CAM-OPERATED SWITCH

B TYPE, BH TYPE

TECHNICAL DATA

Breaking and making current capacity

Type	AC			DC		
	Test voltage (V)	Test current (A)	Load condition	Test voltage (V)	Test current (A)	Load condition
B, BH, BHL	121	165	Power factor: Pf = 0.6 to 0.7	26.4	11	Time constant: L / R = 40±6ms
	242	110		52.8	6.6	
	484	33		121	1.65	
	—	—		242	0.88	

Breaking / making circuit current capacity test

To conduct the opened / closed circuit current capacity test, connect the reactor or inductance, which is connected in series to a resistor, to the switch as illustrated in Fig. 1 or 2. Using the test current specified in Table 1, perform CO 50 times for AC and 20 times for DC at intervals of 10 seconds when the voltage is 1.1 times the rated operating voltage of the switch. At this test, check for:

(1) Short-circuit between poles or earth fault due to generated arc, or broken or burnt switch.

(2) Any other harmful fault in use

Note: CO means performing the closing action (C) and then the opening action (O) about 50 ms later. For a switch that has some identical structures used for the same electric potential, select an adjacent contact or a contact that is most likely to lead the arc to the frame and then carry out the test using the circuit shown in Fig. 1.

Fig.1

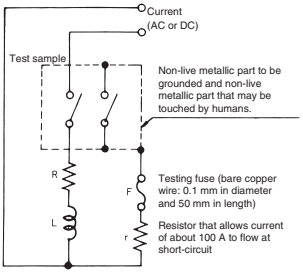
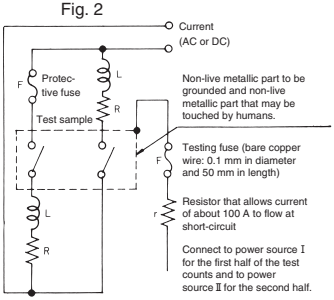


Fig. 2



Note: For DC, connect a parallel resistor so that 1% of the test current value flows in parallel with the loads (R·L).

Table 1

AC or DC	Class	Test voltage	Test current		Power factor (AC) or time constant (DC L / R: ms)
			Making	Breaking	
AC	AC11	1.1*Ue*	11.0 *Ie*	11.0 *Ie*	0.6 to 0.7
	AC12	1.1*Ue*	2.2 *Ie*	2.2 *Ie*	0.6 to 0.7
	AC13	1.1*Ue*	1.1 *Ie*	1.1 *Ie*	0.9 to 1.0
DC	DC11	1.1*Ue*	1.1 *Ie*	1.1 *Ie*	100±15
	DC12	1.1*Ue*	1.1 *Ie*	1.1 *Ie*	40±6
	DC13	1.1*Ue*	1.1 *Ie*	1.1 *Ie*	7±1
	DC14	1.1*Ue*	1.1 *Ie*	1.1 *Ie*	1 max.

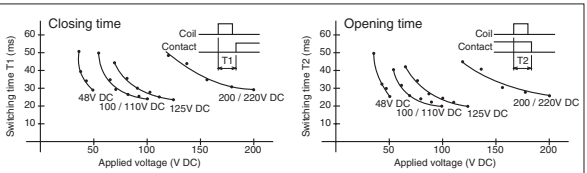
Note: *Ie* shows for the rated operating current and *Ue* shows the rated operating voltage.

Switching speed of lockout relay

(Example: BA-6 8A8B)

Resistance of coil

Voltage	48V DC	100 / 110V DC	125V DC	200 / 220V DC
Resistance	25 Ω	55 Ω	80 Ω	350 Ω



Note: The above voltage values shows the rated values of the coils.

BY type minute electric current switch

■The BY type switch is used to make / break a sequence control current or any other similar low-voltage, minute electric current circuit. It consists of a contact unit that uses twin contacts.

■The BY type switch allows for manufacturing an operation switch that only uses the BY type contact unit. It also allows for manufacturing a switch that incorporates both the BY type contact unit and the standard contact (silver contact) unit (see the right figure).

∗ A silver contact and gold contact cannot be combined in a single unit.

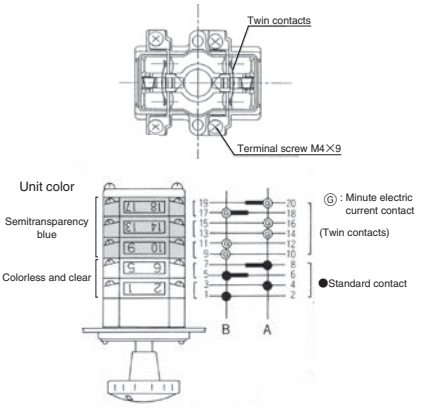
■The contact unit of the BY type switch has its housing designed as semitransparency blue, so that it can be discriminated from the standard type.

●The specification and performance are shown in the following table.

	Contact spec	Twin contacts
Electrical characteristics	Contact resistance (mΩ)	50 max.
	Withstand voltage between contacts (V AC)	2,500
	Insulation resistance (Ω)	1,000M
	Max. current carrying capacity (A)	2.0
	Max. breaking voltage (V)∗	110 DC / 110 AC
	Max. breaking current (A)∗	0.5 DC
	Min. applicable load	5V DC, 1mA
Environmental characteristics	Shock resistance (m/s²)	50
	Vibration resistance (m/s²)	2
	Operating temperature (°C)	–20 to 60

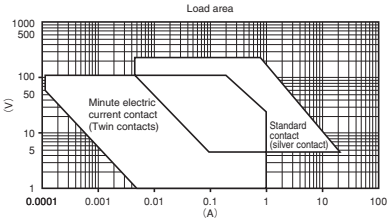
∗ Resistance load

■BY type contact unit



Display example of the above switch:
BY-H5-1B1A1BL1AL2BX2AX1BLX1ALX

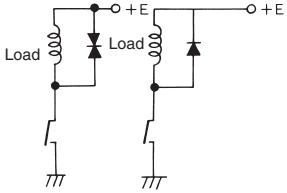
■The operating load range is as shown in the following graph. Select a contact type according to your application.



■Contact protective circuit

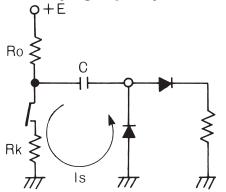
If inductive load or load that causes surge current (rush current) to flow (load-carrying capacity, lamp, long cable, or the like) is used as the load for the twin contacts, a contact protective circuit is required and shown below:

●Inductive load



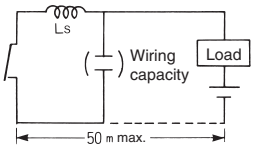
If any electromagnetic relay, solenoid, or counter having an inductance component is used as load, the energy stored in the inductance causes reverse voltage to be generated when the contacts are separated from each other. This reverse voltage reaches even several hundred volt, which can cause remarkable deterioration of the contacts. As a protective circuit, the above method is available.

●Load-carrying capacity



In this case, a capacitor is connected in parallel or in series in a closed circuit including twin contacts. The rush current that flows when the capacitance is charged or discharged can cause remarkable deterioration of the contacts. To prevent this rush current, the above method is generally known and should be used for your reference.

●Wiring capacity



If wiring is carried out at a long distance between the load and twin contacts, the contacts are affected by the capacitance resulting from the cable. Ls differs depending on the load current, but approximately 0.5 to 5 mH is assumed for the circuit.