

R10 Series Relay

- 1 through 8 form C (CO) contact arrangement
- Broad range of coil options provides sensitivity ranging from 25 to 750mW
- Various contacts switch from dry circuit to 7.5 amps
- Many mounting and termination options

Typical applications

Coin changers, audio equipment, elevators, traffic controls, ultrasonic test equipment, parking toll readers.



Approvals

UL E29244; CSA LR15734

Technical data of approved types on request.

Contact Data

| | |
|--|----------------------------------|
| Contact arrangement | 1, 2, 3, 4, 6 and 8 form C (CO) |
| Rated voltage | 120VAC |
| Rated current | 7.5A |
| Contact material | Ag, AgCdO, Au overlay Ag, AuPtAg |
| Contact style | Single or bifurcated crossbar |
| Min. recommended contact load | |
| W type, AgCdO, single contact | 300mA, 12VDC |
| X type, AgCdO, single contact | 300mA, 12VDC |
| M type, AgCdO, bifurcated contact | 300mA, 12VDC |
| Y type, Ag, single contact | 100mA, 12VDC |
| Z type, Ag, bifurcated crossbar | 1mA, 12VDC |
| P type, Au overlay Ag, bifurcated crossbar | dry circuit |
| L type, AuPtAg, bifurcated crossbar | dry circuit |
| Initial contact resistance | |
| All AgCdO contact types | 100mΩ |
| All other contact materials and types | 50mΩ |
| Frequency of operation | 360 ops./hr |

Contact ratings

| Type | Load | Cycles |
|---|-------------------------------|---------------------|
| UL 508 | | |
| W type, AgCdO, single contact | | |
| | 7.5A, 120VAC, resistive | |
| | 7.5A, 28VDC, resistive | |
| | 1/8HP, 120VAC, same polarity | |
| | 1/6HP, 240VAC, same polarity | |
| X type, AgCdO, single contact | | |
| | 2A, 30VDC, resistive | 100x10 ³ |
| | 5A, 120VAC, resistive | 6x10 ³ |
| | 5A, 30VDC, resistive | 100x10 ³ |
| | 1/20HP, 120VAC, same polarity | |
| | 1/10HP, 240VAC, same polarity | |
| M type, AgCdO, bifurcated contact | | |
| | 5A, 120VAC, resistive | 6x10 ³ |
| | 5A, 28VDC, resistive | 6x10 ³ |
| Y type, Ag, single contact | | |
| | 2A, 120VAC | 6x10 ³ |
| | 2A, 28VDC | 6x10 ³ |
| | 250VA, 250VAC | 30x10 ³ |
| | 125VA, 125VAC | 100x10 ³ |
| Z type, Ag, bifurcated crossbar contact | | |
| | 3A, 120VAC | 6x10 ³ |
| | 3A, 28VDC | 6x10 ³ |
| | 2A, 30VDC | 100x10 ³ |

Contact ratings (continued)

| Type | Load | Cycles |
|--|--|---------------------|
| UL 508 | | |
| P type, Au overlay Ag, bifurcated crossbar contact | | |
| | 2A, 120VAC, resistive | 100x10 ³ |
| | 3 A, 120 VAC, resistive | 6x10 ³ |
| | 3 A, 30 VDC, resistive | 100x10 ³ |
| L type, AuPtAg, bifurcated crossbar contact | | |
| | 500mA, 28VDC, resistive | 6x10 ³ |
| Mechanical endurance | 10x10 ⁶ ops., except W type is 1x10 ⁶ ops. | |

Coil Data

| | |
|--------------------|---|
| Coil voltage range | 3 to 115VDC 4.5mA to 20mA 6 to 115VAC |
|--------------------|---|

