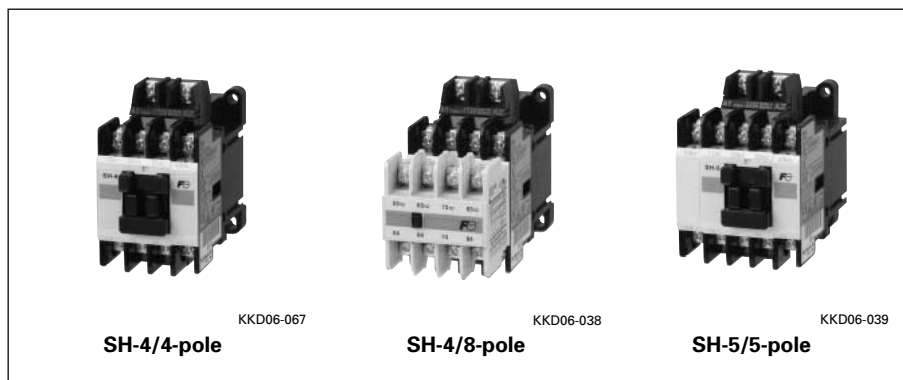


### Standard type industrial relays

#### ■ Description

They are compact and highly efficient and have a long service life, and are suited for industrial electrical control applications. Typical applications include machine tools, process lines, conveyors and automatic and semi-automatic equipment.

The maximum contact ratings are 550 volts AC and 220 volts DC. Operating coils with rating of up to 600 volts AC are available.



#### ■ Features

- Mounting compatible with conventional SRC50 series industrial relays
- Employing of bifurcated contact to increase high contact reliability in low-level circuit use (5V, 3mA) and single button auxiliary contact applicable for large current circuit use.

- Variety of optional function units available  
Auxiliary contact block (2 or 4-pole)  
Off-delay release unit  
Coil surge suppression unit  
Operation counter

- Snap-on 35mm IEC and DIN rail mounting available
- Meets JIS, IEC, BS, NEMA and VDE Standards  
UL, CSA, TÜV, CCC, BV and LR approved
- Terminal numbers meet IEC

#### ■ Contact ratings

| Type  | Ordering code *2 | Contact            | Pole   | Rated thermal current (A) | Make and break capacity AC (A) | Rated operational current (A) |            |            |                |               |            |
|-------|------------------|--------------------|--------|---------------------------|--------------------------------|-------------------------------|------------|------------|----------------|---------------|------------|
|       |                  |                    |        |                           |                                | AC Voltage (V)                | Ind. AC-15 | Res. AC-12 | DC Voltage (V) | Ind. *1 DC-13 | Res. DC-12 |
| SH-4  | SH04AA-■□        | Bifurcated contact | 4<br>8 | 10                        | 60                             | 110                           | 6          | 10         | 24             | 3             | 5          |
|       |                  |                    |        |                           | 30                             | 220                           | 3          | 8          | 48             | 1.5           | 3          |
|       |                  |                    |        |                           | 15                             | 440                           | 1.5        | 5          | 110            | 0.55          | 2.5        |
|       |                  |                    |        |                           | 12                             | 550                           | 1.2        | 5          | 220            | 0.27          | 1          |
|       |                  |                    |        |                           |                                |                               |            |            |                |               |            |
| SH-5  | SH05AA-■□        | Bifurcated contact | 5      | 10                        | 60                             | 110                           | 6          | 10         | 24             | 3             | 5          |
|       |                  |                    |        |                           | 30                             | 220                           | 3          | 8          | 48             | 1.5           | 3          |
|       |                  |                    |        |                           | 15                             | 440                           | 1.5        | 5          | 110            | 0.55          | 2.5        |
|       |                  |                    |        |                           | 12                             | 550                           | 1.2        | 5          | 220            | 0.27          | 1          |
|       |                  |                    |        |                           |                                |                               |            |            |                |               |            |
| SH-4H | SH04AH-■□        | Single contact     | 4<br>8 | 10                        | 60                             | 110                           | 6          | 10         | 24             | 5             | 10         |
|       |                  |                    |        |                           | 60                             | 220                           | 6          | 10         | 48             | 1.5           | 5          |
|       |                  |                    |        |                           | 40                             | 440                           | 4          | 10         | 110            | 0.7           | 4          |
|       |                  |                    |        |                           | 40                             | 550                           | 4          | 10         | 220            | 0.27          | 1          |
|       |                  |                    |        |                           |                                |                               |            |            |                |               |            |
| SH-5H | SH05AH-■□        | Single contact     | 5      | 10                        | 60                             | 110                           | 6          | 10         | 24             | 5             | 10         |
|       |                  |                    |        |                           | 60                             | 220                           | 6          | 10         | 48             | 1.5           | 5          |
|       |                  |                    |        |                           | 40                             | 440                           | 4          | 10         | 110            | 0.7           | 4          |
|       |                  |                    |        |                           | 40                             | 550                           | 4          | 10         | 220            | 0.27          | 1          |
|       |                  |                    |        |                           |                                |                               |            |            |                |               |            |

Notes: \*1 Time constant is less than 70ms.

