLS | BHL and others |
|--------|-------------------------|------|----------------|
| H | Candесcent lamp | — | ○ |
| L1 | LED lamp | ○ | ○ |
| L2 (+) | Connector type LED lamp | — | ○ |
| LXF | Flicker type LED lamp | — | ○ |

* L2 and LXF are special types.

⑧ Knob color

| Code | Description | BHLS | BHL and others |
|------|---|------|----------------|
| W | Milky white (Silver line + Black point) Standard color for indication other than "L2" type | ○ | ○ |
| C | Clear Standard color for indication of "L2" type | — | ○ |
| WB | Milky white (Black line + Black point) Special color | ○ | ○ |

⑨ Flange shape and color

| Code | Shape | Color |
|------|--------|-------------------------|
| Y-B | Square | Black (N1.5) |
| Y-BG | Square | Blue green (7.5BG4/1.5) |
| Z-B | Round | Black (N1.5) |
| Z-BG | Round | Blue green (7.5BG4/1.5) |

Munsell approximate value is indicated in ().

⑩ Nameplate

See page F63.

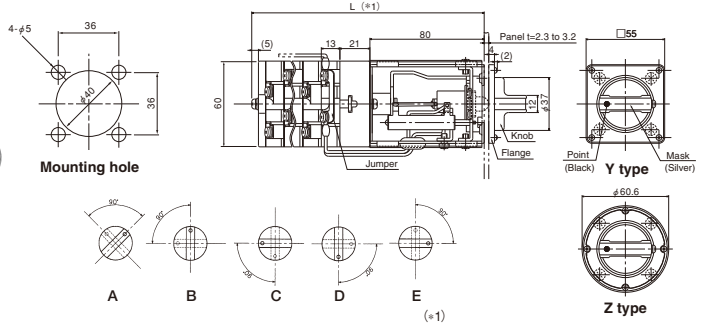
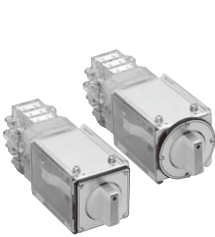
STANDARD PRODUCTS

Standard type (2-position changeover)

BHL-1

Operation method: Manual switching type

* The following figure shows the LED type.



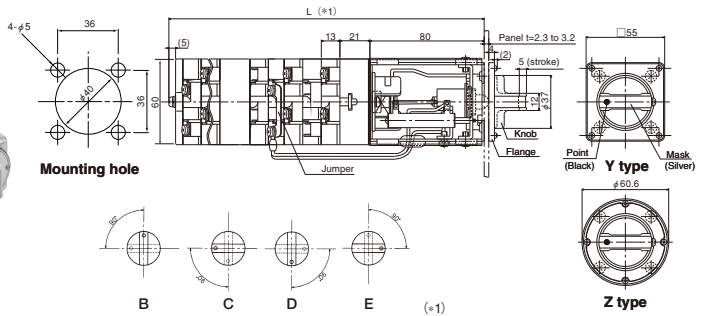
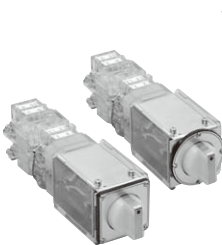
| | | | | | | |
|--------------|-----|-----|-----|-----|-----|-----|
| No. of units | 1 | 2 | 3 | 4 | 5 | 6 |
| L (mm) | 137 | 150 | 163 | 176 | 189 | 202 |

Standard type (Push after 2-position changeover)

BHL-2

Operation method: Manual switching type (Push operation is enabled at each position.)

* The following figure shows the LED type.