Coil versions, DC coil

| Coil code | Rated voltage VDC | Operate voltage VDC | Coil resistance Ω±10% | Rated coil power mW |
|------------------------------------|-------------------|---------------------|-----------------------|---------------------|
| V - standard DC voltage adjustment | | | | |
| 1, 2 and 4 pole | | | | |
| V10 | 3 | 2.25 | 10 | 900 |
| V28 | 5 | 3.75 | 28 | 900 |
| V52 | 6 | 4.5 | 52 | 900 |
| V185 | 12 | 9 | 185 | 900 |
| V700 | 24 | 18 | 700 | 900 |
| V2.5K | 48 | 36 | 2500 | 900 |
| V5.8K | 72 | 54 | 5800 | 900 |
| V15.0K | 115 | 86 | 15000 | 900 |
| 6 pole | | | | |
| V6 | 3 | 2.25 | 6 | 1,500 |
| V16 | 5 | 3.75 | 16 | 1,600 |
| V25 | 6 | 4.5 | 25 | 1,500 |
| V90 | 12 | 9 | 90 | 1,600 |
| V430 | 24 | 18 | 430 | 1,400 |
| V1.5K | 48 | 36 | 1500 | 1,600 |
| V3.5K | 72 | 54 | 3500 | 1,500 |
| V9.0K | 115 | 86 | 9000 | 1,500 |
| 8 pole | | | | |
| V5 | 3 | 2.25 | 5 | 1,800 |
| V14 | 5 | 3.75 | 14 | 1,800 |
| V20 | 6 | 4.5 | 20 | 1,800 |
| V72 | 12 | 9 | 72 | 2,000 |
| V350 | 24 | 18 | 350 | 1,700 |
| V1.25K | 48 | 36 | 1250 | 1,900 |
| V2.8K | 72 | 54 | 2800 | 1,900 |
| V8.0K | 115 | 86 | 8000 | 1,700 |

All figures are given for coil without preenergization, at ambient temperature +23°C.

R10 Series Relay (Continued)

Coil versions, DC coil (continued)

| Coil code | Maximum coil current mADC | Operate current mADC | Coil resistance $\Omega \pm 10\%$ | Pick-up coil power mW |
|---|---------------------------|----------------------|-----------------------------------|-----------------------|
| J - sensitive DC current adjustment – R10S types only | | | | |
| 2 pole | | | | |
| J500 ¹⁾ | – | 6.3 | 500 | 20 |
| J1.0K | – | 4.5 | 1000 | 20 |
| J2.5K ²⁾ | – | 2.9 | 2500 | 25 |
| J5.0K | – | 2 | 5000 | 20 |
| J10.0K ³⁾ | – | 1.4 | 10000 | 20 |
| J16.0K | – | 1.2 | 16000 | 25 |
| J30.0K | – | 0.8 | 30000 | 20 |
| 4 pole | | | | |
| J500 | – | 9 | 500 | 45 |
| J1.0K | – | 6.5 | 1000 | 45 |
| J2.5K ²⁾ | – | 4.1 | 2500 | 45 |
| J5.0K ³⁾ | – | 2.9 | 5000 | 45 |
| J10.0K | – | 2 | 10000 | 40 |
| J16.0K | – | 1.4 | 16000 | 35 |
| J30.0K | – | 1.2 | 30000 | 45 |

- 1) Suggested for 5VDC operation
- 2) Suggested for 12VDC operation
- 3) Suggested for 24VDC operation

JJ - ultrasensitive DC current adjustment

| | | | | |
|---------|------|------|-------|----|
| 1 pole | | | | |
| JJ1.0K | 45 | 4.5 | 1000 | 20 |
| JJ2.5K | 28 | 2.9 | 2500 | 25 |
| JJ5.0K | 20 | 2.1 | 5000 | 25 |
| JJ10.0K | 14 | 1.5 | 10000 | 25 |
| JJ15.0K | 11.5 | 1.2 | 15000 | 25 |
| JJ30.0K | 8.3 | 0.85 | 30000 | 25 |
| 2 pole | | | | |
| JJ1.0K | 45 | 6.5 | 1000 | 45 |
| JJ2.5K | 28 | 4.1 | 2500 | 45 |
| JJ5.0K | 20 | 2.9 | 5000 | 45 |
| JJ10.0K | 14 | 2 | 10000 | 40 |
| JJ15.0K | 11.5 | 1.7 | 15000 | 45 |
| JJ30.0K | 8.3 | 1.2 | 30000 | 45 |
| 4 pole | | | | |
| JJ1.0K | 45 | 9 | 1000 | 85 |
| JJ2.5K | 28 | 5.8 | 2500 | 85 |
| JJ5.0K | 20 | 4.1 | 5000 | 85 |
| JJ10.0K | 14 | 3 | 10000 | 90 |
| JJ15.0K | 11.5 | 2.4 | 15000 | 85 |
| JJ30.0K | 8.3 | 1.7 | 30000 | 90 |

