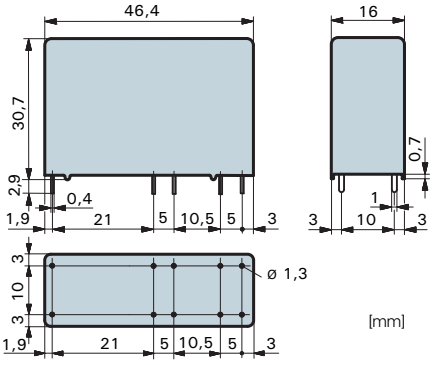
ELESTA relays

# SIR 4 Contacts

## Relay data

- PCB relay with forcibly guided contacts
- Protective separation between coil/control contacts and output contacts (> 10mm) as well as protective separation between the output contacts themselves (> 8mm)
- EN 50205, type A
- Contact mounting:
  SIR312 3NO/1NC
  SIR222 2NO/2NC
- Small external dimensions
- Mean coil power 0.6W
- Holding power 0.18W
- For Railway Applications: EN 50155




| | |
|---|---|
| Contact material | $AgSnO_2$+0.2µm Au |
| Type of contact | Crest contact |
| Rated switching capacity | 250VAC 10A AC1 2'500VA |
| Electr. life AC1 (360 cycles/h) | approx.100'000 |
| Inrush current max. | 25A for 20ms |
| Switching voltage range | 5 to 250 VDC/VAC |
| Switching current range* | 10mA to 10A |
| Switching capacity range* | 0.06VA(W) to 2'500VA |
| Contact resistance (as delivered) | ≤100mΩ/28 V/100mA |

* Guide values

### Standard coils for direct current (other voltages on request)

| Nominal voltage VDC | Min. pick-up voltage at 20°C | Drop-out voltage at 20 °C | Nominal current in mA | Resistance in Ohm at 20 °C | Tolerance in % |
|---|---|---|---|---|---|
| 5 | 3,5 | ≥ 0,5 | 121,0 | 41 | ± 10 |
| 6 | 4,2 | ≥ 0,6 | 100,0 | 60 | ± 10 |
| 12 | 8,4 | ≥ 1,2 | 50,0 | 240 | ± 10 |
| 18 | 12,6 | ≥ 1,8 | 33,3 | 540 | ± 10 |
| 24 | 16,8 | ≥ 2,4 | 25,2 | 950 | ± 10 |
| 48 | 33,6 | ≥ 4,8 | 12,6 | 3'800 | ± 10 |
| 60 | 42,0 | ≥ 6,0 | 10,0 | 6'000 | ± 13 |
| 110 | 77,0 | ≥ 11,0 | 5,5 | 20'000 | ± 15 |

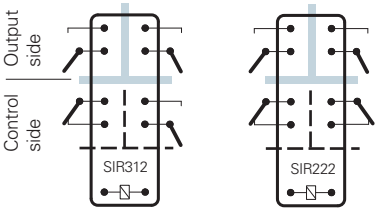
### Ordering example

**SIR 3 1 2 24VDC**

- 24VDC — Coil voltage
- 2 — Soldering tags
- 1 — Number of NC contacts
- 3 — Number of NO contacts
- SIR — Type designation

## General data

### Circuit diagram (view on relay upper side)




| | |
|---|---|
| Mechanical life | > 10 x $10^6$ operations |
| Switching frequency, mechanical | 15Hz |
| Response time | typically 15ms |
| Drop-out time** | typically 4ms |
| Bounce time of NO contact | typically 6ms |
| Bounce time of NC contact | typically 12ms |
| Shock resistance 16ms | NO contact > 10g<br>NC contact 6g |
| Vibration resistance 10-200Hz | NO contact > 5g<br>NC contact 1,5g |
| Test voltage coil/control contacts | 2'500Veff 1min |
| Test voltage coil-control contacts/output contacts | 5'000Veff 1min |
| Test voltage output contacts as against each other | 4'000Veff 1min |
| Test voltage contact open | 1'500Veff 1min |
| Insulation resistance | $10^{11}$ Ω |
| Creepage resistance | CTI 250 |
| Weight | approx. 30g |
| Mounting position | any |
| Ambient temperature | -40°C to +70°C |
| Type of protection | RT II |
| Solder bath temperature | 270 °C/5s |
| Thermal resistance | 55K/W |
| Temperature limit for coil | 120°C |
| Pollution degree | 2 |
| Overvoltage category | III |
| Resistance to short circuiting | 1'000A SCPD 10A gG (pre-fuse) |