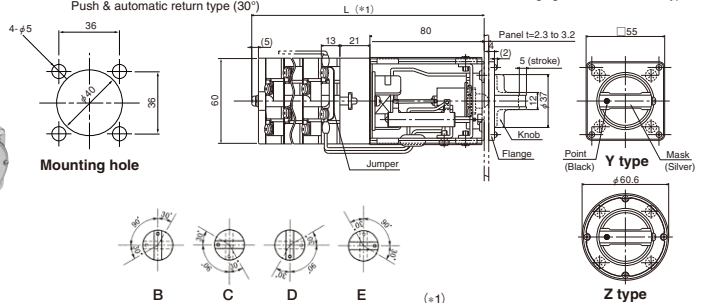
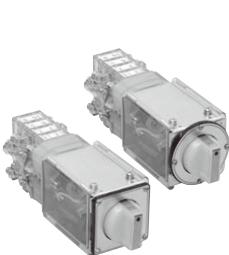
| | | | | | | |
|--------------|-----|-----|-----|-----|-----|-----|
| No. of units | 1 | 2 | 3 | 4 | 5 | 6 |
| L (mm) | 197 | 210 | 223 | 236 | 249 | 262 |

Standard type (Push and turn right / left after 2-position changeover)

BHL-3

Operation method: Manual switching type (90° Push & automatic return type (30°))

* The following figure shows the LED type.



| | | | | | | |
|--------------|-----|-----|-----|-----|-----|-----|
| No. of units | 1 | 2 | 3 | 4 | 5 | 6 |
| L (mm) | 137 | 150 | 163 | 176 | 189 | 202 |



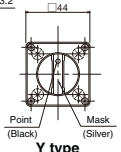
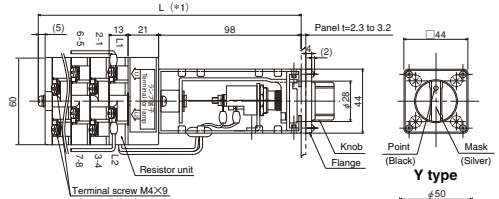
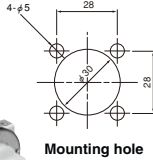
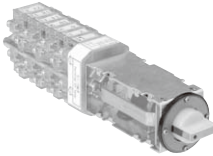
DISCREPANCY SWITCH

BHL TYPE

STANDARD PRODUCTS

Small-size type (2-position changeover)

BHLS-1

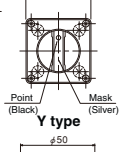
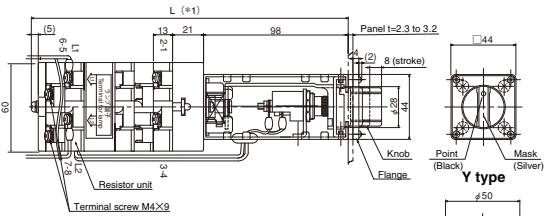
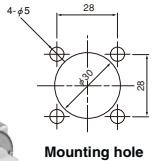
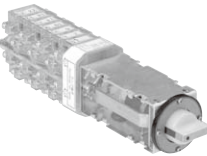


(*1)

| | | | | | | |
|--------------|-----|-----|-----|-----|-----|-----|
| No. of units | 1 | 2 | 3 | 4 | 5 | 6 |
| L (mm) | 155 | 168 | 181 | 194 | 207 | 220 |

Small-size type (Push after 2-position changeover)

BHLS-2

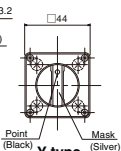
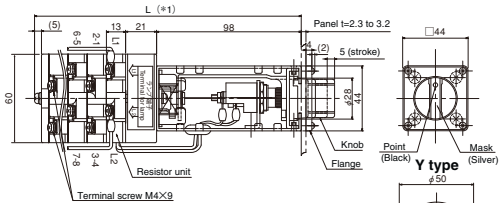
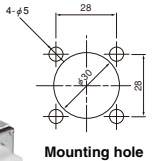
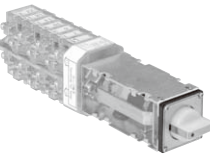


(*1)

| | | | | | | |
|------------------------------|--------------|-----|-----|-----|-----|-----|
| | No. of units | | | | | |
| 2-position switching contact | 1 | 2 | 3 | 4 | | |
| Push-operation contact | 1 | 2 | 1 | 1 | | |
| L (mm) | 215 | 241 | 228 | 254 | 241 | 254 |

Small-size type (Push and turn right / left after 2-position changeover)