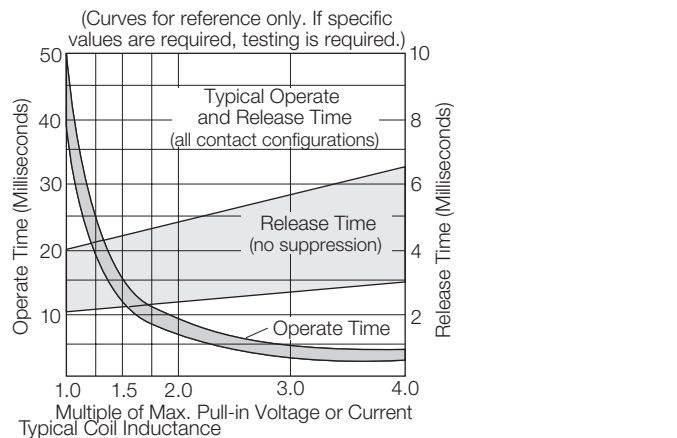
All figures are given for coil without preenergization, at ambient temperature +23°C.

Coil versions, AC coil (dual coil diode rectified construction)

| Coil code | Rated voltage VAC | Operate voltage VAC | Coil resistance $\Omega \pm 20\%$ |
|--------------|-------------------|---------------------|-----------------------------------|
| Standard AC | | | |
| 2 and 4 pole | | | |
| 6V | 6 | 5 | 25 |
| 12V | 12 | 9 | 120 |
| 24V | 24 | 18 | 500 |
| 48V | 48 | 36 | 2000 |
| 115V | 115 | 86 | 9000 |
| 6 and 8 pole | | | |
| 6V | 6 | 5 | 15 |
| 12V | 12 | 9 | 90 |
| 24V | 24 | 18 | 350 |
| 48V | 48 | 36 | 1400 |
| 115V | 115 | 86 | 7500 |

All figures are given for coil without preenergization, at ambient temperature +23°C.

Operative Range
R10 Relays (DC Only) Typical Ranges of Operations @ 25°C



R10 Series Relay (Continued)

Insulation Data

| | |
|-------------------------------|----------------------|
| Initial dielectric strength | |
| between open contacts | 500V _{rms} |
| between contact and coil | 1000V _{rms} |
| between adjacent contacts | 1000V _{rms} |
| Initial insulation resistance | |
| between insulated elements | 10GΩ, 500VDC |

Other Data

Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at www.te.com/customer-support/rohssupportcenter.

| | |
|--------------------------------------|---|
| Ambient temperature | -55°C to 75°C |
| Category of environmental protection | |
| IEC 61810 | RTI - dust protected and RTIII - wash tight |

Other Data (continued)

| | |
|----------------|---|
| Terminal type | Solder/plug-in terminals, PCB-THT, 8- or 11-PIN octal type plug |
| Weight | 23 to 40g |
| Packaging/unit | tray/50 pcs., box/350pcs. |

Accessories

For details see datasheet Sockets and Accessories, R10 Relays

Product Code Description
Many versions of sockets and clips available.

NOTE: Relays with contact current <50mA are not recommended for use in sockets.

Dimensions



Terminal dimensions

Solder terminal dimensions



Printed circuit terminal dimensions



| | A | B | C | D | Arrang. |
|-----------|------|------|------|-------|-----------|
| Type 2 | .131 | .050 | .064 | 1.251 | Inline |
| Type 7 | .131 | .040 | .013 | 1.20 | Inline |
| Type 9 | .170 | .040 | .000 | 1.187 | Staggered |
| Thickness | .012 | .012 | .012 | .013 | — |

Terminal assignment



R10 - AC Coil Diagram



R10 Series Relay (Continued)

PCB layout

Bottom view on solder pins

Terminal Types E2 & R2
(Omit unnecessary holes)



Terminal Types E9 & R9
(Omit unnecessary holes)



Suggested panel cutout for relay



Mounting hole layout for terminal & mounting style 6



Product code structure

Typical product code

R10 -E 1 Y 4 -V700

Type

- R10** Cradle-style relay with form C contacts
- R10S** Super sensitive cradle-style relay with form C contacts

Case style

- E** Non-sealed polycarbonate dust cover (RTI)
- R** Wash-tight (RTIII), tape sealed plastic case ¹⁾
- T** Octal style base on non-sealed polycarbonate dust cover (terminal types 1 & 2 only; 1, 2 & 3 poles only)
¹⁾ R10 type only, terminal code 2 or 9 only, no ground or stud