** without spark suppression

### Insulation terms

| |
|---|
| Coil to control contacts: Basic insulation |
| Coil/control contacts to output contacts: Double or reinforced insulation > 10mm |
| Output contacts as against each other: Double or reinforced insulation > 8mm |

### Tests, regulations

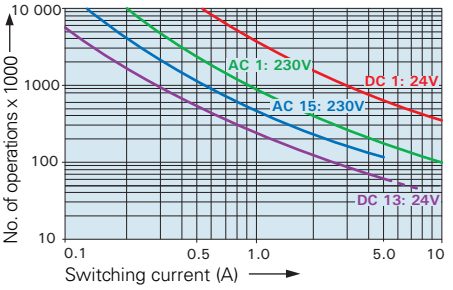
| | |
|---|---|
| Approvals | SEV, UL, cUL, TÜV |
| UL File E188953 | Sec. 3 |
| Insulation class IEC 60664-1 | 250VAC |
| Protection class II | VDE 0106 |
| Fire protection requirements | UL 94 / V0 |

### Options, accessories

| | |
|---|---|
| PCB socket | see page 31 |

## Diagrams

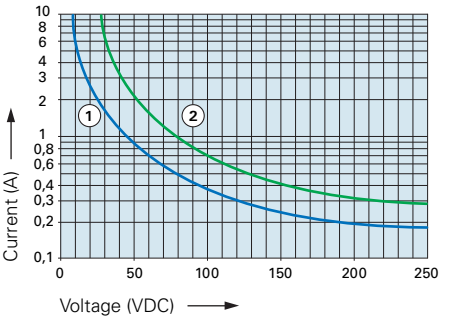
### Contact lifetime




Max. switching characteristics
(determined acc. to DIN EN 60947-5-1 table C2):
AC 15: 230V/5A
DC 13: 24V/7.5A/0.1 Hz
UL 508: C600/R300

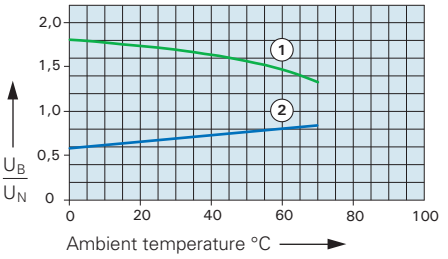
Maximal contact load at AC 1 with 230V:
2 contacts each with 10A
3 contacts each with 8.4A

### Load limit curve with direct current




1) Inductive load, L/R 40 ms
2) Resistive load

### Excitation voltage range




1) Max. excitation voltage with contact load ≤ 2A
2) Min. excitation voltage (guaranteed values) without previous operation

No heat accumulation due to intrinsic heating of other components.
Continuous duty 100%.

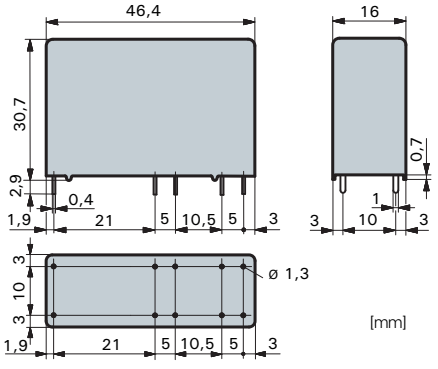

Phone:86-755-82489221
Fax: 86-755-82489223
E-Mail: sales@creatich.com
Internet: http://www.creatich.com

ELESTA relays

# SIR 4 Contacts „Power“

## Relay data

- PCB relay with forcibly guided contacts
- Protective separation between coil/control contacts and output contacts (> 10mm) and output contacts side by side (> 8mm)
- EN 50205, type A
- Contact mounting:
  SIR312P „Power“ Control contacts 1NO/1NC
  Output contacts 2NO
  SIR222P „Power“ Control contacts 2NC
  Output contacts 2NO
- Inrush current 60A / continuous current 12A
- Mean coil power 0.75W
- Holding power 0.23 W




### Control Contacts

| | |
|---|---|
| Contact material | $AgSnO_2$+0.2µm Au |
| Rated switching capacity 250VAC 6A AC1 | 1'500VA |
| Electr. life AC1 (360 cycles/h) | approx.100'000 |
| Inrush current max. | 15A for 20ms |
| Switching voltage range | 5 to 250 VDC/VAC |
| Switching current range* | 5mA to 6A |
| Switching capacity range* | 60mW to 1'500W (VA) |
| Contact resistance (as delivered) | ≤100mΩ/28 V/100mA |

