

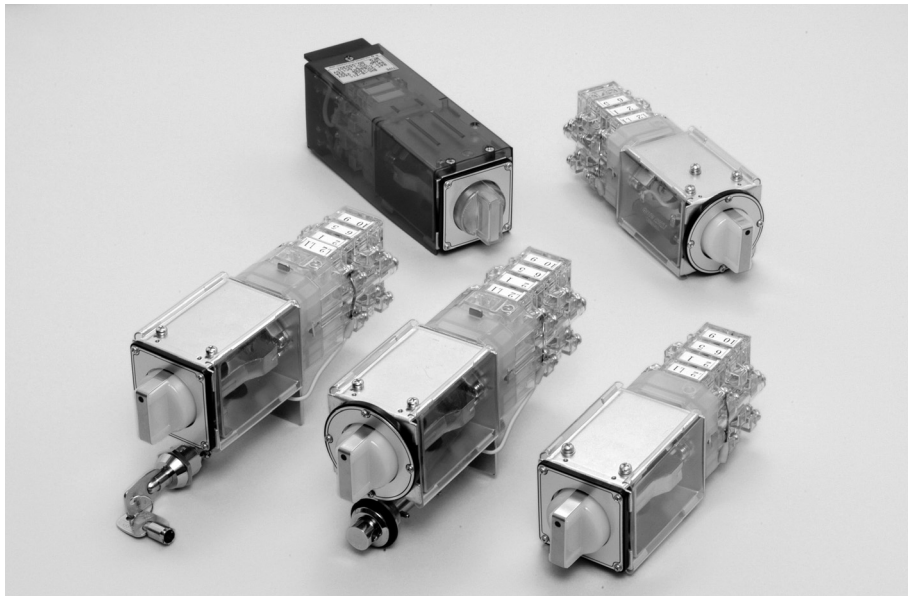


DISCREPANCY SWITCH

# BHL TYPE

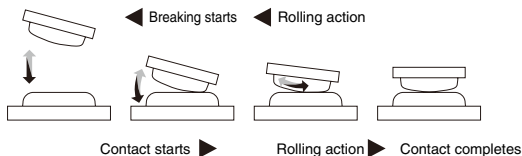


(Some models uncomformable)



## 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 (24 V, 48 V, 110 V, 125 V and 220 V)

**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 p. 249.

**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 AC / DC
Rated current-carrying capacity (Ith)		20A
Max. wire size		5.5mm <sup>2</sup>
Screw size		M4x9
Withstand voltage		2,500 V AC for one minute
Rated impulse withstand voltage		4kV
Contact resistance		50 mΩ max.
Mechanical life		100,000 operations or more
Electrical life		500,000 operations or more
Shock resistance		500 m/s <sup>2</sup> or more (in 6 directions) (Contact part: 300 m/s <sup>2</sup> )
Vibration resistance		Vibration range: 10 to 50 Hz, Acceleration: 20 m/s <sup>2</sup> , Time: 1 hour (in 3 directions)
Min. applicable load		5 V AC / 500 mA, 5 V DC / 100 mA (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 ±6 ms

## 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 Rated operating current (Ie) Rated operating voltage (Ue) * Electrical durability	Name	Operating load class	Ue (V)	Ie (A)	IEC60947-5-1 Annex A
		A600	AC-15	240	3	
				100,000 operations or more*		
		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	1000 A (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

## PRODUCT CODING

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

①

②

③

④

⑤

⑥

⑦

⑧

⑨

### ① Basic type

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

### ② Operation method

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

### 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 p. 225 through p. 256). For details, contact Fuji Electric Industry.

### ⑥ Voltage on indication part

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	Candescient lamp	—	○
L1	LED lamp	○	○
L2 (*)	Connector type LED lamp	—	○
LXF	Flicker type LED lamp	—	○

(\*) The L2 type is not applicable to 24 V DC and 48 V DC power supplies.

### ⑧ Knob color

Code	Description	BHLS	BHL and others
W	Milk white (Silver mask + Black point) Standard color for indication other than "L2" type	○	○
C	Clear Standard color for indication of "L2" type	—	○
WB	Milk white (Black mask + 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 ( ).

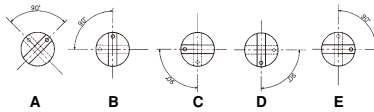
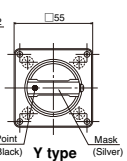
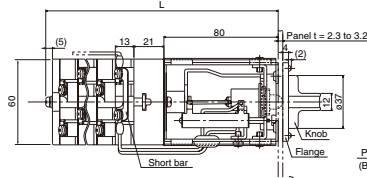
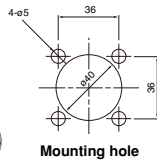
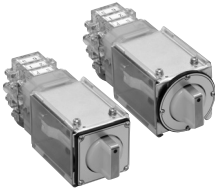
## STANDARD PRODUCTS

Standard type (2-position changeover)

**BHL-1**

Operation method: Manual switching type

\* The following figure shows the LED type.



