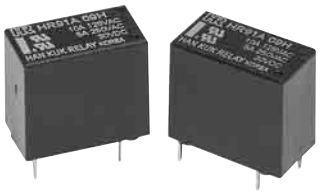
# HR91

RoHS 대응품

## Compact 1-pole 3-10A relay

### Features

- 2mm slimer in length than HR96 series
- 200mW Ultra sensitive type avaliable
- Basic grid (one inch) terminal layout
- Sealed type, immersion cleanable



### Applications

- Home appliance, Industrial control

### Approvals

UL

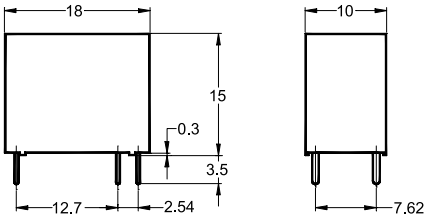
CUL

TUV

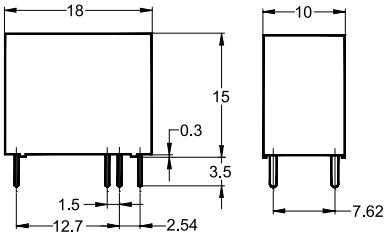
### Dimensions (mm)

To convert into inches, multiply by 0.03937

HR91A (1 Form A)



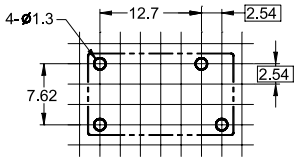

HR91C (1 Form C)



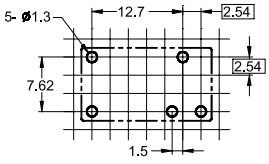

### PC Board Layout

Copper-side view

HR91A (1 Form A)



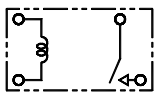

HR91C (1 Form C)



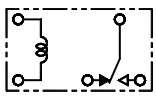

### Schematic

Copper-side view

HR91A (1 Form A)



HR91C (1 Form C)



## Contact data

| | | | | |
|---|---|---|---|---|
| Arrangement | | 1 Form S (SPST) | 1 Form C (SPDT) | |
| Contact material | | Ag Alloy | | |
| Initial contact resistance | | 100mΩ max. | | |
| Rated load, resistive | | | NO | NC |
| | | 5A 28VDC<br>10A 125VAC<br>5A 250VAC | 5A 28VDC<br>10A 125VAC<br>5A 250VAC | 3A 28VAC<br>5A 125VDC<br>3A 250VDC |
| Maximum carry current | | 10A | 10A | 5A |
| Maximum switching capacity | with DC voltage:<br>with AC voltage: | 140W<br>1,250VA | 140W<br>1,250VA | 84W<br>750VA |
| Maximum switching voltage | | 30VDC | | |
| Minimum switching rating[1)] | | 100mA 5VDC | | |

[1)] Min. Switching Load mentioned above are reference values. Therefore it is recommended to perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

## Coil data

| | |
|---|---|
| Nominal voltage | 3VDC to 24VDC |
| Nominal power consumption[2)] | 200mW , 450mW |
| Operate voltage[3)] | 75% of nominal voltage |
| Release voltage[4)] | 5% of nominal voltage |

[2), 3), 4)] The values depend on coil voltage, see Part selection chart

## General data

| | | |
|---|---|---|
| Operate time | | 10ms max. at nominal voltage |
| Release time | | 4ms max. at nominal voltage |
| Initial insulation resistance | | 100 MΩ min. (500VDC) |
| Dielectric strength | Between open contacts:<br>Between contacts and coil: | 750VAC$_{rms}$ for 1 minute<br>2,000VAC$_{rms}$ for 1 minute |
| Expected life | Mechanical:<br>Electrical: | More than 10,000,000 operations<br>More than 100,000 operations at rated load |
| Vibration resistance | Functional:<br>Destructive: | 10 ~ 55Hz Dual amplitude: 1.5mm<br>10 ~ 55Hz Dual amplitude: 1.5mm |
| Shock resistance | Functional:<br>Destructive: | 10G min.<br>100G min. |
| Ambient temperature | | – 40˚C to + 70˚C (with no icing) |
| Humidity | | 35% to 95% RH |
| Weight | | 6g approx. |

Note: The above figures are initial values

## Part number description

HR91 □ □ □

**Contact arragement**

A: 1 Form A (SPST)
C: 1 Form C (SPDT)

**Coil voltage**

03: 3VDC
05: 5VDC
06: 6VDC
09: 9VDC
12: 12VDC
18: 18VDC
24: 24VDC

**Coil sensitivity**

None: Standard (0.45W)
H: High sensitive (0.2W)

Part number description is provided for reference, part number can not be arbitrarily composed. Refer to the part numbers shown in the table below. Special designs to customer specifications are possible; please contact HR.