\*2 Enter the coil voltage code in the ■ mark.

Enter the contact arrangement code in the □ mark.

• 8-pole type SH-4(H) is a combination of 4-pole type SH-4(H) and add-on auxiliary contact block SZ-A□(H).

#### ■ Coil voltage

| Type           | Operating coil voltage *1  | Coil voltage code *2 | Operating voltage range              | Wiring |
|----------------|--|----------------------|--------------------------------------|--------|
| SH-4<br>SH-5   | 24V 50Hz/24 to 26V 60Hz<br>48V 50Hz/48 to 52V 60Hz   | E<br>F               | 0.85 to 1.1 times coil rated voltage |        |
| SH-4H<br>SH-5H | 100V 50Hz/100 to 110V 60Hz<br>110 to 120V 50Hz/120 to 130V 60Hz  | 1<br>K               |                                      |        |
|                | 200V 50Hz/200 to 220V 60Hz<br>220 to 240V 50Hz/240 to 260V 60Hz  | 2<br>P               |                                      |        |
|                | 346 to 380V 50Hz/380 to 420V 60Hz<br>380 to 400V 50Hz/400 to 440V 60Hz<br>415 to 440V 50Hz/440 to 480V 60Hz<br>480 to 500V 50Hz/500 to 550V 60Hz | S<br>4<br>T<br>5     |                                      |        |
|                |  |                      |                                      |        |

Notes: \*1 Other voltages between 24V and 600V AC are available on request.

\*2 When ordering, specify the coil voltage code.

# Industrial Relays

## SH series

### Standard type

#### ■ Coil characteristics

| Type     | Pole | Power consumption |             | Pick-up voltage (V) |              | Drop-out voltage (V) |              | Watt loss (W) |              |
|----------|------|-------------------|-------------|---------------------|--------------|----------------------|--------------|---------------|--------------|
|          |      | Inrush (VA)       | Sealed (VA) | 200V<br>50Hz        | 220V<br>60Hz | 200V<br>50Hz         | 220V<br>60Hz | 200V<br>50Hz  | 220V<br>60Hz |
| SH-4, 4H | 4    | 95                | 9           | 105-125             | 116-136      | 70-98                | 80-110       | 2.7           | 2.8          |
| SH-4, 4H | 8    | 95                | 9           | 105-125             | 116-136      | 70-98                | 80-110       | 2.7           | 2.8          |
| SH-5, 5H | 5    | 95                | 9           | 105-125             | 116-136      | 70-98                | 80-110       | 2.7           | 2.8          |

Note: Coil rating 200V 50Hz/200-220V 60Hz

#### ■ Operating characteristics

| Type     | Pole | Contact arrangement | Voltage (V) | Frequency (Hz) | Pick-up time(ms.) |                   | Drop-out time(ms.) |                  |
|----------|------|---------------------|-------------|----------------|-------------------|-------------------|--------------------|------------------|
|          |      |                     |             |                | NO contact<br>ON  | NC contact<br>OFF | NO contact<br>OFF  | NC contact<br>ON |
| SH-4, 4H | 4    | 2NO+2NC             | 200         | 50             | 9-20              | 5-15              | 5-15               | 9-20             |
| SH-4, 4H | 8    | 4NO+4NC             | 200         | 50             | 9-20              | 5-15              | 5-15               | 9-20             |
| SH-5, 5H | 5    | 3NO+2NC             | 200         | 50             | 9-20              | 5-15              | 5-15               | 9-20             |

Note: Coil rating 200V 50Hz/200-220V 60Hz

#### ■ Performance data (AC-15)

| Type     | Pole | Making current | Breaking current | Operating cycles<br>per hour | Voltage   | Life expectancy(operations) |            |
|----------|------|----------------|------------------|------------------------------|-----------|-----------------------------|------------|
|          |      |                |                  |                              |           | Electrical                  | Mechanical |
| SH-4, 4H | 4    | 10 le          | 1 le             | 1800                         | 220V/440V | 500,000                     | 10 million |
| SH-4, 4H | 8    | 10 le          | 1 le             | 1800                         | 220V/440V | 500,000                     | 10 million |
| SH-5, 5H | 5    | 10 le          | 1 le             | 1800                         | 220V/440V | 500,000                     | 10 million |

Note: le: Rated operational current (A)