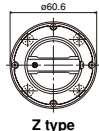
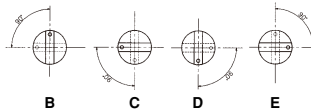
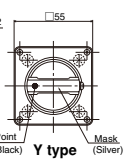
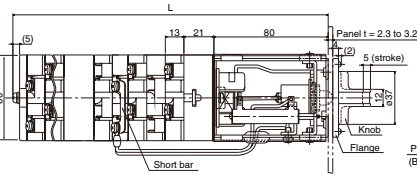
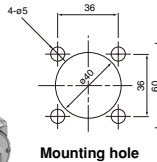
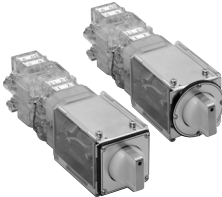
No. of units	1	2	3	4	5	6
L (mm)	137	150	163	176	189	202

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

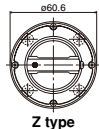
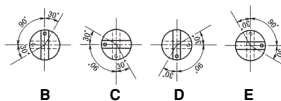
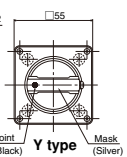
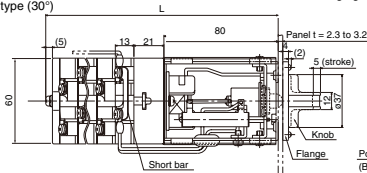
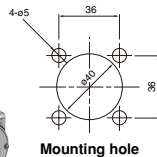
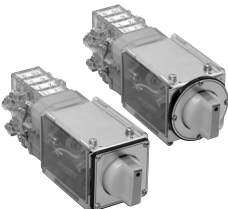
Standard type (Push and turn right / left after 2-position changeover)

**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



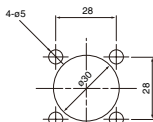
DISCREPANCY SWITCH

# BHL TYPE

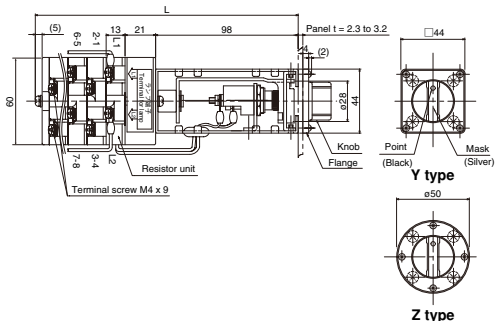
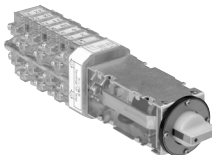
## PRODUCT CODING

Small-size type (2-position changeover)

### BHLS-1



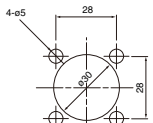
Mounting hole



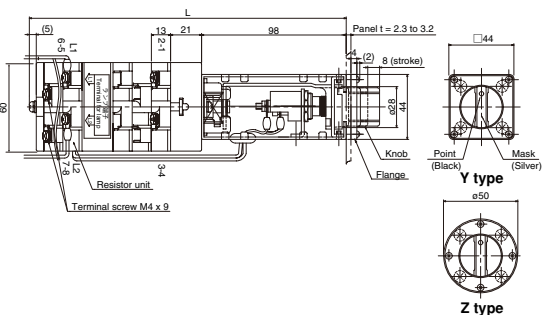
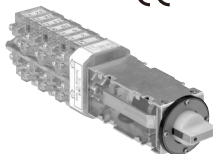
No. of units	1	2	3	4	5	6
L (mm)	155	168	181	194	207	220

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

### BHLS-2



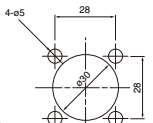
Mounting hole



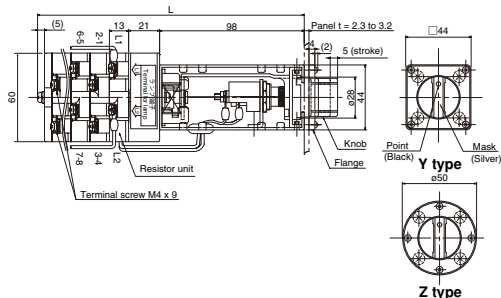
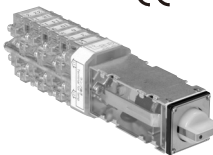
	No. of units					
2-position switching contact	1	2	3	4		
Push-operation contact	1	2	1	1		
L (mm)	215	241	228	254	241	254

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

### BHLS-3



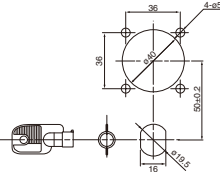
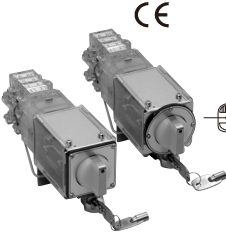
Mounting hole



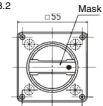
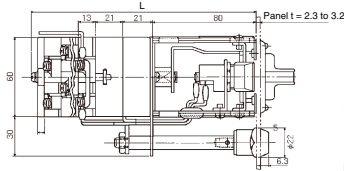
No. of units	1	2	3	4	5	6
L (mm)	155	168	181	194	207	220