## Part selection

| Part number | Nominal voltage (VDC) | Coil resistance (Ω ± 10%) | Nominal current (mA) | Must operate voltage (VDC) | Must release voltage (VDC) | Max voltage (VDC) | Nominal power (mW) |
|---|---|---|---|---|---|---|---|
| **Standard coil, 1 Form A** | | | | | | | |
| HR91A 03 | 3 | 20 | 150 | 2.25 | 0.15 | 3.3 | 450 |
| HR91A 05 | 5 | 56 | 90 | 3.75 | 0.25 | 5.5 | |
| HR91A 06 | 6 | 80 | 75 | 4.50 | 0.30 | 6.6 | |
| HR91A 09 | 9 | 180 | 50 | 6.75 | 0.45 | 9.9 | |
| HR91A 12 | 12 | 320 | 37.5 | 9.00 | 0.60 | 13.2 | |
| HR91A 18 | 18 | 720 | 25 | 13.5 | 0.90 | 19.8 | |
| HR91A 24 | 24 | 1,280 | 18.75 | 18.0 | 1.20 | 26.4 | |
| **High Sensitive coil, 1 Form A** | | | | | | | |
| HR91A 03H | 3 | 45 | 66.7 | 2.25 | 0.15 | 3.3 | 200 |
| HR91A 05H | 5 | 125 | 40.0 | 3.75 | 0.25 | 5.5 | |
| HR91A 06H | 6 | 180 | 33.3 | 4.50 | 0.30 | 6.6 | |
| HR91A 09H | 9 | 400 | 22.5 | 6.75 | 0.45 | 9.9 | |
| HR91A 12H | 12 | 720 | 16.7 | 9.00 | 0.60 | 13.2 | |
| HR91A 18H | 18 | 1,600 | 11.2 | 13.5 | 0.90 | 19.8 | |
| HR91A 24H | 24 | 2,880 | 8.3 | 18.0 | 1.20 | 26.4 | |

Note: All values in the chart are measured at 23˚C

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| Part number | Nominal voltage (VDC) | Coil resistance (Ω ± 10%) | Nominal current (mA) | Must operate voltage (VDC) | Must release voltage (VDC) | Max voltage (VDC) | Nominal power (mW) |
|---|---|---|---|---|---|---|---|
| **Standard coil, 1 Form C** | | | | | | | |
| HR91C 03 | 3 | 20 | 150 | 2.25 | 0.15 | 3.3 | 450 |
| HR91C 05 | 5 | 56 | 90 | 3.75 | 0.25 | 5.5 | |
| HR91C 06 | 6 | 80 | 75 | 4.50 | 0.30 | 6.6 | |
| HR91C 09 | 9 | 180 | 50 | 6.75 | 0.45 | 9.9 | |
| HR91C 12 | 12 | 320 | 37.5 | 9.00 | 0.60 | 13.2 | |
| HR91C 18 | 18 | 720 | 25 | 13.5 | 0.90 | 19.8 | |
| HR91C 24 | 24 | 1,280 | 18.75 | 18.0 | 1.20 | 26.4 | |
| **High Sensitive coil, 1 Form C** | | | | | | | |
| HR91C 03H | 3 | 45 | 66.7 | 2.25 | 0.15 | 3.3 | 200 |
| HR91C 05H | 5 | 125 | 40.0 | 3.75 | 0.25 | 5.5 | |
| HR91C 06H | 6 | 180 | 33.3 | 4.50 | 0.30 | 6.6 | |
| HR91C 09H | 9 | 400 | 22.5 | 6.75 | 0.45 | 9.9 | |
| HR91C 12H | 12 | 720 | 16.7 | 9.00 | 0.60 | 13.2 | |
| HR91C 18H | 18 | 1,600 | 11.2 | 13.5 | 0.90 | 19.8 | |
| HR91C 24H | 24 | 2,880 | 8.3 | 18.0 | 1.20 | 26.4 | |

Note: All values in the chart are measured at 23˚C