* Guide values

### Output contacts

| | |
|---|---|
| Contact material | $AgSnO_2$ |
| Rated switching capacity | 250VAC (440VAC) 12A AC1 3'000VA |
| Electr. life AC1 (360 cycles/h) | approx. 250'000 |
| Inrush current max. | 60A for 20ms |
| Switching voltage range | 5 to 480 VDC/VAC |
| Switching current range* | 10mA to 12A |
| Switching capacity range* | 120mW to 3'000W (VA) |
| Contact resistance (as delivered) | ≤100mΩ/28 V/100mA |

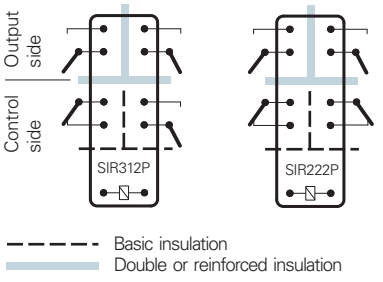
* Guide values

### Standard coils for direct current (examples) other voltages on request

| Nominal voltage VDC | Min. pick-up voltage at 20°C VDC | Drop-out voltage at 20 °C VDC | Nominal current in mA | Resistance in Ohm at 20 °C | Tolerance in % |
|---|---|---|---|---|---|
| 5 | ≤ 3.5 | ≥ 0.5 | 151.0 | 33 | ± 10 |
| 12 | ≤ 8.4 | ≥ 1.2 | 63.1 | 190 | ± 10 |
| 18 | ≤ 12,6 | ≥ 1,8 | 41,6 | 432 | ± 10 |
| 20 | ≤ 14.0 | ≥ 2.0 | 37.7 | 530 | ± 10 |
| 24 | ≤ 16.8 | ≥ 2.4 | 31.5 | 760 | ± 10 |
| 48 | ≤ 33.6 | ≥ 4.8 | 15.7 | 3'050 | ± 10 |
| 60 | ≤ 42.0 | ≥ 6.0 | 12.5 | 4'800 | ± 10 |
| 110 | ≤ 77.0 | ≥ 11.0 | 6.8 | 16'000 | ± 15 |

## General data

### Circuit diagram (view on relay upper side)




| | |
|---|---|
| Mechanical life | > 10 x $10^6$ operations |
| Switching frequency, mechanical | 15Hz |
| Response time | typically 15ms |
| Drop-out time** | typically 4ms |
| Bounce time of NO contact | typically 6ms |
| Bounce time of NC contact | typically 12ms |
| Shock resistance 16ms | NO contact 17g<br>NC contact 7g |
| Vibration resistance 10-200Hz | NO contact 10g<br>NC contact 4,5g |
| Test voltage coil/control contacts | 2'500Veff 1min |
| Test voltage coil-control contacts/output contacts | 5'000Veff 1min |
| Test voltage output contacts as against each other | 4'000Veff 1min |
| Test voltage contact open | 1'500Veff 1min |
| Insulation resistance | $10^{11}$ Ω |
| Creepage resistance | CTI 250 |
| Weight | approx. 32g |
| Mounting position | any |
| Ambient temperature | -40°C to +70°C |
| Type of protection | RT II |
| Solder bath temperature | 270 °C/5s |
| Thermal resistance | 55K/W |
| Temperature limit for coil | 120°C |
| Pollution degree | 2 |
| Overvoltage category | III |
| Resistance to short circuiting control contacts | 1'000A SCPD 6A gG (pre-fuse) |
| Resistance to short circuiting output contacts | 1'000A SCPD 16A gL/gG (pre-fuse) |

** without spark suppression

### Insulation terms

| |
|---|
| Coil to control contacts: Basic insulation |
| Coil/control contacts to output contacts: Double or reinforced insulation > 10mm |
| Output contacts as against each other: Double or reinforced insulation > 8mm |

### Tests, regulations

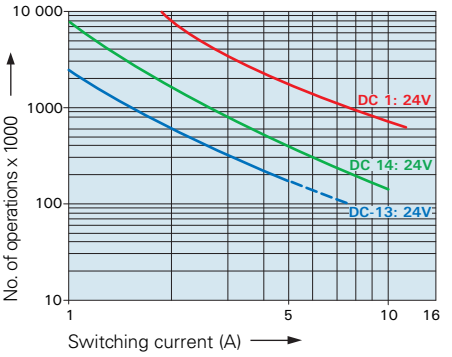
| | |
|---|---|
| Approvals | SEV, UL, cUL, TÜV |
| UL File E188953 | Sec. 3 |
| Insulation class IEC 60664-1 | 250VAC |
| Protection class II | VDE 0106 |
| Fire protection requirements | UL 94 / V0 |