BHLS-3

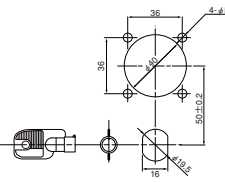
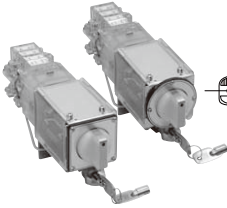


(*1)

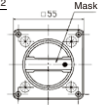
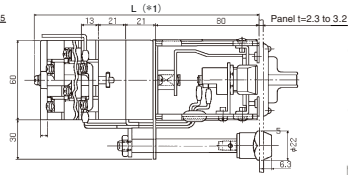
| | | | | | | |
|--------------|-----|-----|-----|-----|-----|-----|
| No. of units | 1 | 2 | 3 | 4 | 5 | 6 |
| L (mm) | 155 | 168 | 181 | 194 | 207 | 220 |

With key lock mechanism type * See page F13 to 14 for key specifications.

BHLC



Mounting hole



Y type



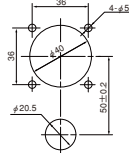
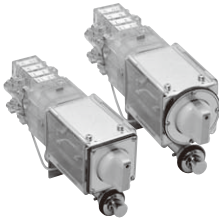
Z type

| No. of units | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------|-----|-----|-----|-----|-----|-----|
| L (mm) | 158 | 171 | 184 | 197 | 210 | 223 |

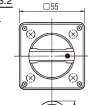
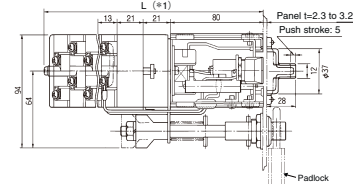
* The key is TAKIGEN C-88 and C-110.

With padlock mechanism type

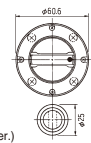
BHLP



Mounting hole



Y type



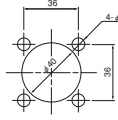
Z type

| No. of units | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------|-----|-----|-----|-----|-----|-----|
| L (mm) | 158 | 171 | 184 | 197 | 210 | 223 |

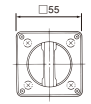
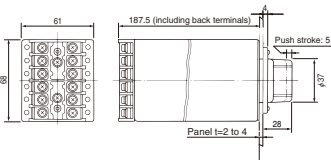
* Padlock not included in the product. (Use a padlock with a 6 mm diameter.)

With rear terminal type

BHL-B



Mounting hole



Y type

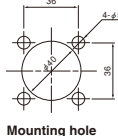
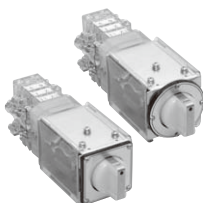


Z type

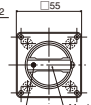
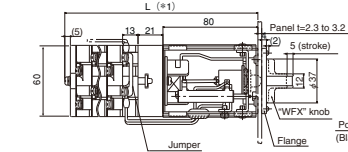
* The BHL-B type can accept up to 3 units (6 contacts).

With fixed knob + housing protection ground terminal type (IP40)

BHLFX



Mounting hole



Y type



Z type

| No. of units | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------|-----|-----|-----|-----|-----|-----|
| L (mm) | 137 | 150 | 163 | 176 | 189 | 202 |



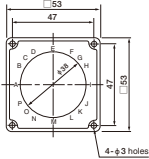
DISCREPANCY SWITCH

BHL TYPE

ACCESSORIES

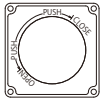
Nameplate (for BHL, BHLC, BHLP, BHL-B and BHLFX)

● Square type (Y type)



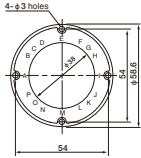
● BHL-NP-L54-Y000 Nameplate No.