Terminal and mounting

- 1** Solder/Plug-in terminals with #3-48 mounting stud on R10-E; 8-pin octal type on R10-T
- 2** PCB terminals (std.) 1.62mm (.064in) clearance, 31.75mm (1.25in) seated ht.; 11-pin octal type on R10-T
- 6** Side mounting plate with #6-32 stud, solder/plug-in terminals (#3-48 stud not included)
- 7** Narrow 1.02mm (.04in) PCB terminals, .33mm (.013in) clearance, 30.48mm (1.2in) seated ht.
- 9** Non-shouldered, narrow 1.02mm (.04in) PCB terminals in staggered arrangement ²⁾
²⁾ Available only on 1 through 6 pole models

Contact style and rating ³⁾

- W** Single contact rated 7.5A max, 300mA min. ^{4) 5)}
- X** Single contact rated 5A max, 300mA min. ^{5) 6)}
- M** Bifurcated contact rated 5A max, 300 mA min. ^{5) 6)}
- Y** Single contact rated 2A typ, 3A max, 100mA min.
- Z** Bifurcated low level contacts rated 100mA typ, 2A max, 1mA min.
- P** Bifurcated crossbar dry circuit contacts rated 1mA typ, 3A max, dry circuit min.
- L** Bifurcated crossbar dry circuit contacts rated 500 microA typ, 250 mA max, dry circuit min.
³⁾ Ratings are at 28VDCV or 115VAC. Total load must not exceed 30A per relay.
⁴⁾ Use ungrounded frame for AC load of ≥5A. Max ratings are 7.5A at 115VAC and 4A at 28VDC for coil codes S & J
⁵⁾ Only available on R10 type, only available with coil adjustment code V, Q, S and J.
⁶⁾ Use ungrounded frame for AC load of ≥5A. Max ratings are 5A at 115VAC and 3A at 28VDC for coil codes S & J

Number of poles

- 1** 1 pole
 - 2** 2 pole
 - 3** 3 pole
 - 4** 4 pole (not available on R10-T)
 - 6** 6 pole (not available on R10-T) ⁷⁾
 - 8** 8 pole (not available on R10-T) ⁸⁾
- ⁷⁾ Not available with contact code W
⁸⁾ Only available with case style E, not available with contact code W

Coil voltage

Coil code: please refer to coil versions table

AC voltage Specify coil code consisting of nominal coil voltage followed by W (example: 24V)

DC voltage Specify coil code consisting of coil adjustment code letter followed by coil resistance (example: V700)

R10 Series Relay (Continued)