### Options, accessories

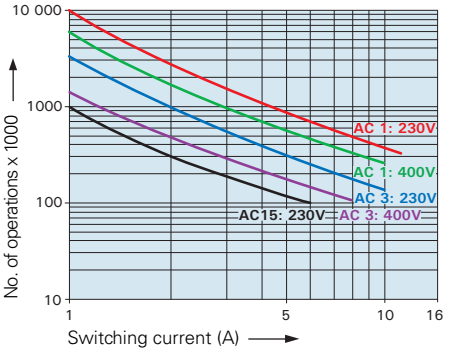
| | |
|---|---|
| PCB socket: | see page 31 |

## Diagrams

### contacts each with (output contacts)

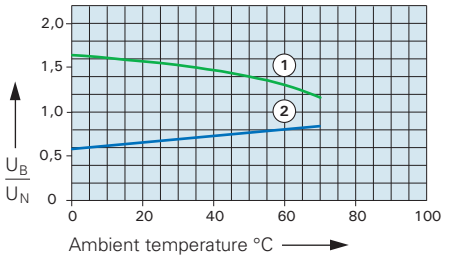



### Contact lifetime (output contacts)




Maximal contact load at AC 1 with 230V:
2 contacts each with 12A

### Excitation voltage range




1) Max. excitation voltage with contact load ≤ 2A control contacts / ≤ 10A output contacts
2) Min. excitation voltage (guaranteed values) without previous operation

No heat accumulation due to intrinsic heating of other components.
Continuous duty 100%.

### Ordering example

**SIR 3 1 2 P 24VDC**

- 24VDC — Coil voltage
- P — Power version
- 2 — Soldering tags
- 1 — Number of NC contacts
- 3 — Number of NO contacts
- SIR — Type designation

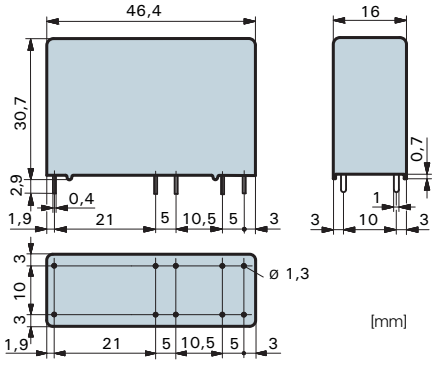


Phone:86-755-82489221 E-Mail: sales@creatich.com
Fax: 86-755-82489223 Internet: http://www.creatich.com

# SIR 4 Contacts sensitive

## Relay data

- PCB relay with forcibly guided contacts
- Protective separation between coil/control contacts and output contacts (> 10mm) as well as protective separation between the output contacts themselves (> 8mm)
- EN 50205, type A
- Contact mounting:
  SIR312 3NO/1NC
  SIR222 2NO/2NC
- Small external dimensions
- Mean coil power 0.36W
- Holding power 0.12W
- For Railway Applications: EN 50155




| | |
|---|---|
| Contact material | $AgSnO_2$+0.2µm Au |
| Type of contact | Crest contact |
| Rated switching capacity | 250VAC 10A AC1 2'500VA |
| Electr. life AC1 (360 cycles/h) | approx.100'000 |
| Inrush current max. | 25A for 20ms |
| Switching voltage range | 5 to 250 VDC/VAC |
| Switching current range* | 10mA to 10A |
| Switching capacity range* | 0.06VA(W) to 2'500VA |
| Contact resistance (as delivered) | ≤100mΩ/28 V/100mA |

* Guide values

### Standard coils for direct current (other voltages on request)

| Nominal voltage VDC | Min. pick-up voltage at 20°C | Drop-out voltage at 20 °C | Nominal current in mA | Resistance in Ohm at 20 °C | Tolerance in % |
|---|---|---|---|---|---|
| 5 | 3,75 | ≥ 0,5 | 72,0 | 69,4 | ± 10 |
| 6 | 4,5 | ≥ 0,6 | 60,0 | 100 | ± 10 |
| 9 | 6,75 | ≥ 0,9 | 40,0 | 225 | ± 10 |
| 12 | 9,0 | ≥ 1,2 | 30,0 | 400 | ± 10 |
| 18 | 13,5 | ≥ 1,8 | 20,0 | 900 | ± 10 |
| 24 | 18,0 | ≥ 2,4 | 15,0 | 1'600 | ± 10 |
| 48 | 36,0 | ≥ 3,6 | 7,5 | 6'400 | ± 13 |
| 60 | 45,0 | ≥ 4,5 | 6,0 | 10'000 | ± 15 |