With key lock mechanism type

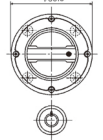
## BHLC



Mounting hole



Y type



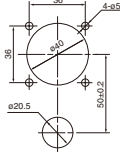
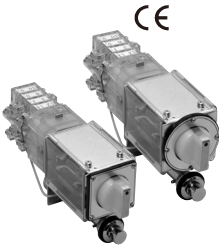
Z type

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

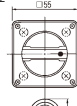
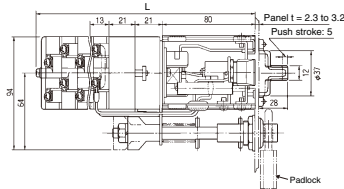
\* The key is TAKIGEN C-88 and C-110.

With padlock mechanism type

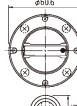
## BHLP



Mounting hole



Y type



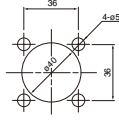
Z type

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

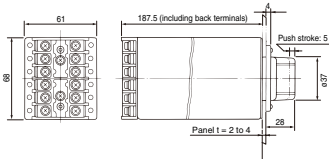
\* Padlock not included in the product. (Use a padlock with a 6 mm diameter.)

With back terminal type

## BHL-B



Mounting hole



Y type

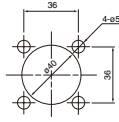
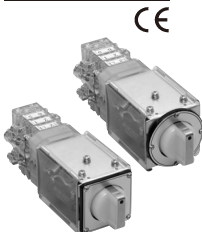


Z type

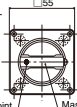
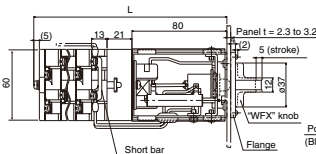
\* The BHL-B type can accept up to 3 units (6 contacts).

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



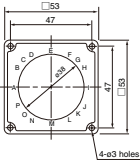
DISCREPANCY SWITCH

# BHL TYPE

## ACCESSORIES

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

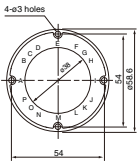
#### ● Square type (Y type)



#### ●BHL-NP-L54-Y000 Nameplate No.

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)

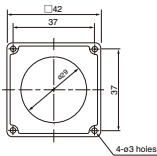


#### ●BHL-NP-L54-Z000 Nameplate No.

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	--				

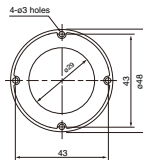
### Nameplate (for BHLS)

#### ●Square type (Y type)



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

#### ●Round type (Z type)



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

## ACCESSORIES

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

- BHL flange set Y
- BHLS flange set Y

- BHL flange set Z
- BHLS flange set Z



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



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

### LED lamp (24 V rating)

- E-12 LED lamp LD-24-YO



Equipment for "L1" type

- E-12 LED lamp LTH-024-12E-AY



Equipment for "L2" type

### Flicker LED lamp

- E-12 LED lamp LXF-DC110-AY



Indication color: Amber

Power supply voltage	
Code	Voltage
DC024	24 V DC
DC048	48 V DC
DC110	100 / 110 V DC
DC125	125 V DC
DC220	200 / 220 V DC

### Candescant lamp

- E-10 panel lamp 110V2W

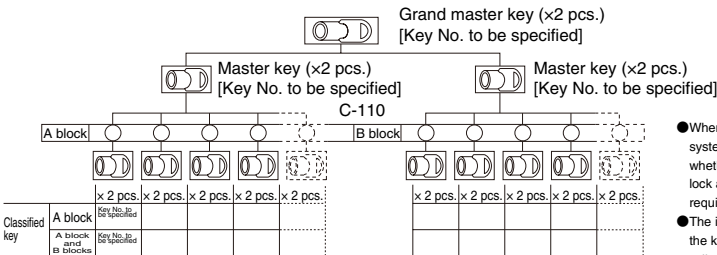


Equipment for "H" type

## KEY SYSTEM

### For C-110 cylinder key

[When the master key is required]

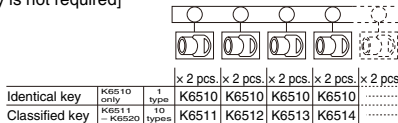


● When placing an order for a key system, the key type is determined by whether the use is shared by the door lock and whether the master key is required.

● The insertion / removal count (life) of the key is 10,000 times for both of the cylinder key and the cam rotor key.

### For C-88 cylinder key

[When the mast key is not required]



● Key numbers can be engraved on request.





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□-1E2221	BHL□-3B3101
Contact arrangement		
Type	BHL□-3B3111	BHL□-3B3112
Contact arrangement		

## CONTACT ARRANGEMENT TABLE

Type	BHL□-3B3221	BHL□-3B4111
Contact arrangement		
Type	BHL□-3E4111	BHL□-3B4211
Contact arrangement		
Type	BHL□-3B4212	BHL□-3B6111
Contact arrangement		