| Product Code | Arrangement | Material | Contact Style/Rating | Nom. Coil V | Terminals & Mounting | Part Number |
|-----------------|----------------|---------------|-----------------------------|----------------|--|-------------|
| R10-E1P2-115V | 2 form C, 2 CO | Au overlay Ag | Bif crossbar / dry circuit | 115 VAC | Solder/plug-in w/ #3-48 mounting stud | 7-1393765-0 |
| R10-E1P2-V700 | | | | 24 VDC | | 6-1393765-9 |
| R10-E1P4-115V | 4 form C, 4 CO | | | 115 VAC | | 7-1393765-6 |
| R10-E1P4-V700 | | | | 24 VDC | | 7-1393765-5 |
| R10-E1W2-V185 | 2 form C, 2 CO | AgCdO | Single contact / 7.5A | 12 VDC | | 8-1393765-9 |
| R10-E1W2-V700 | | | | 24 VDC | | 9-1393765-1 |
| R10-E1W4-V185 | 4 form C, 4 CO | | | 12 VDC | | 9-1393765-3 |
| R10-E1W4-V700 | | | | 24 VDC | | 9-1393765-5 |
| R10-E1X2-24V | 2 form C, 2 CO | | Single contact / 5A | 24 VAC | | 1-1393766-1 |
| R10-E1X2-115V | | | | 115 VAC | | 1-1393766-0 |
| R10-E1X2-S800 | | | | 12 VDC | | 1393766-3 |
| R10-E1X2-V185 | | | | | | 1393766-5 |
| R10-E1X2-V700 | | | | 24 VDC | | 1393766-9 |
| R10-E1X4-115V | 4 form C, 4 CO | | | 115 VAC | | 1-1393766-8 |
| R10-E1X4-V185 | | | | 12 VDC | | 1-1393766-4 |
| R10-E1X4-V700 | | | | 24 VDC | | 1-1393766-7 |
| R10-E1X4-V2.5K | | | | 48 VDC | | 1-1393766-5 |
| R10-E1X6-115V | 6 form C, 6 CO | | | 115 VAC | | 2-1393766-5 |
| R10-E1X6-V90 | | | | 12 VDC | | 2-1393766-4 |
| R10-E1X6-V430 | | | | 24 VDC | | 2-1393766-2 |
| R10-E1Y2-J1.0K | 2 form C, 2 CO | Ag | Single contact / 2A typical | Not applicable | | 3-1393766-3 |
| R10-E1Y2-J2.5K | | | | | | 3-1393766-4 |
| R10-E1Y2-V185 | | | | 12 VDC | | 4-1393766-0 |
| R10-E1Y2-V700 | | | | 24 VDC | | 4-1393766-4 |
| R10-E1Y2-V2.5K | | | | 48 VDC | | 4-1393766-1 |
| R10-E1Y2-V15.0K | | | | 115 VDC | | 3-1393766-9 |
| R10-E1Y4-J10.0K | 4 form C, 4 CO | | | Not applicable | | 4-1393766-9 |
| R10-E1Y4-V52 | | | | 6 VDC | | 5-1393766-6 |
| R10-E1Y4-V2.5K | | | | 48 VDC | | 5-1393766-5 |
| R10-E1Y4-V700 | | | | 24 VDC | | 5-1393766-7 |
| R10-E1Y6-V430 | 6 form C, 6 CO | | | | | 6-1393766-1 |
| R10-E1Y6-V1.5K | | | | 48 VDC | | 6-1393766-0 |
| R10-E1Z2-V185 | 2 form C, 2 CO | | Bifurcated / 100mA typical | 12 VDC | | 7-1393766-2 |
| R10-E1Z2-V700 | | | | 24 VDC | | 7-1393766-4 |
| R10-E1Z4-V185 | 4 form C, 4 CO | | | 12 VDC | | 7-1393766-9 |
| R10-E1Z4-V700 | | | | 24 VDC | | 8-1393766-1 |
| R10-E1Z4-V2.5K | | | | 48 VDC | | 8-1393766-0 |
| R10-E1Z6-V430 | 6 form C, 6 CO | | | 24 VDC | | 8-1393766-6 |
| R10-E1Z6-V1.5K | | | | 48 VDC | | 8-1393766-5 |
| R10-T1P2-115V | 2 form C, 2 CO | Au overlay Ag | Bif crossbar / dry circuit | 115 VAC | | 2-1393769-8 |
| R10S-E1Y1-J1.0K | 1 form C, 1 CO | Ag | Single contact / 2A typical | Not applicable | | 7-1393769-0 |
| R10S-E1Y2-J5.0K | 2 form C, 2 CO | | | | | 7-1393769-5 |
| R10-E2P4-V185 | 4 form C, 4 CO | Au overlay Ag | Bif crossbar / dry circuit | 12 VDC | PCB, .064" clearance, 1.25" seated ht. | 1393767-3 |
| R10-E2P4-V700 | | | | 24 VDC | | 1393767-4 |
| R10-E2W2-V185 | 2 form C, 2 CO | AgCdO | Single contact / 5A | 12 VDC | | 1393767-7 |
| R10-E2X2-V185 | | | | | | 1-1393767-1 |
| R10-E2X2-V700 | | | | 24 VDC | | 1-1393767-5 |
| R10-E2X4-V185 | 4 form C, 4 CO | | | 12 VDC | | 1-1393767-7 |
| R10-E2X4-V700 | | | | 24 VDC | | 1-1393767-8 |
| R10-E2Y2-V185 | 2 form C, 2 CO | Ag | Single contact / 2A typical | 12 VDC | | 2-1393767-6 |
| R10-E2Y2-V700 | | | | 24 VDC | | 2-1393767-9 |
| R10-E2Y4-V185 | 4 form C, 4 CO | | | 12 VDC | | 3-1393767-5 |
| R10-E2Y4-V700 | | | | 24 VDC | | 3-1393767-6 |
| R10S-E2Y1-J1.0K | 1 form C, 1 CO | | | Not applicable | | 8-1393769-1 |