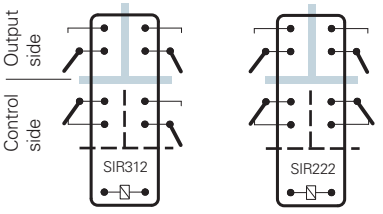
### Ordering example

**SIR 3 1 2 24VDC SEN**

- SEN — Sensitive coil
- 24VDC — Coil voltage
- 2 — Soldering tags
- 1 — Number of NC contacts
- 3 — Number of NO contacts
- SIR — Type designation

## General data

### Circuit diagram (view on relay upper side)




| | |
|---|---|
| Mechanical life | > 10 x $10^6$ operations |
| Switching frequency, mechanical | 15Hz |
| Response time | typically 18ms |
| Drop-out time** | typically 5ms |
| Bounce time of NO contact | typically 6ms |
| Bounce time of NC contact | typically 12ms |
| Shock resistance 16ms | NO contact > 10g<br>NC contact 6g |
| Vibration resistance 10-200Hz | NO contact > 5g<br>NC contact 1,5g |
| Test voltage coil/control contacts | 2'500Veff 1min |
| Test voltage coil-control contacts/output contacts | 5'000Veff 1min |
| Test voltage output contacts as against each other | 4'000Veff 1min |
| Test voltage contact open | 1'500Veff 1min |
| Insulation resistance | $10^{11}$ Ω |
| Creepage resistance | CTI 250 |
| Weight | approx. 30g |
| Mounting position | any |
| Ambient temperature | -40°C to +70°C |
| Type of protection | RT II |
| Solder bath temperature | 270 °C/5s |
| Thermal resistance | 55K/W |
| Temperature limit for coil | 120°C |
| Pollution degree | 2 |
| Overvoltage category | III |
| Resistance to short circuiting | 1'000A SCPD 10A gG (pre-fuse) |

** without spark suppression

### Insulation terms

| |
|---|
| Coil to control contacts: Basic insulation |
| Coil/control contacts to output contacts: Double or reinforced insulation > 10mm |
| Output contacts as against each other: Double or reinforced insulation > 8mm |

### Tests, regulations

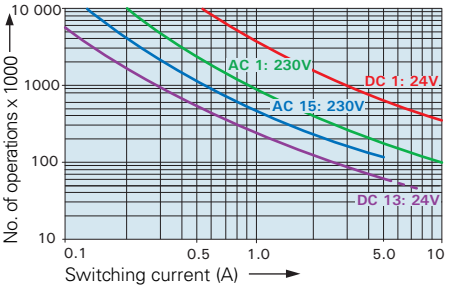
| | |
|---|---|
| Approvals | SEV, UL, cUL, TÜV |
| UL File E188953 | Sec. 3 |
| Insulation class IEC 60664-1 | 250VAC |
| Protection class II | VDE 0106 |
| Fire protection requirements | UL 94 / V0 |

### Options, accessories

| | |
|---|---|
| PCB socket | see page 31 |

## Diagrams

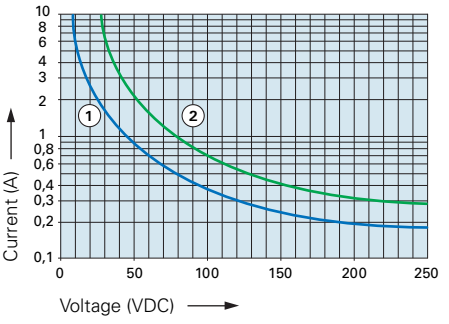
### Contact lifetime




Max. switching characteristics
(determined acc. to DIN EN 60947-5-1 table C2):
AC 15: 230V/5A
DC 13: 24V/7.5A/0.1 Hz
UL 508: C600/R300

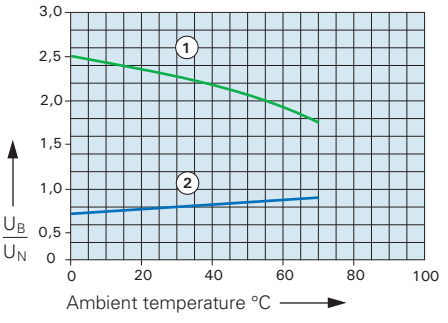
Maximal contact load at AC 1 with 230V:
2 contacts each with 10A
3 contacts each with 8.4A

### Load limit curve with direct current




1) Inductive load, L/R 40 ms
2) Resistive load

### Excitation voltage range




1) Max. excitation voltage with contact load ≤ 2A
2) Min. excitation voltage (guaranteed values) without previous operation

No heat accumulation due to intrinsic heating of other components.
Continuous duty 100%.


Phone:86-755-82489221
Fax: 86-755-82489223
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Internet: http://www.creatich.com