#### ■ Combination of industrial relay and auxiliary contact block

The standard type industrial relays can be used according to the combination with the auxiliary contact blocks shown below.

| Industrial relay    |                     | Add-on auxiliary contact block |         |         |         |         |         | Side mounting |         |
|---------------------|---------------------|--------------------------------|---------|---------|---------|---------|---------|---------------|---------|
| Bifurcated contacts |                     | Front mounting                 |         |         |         |         |         | SZ-AS1x2      |         |
| Type                | Contact arrangement | SZ-A40                         | SZ-A31  | SZ-A22  | SZ-A20  | SZ-A11  | SZ-A02  | SZ-AS1        | SZ-AS1  |
|                     |                     | 4NO                            | 3NO+1NC | 2NO+2NC | 2NO     | 1NO+1NC | 2NC     | 2NO+2NC       | 1NO+1NC |
| <b>SH-4</b>         | 4NO                 | 8NO                            | 7NO+1NC | 6NO+2NC | 6NO     | 5NO+1NC | 4NO+2NC | 6NO+2NC       | 5NO+1NC |
|                     | 3NO+1NC             | 7NO+1NC                        | 6NO+2NC | 5NO+3NC | 5NO+1NC | 4NO+2NC | 3NO+3NC | 5NO+3NC       | 4NO+2NC |
|                     | 2NO+2NC             | 6NO+2NC                        | 5NO+3NC | 4NO+4NC | 4NO+2NC | 3NO+3NC | 2NO+4NC | 4NO+4NC       | 3NO+3NC |
|                     | 8NO                 | -                              | -       | -       | -       | -       | -       | -             | -       |
|                     | 7NO+1NC             | -                              | -       | -       | -       | -       | -       | -             | -       |
|                     | 6NO+2NC             | -                              | -       | -       | -       | -       | -       | -             | -       |
|                     | 5NO+3NC             | -                              | -       | -       | -       | -       | -       | -             | -       |
| 4NO+4NC             | -                   | -                              | -       | -       | -       | -       | -       | -             |         |
| <b>SH-5</b>         | 5NO                 | 9NO                            | 8NO+1NC | 7NO+2NC | 7NO     | 6NO+1NC | 5NO+2NC | 7NO+2NC       | 6NO+1NC |
|                     | 4NO+1NC             | 8NO+1NC                        | 7NO+2NC | 6NO+3NC | 6NO+1NC | 5NO+2NC | 4NO+3NC | 6NO+3NC       | 5NO+2NC |
|                     | 3NO+2NC             | 7NO+2NC                        | 6NO+3NC | 5NO+4NC | 5NO+2NC | 4NO+3NC | 3NO+4NC | 5NO+4NC       | 4NO+3NC |
|                     | 2NO+3NC             | 6NO+3NC                        | 5NO+4NC | -       | 4NO+3NC | 3NO+4NC | -       | -             | 3NO+4NC |
|                     | 1NO+4NC             | 5NO+4NC                        | -       | -       | 3NO+4NC | -       | -       | -             | -       |
|                     | 5NC                 | 4NO+5NC                        | -       | -       | 2NO+5NC | -       | -       | -             | -       |
|                     |                     |                                |         |         |         |         |         |               |         |

| Industrial relay |                     | Add-on auxiliary contact block |         |         |
|------------------|---------------------|--------------------------------|---------|---------|
| Single contact   |                     | Front mounting                 |         |         |
| Type             | Contact arrangement | SZ-A40H                        | SZ-A31H | SZ-A22H |
|                  |                     | 4NO                            | 3NO+1NC | 2NO+2NC |
| <b>SH-4H</b>     | 4NO                 | 8NO                            | 7NO+1NC | 6NO+2NC |
|                  | 3NO+1NC             | -                              | -       | -       |
|                  | 2NO+2NC             | -                              | 5NO+3NC | 4NO+4NC |
| <b>SH-5H</b>     | 5NO                 | 9NO                            | 8NO+1NC | 7NO+2NC |
|                  | 4NO+1NC             | -                              | -       | -       |
|                  | 3NO+2NC             | -                              | 6NO+3NC | 5NO+4NC |
|                  | 2NO+3NC             | -                              | -       | -       |
|                  | 1NO+4NC             | -                              | -       | -       |
|                  | 5NC                 | 4NO+5NC                        | -       | -       |

#### Notes:

- Both front mounting and side mounting auxiliary contact blocks cannot be mounted on a relay at a time.
- Any auxiliary contact blocks cannot be mounted on 8-pole type SH-4 and SH-4H relays.
- Side mounting contact blocks (SZ-AS1), with bifurcated contacts, can be mounted on SH-4H and SH-5H.

#### ■ Ordering information

Specify the following:

1. Ordering code