Example: L54-Y11E



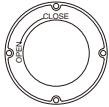
| Aluminum nameplate No. | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P |
|------------------------|----------------------|---|--------|----|-------|--------|---|---|----|----|---|------|---|------|------|-------|
| L54-Y000 | Plain (Outline only) | | | | | | | | | | | | | | | |
| L54-Y00B | Plain (Black) | | | | | | | | | | | | | | | |
| L54-Y01E | OPEN | | | | CLOSE | →CC | | | | | | | | | | OC→ |
| L54-Y02E | IO | | | | IC | C | | | | | | | | | | O |
| L54-Y03E | | | | O | IO | | | | IC | C | | | | | | |
| L54-Y05E | T | | | | C | TC | | | | | | | | | | TT |
| L54-Y06E | | | | TT | T | | | | C | TC | | | | | | |
| L54-Y07E | PUSH | | | | PUSH | →CLOSE | | | | | | | | | | TRIP→ |
| L54-Y08E | OPEN | | | | CLOSE | | | | | | | | | | | |
| L54-Y11E | PUSH | | | | PUSH | →CLOSE | | | | | | | | | OPEN | ← |
| L54-Y12E | PUSH | | →CLOSE | | | | | | | | | OPEN | ← | PUSH | | |

● Round type (Z type)



● BHL-NP-L54-Z000 Nameplate No.

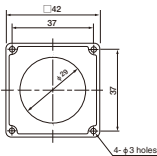
Example: L54-Z02E



| Aluminum nameplate No. | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P |
|------------------------|----------------------|---|--------|----|-------|--------|---|---|----|----|---|-------|------|---|------|-------|
| L54-Z000 | Plain (Outline only) | | | | | | | | | | | | | | | |
| L54-Z00B | Plain (Black) | | | | | | | | | | | | | | | |
| L54-Z01E | OPEN | | | | CLOSE | →CC | | | | | | | | | | OC→ |
| L54-Z02E | OPEN | | | | CLOSE | | | | | | | | | | | |
| L54-Z03E | IO | | | | IC | C | | | | | | | | | | O |
| L54-Z04E | | | | O | IO | | | | IC | C | | | | | | |
| L54-Z05E | CLOSE | | | | OPEN | | | | | | | | | | | |
| L54-Z06E | →OPEN | | | | | | | | | | | CLOSE | | | | |
| L54-Z07E | PUSH | | | | PUSH | →CLOSE | | | | | | | | | | OPEN→ |
| L54-Z08E | | | | TT | T | | | | C | TC | | | | | | |
| L54-Z09E | T | | | | C | TC | | | | | | | | | | TT |
| L54-Z10E | | | | | T | | | | C | | | | | | | |
| L54-Z11E | PUSH | | | | PUSH | →CLOSE | | | | | | | PUSH | | OPEN | ← |
| L54-Z12E | PUSH | | →CLOSE | | | | | | | | | OPEN | ← | | | |

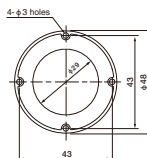
Nameplate (for BHLS)

● Square type (Y type)



● BHLS-NP D54-000 Plain (Outline only)

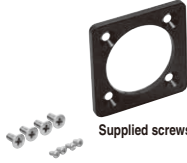
● Round type (Z type)



● BHLS-NP D54-Z000 Plain (Outline only)

Flange (nameplate mount) set : B (N1.5), BG (7.5BG 4/1.5)

- BHL flange set Y
- BHLS flange set Y



Supplied screws ① Countersunk screw, M4×10, 4 screws
② Tapping screw, M2.6×4, 4 screws

- BHL flange set Z
- BHLS flange set Z



Supplied screws ① Countersunk screw, M4×10, 4 screws
② Tapping screw, M2.6×4, 4 screws

LED lamp (24 V rating)

- E-12 LED lamp LD-24-YO
- E-12 LED lamp LTH-024-12E-AY



Flicker LED lamp

- E-12 LED lamp LXF-DC110-AY



Indication color: Amber

Power supply voltage

| Code | Voltage |
|-------|---------------|
| DC024 | 24V DC |
| DC048 | 48V DC |
| DC110 | 100 / 110V DC |
| DC125 | 125V DC |

Candescant lamp

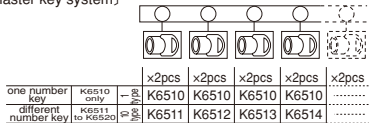
- E-10 panel lamp 110V2W



KEY SYSTEM

C-88 type

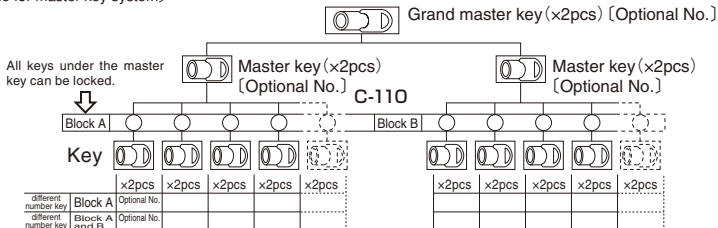
(not available for master key system)



● Special character keys are available. Please see "Available character for key No."

C-110 type

(available for master key system)



- Master key is applicable to the all keys under the master key.
- Mechanical life time of key operation is 10,000 times for cylinder key type.
- Ground key is upper key of master keys.
- Master key number and change key number applicable to the master key are necessary to make C-110 type key.
- Master key is optionally sold.



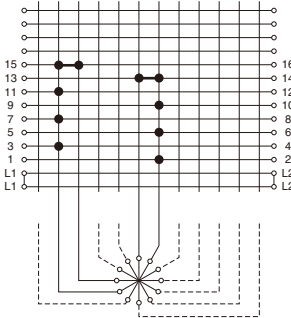
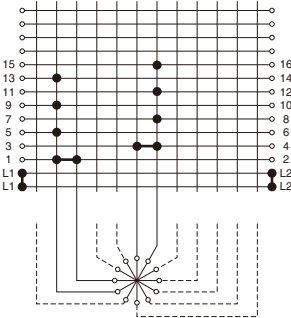
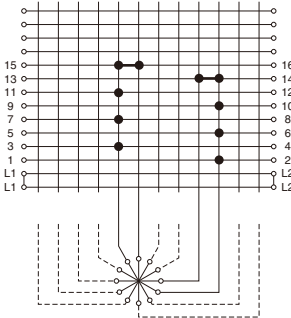
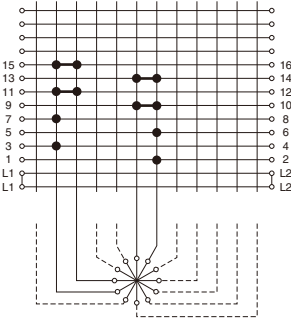
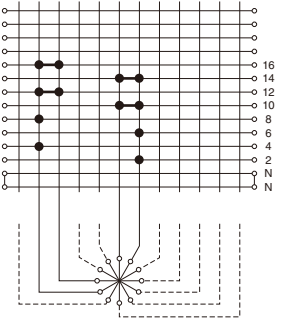
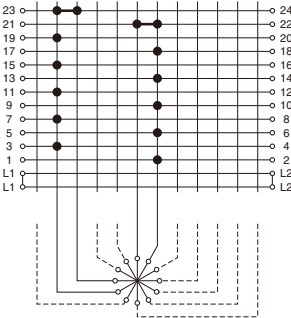
DISCREPANCY SWITCH

BHL TYPE

CONTACT ARRANGEMENT TABLE

Standard contact arrangements are listed below. (For specifications of other types, contact Fuji Electric Industry.)

| Type | BHL□-1B1131 | BHL□-1B2221 |
|---------------------|-------------|-------------|
| Contact arrangement | | |
| Type | BHL□-3B3101 | BHL□-3B3111 |
| Contact arrangement | | |
| Type | BHL□-3B3112 | BHL□-3B3221 |
| Contact arrangement | | |

| | | |
|---|---|---|
| <p>Type</p> <p>BHL□-3B4111</p> <p>Contact arrangement</p> | <p>BHL□-3B4111</p>  | <p>BHL□-3B4121</p>  |
| <p>Type</p> <p>BHL□-3E4111</p> <p>Contact arrangement</p> | <p>BHL□-3E4111</p>  | <p>BHL□-3B4211</p>  |
| <p>Type</p> <p>BHL□-3B4212</p> <p>Contact arrangement</p> | <p>BHL□-3B4212</p>  | <p>BHL□-3B6111</p>  |