

High Power relay 50 A



Power generators



Back-up generators



Pump control



Disabled lift



Inverter



Printed circuit mount - 3 mm contact gap
50 A Power relay for photovoltaic inverters

Type 67.22-x300
- 2 NO

Type 67.23-x300
- 3 NO

- Contact gap ≥ 3 mm (according to VDE 0126-1-1, EN 62109-1, EN 62109-2)
- DC coils, with only 170 mW holding power
- Reinforced insulation between coil and contacts
- 1.5 mm gap between PCB and relay base
- Suitable for use at ambient temperatures up to 85 °C (with energy-saving coil energization) or 70 °C (with standard coil energization)
- Meets the EN 60335-1 requirements of resistance to heat and fire (GWIT 775 °C and GWFI 850 °C)
- Cadmium free contact materials:
 - AgNi version (for applications where lower contact resistance is needed)
 - AgSnO₂ version (for applications where higher inrush current values are expected)

For outline drawing see page 8

Contact specification

| | | | |
|---------------------------------------------------|-----------|--------------------|--------------------|
| Contact configuration | | 2 NO (DPST-NO) | 3 NO (3PST-NO) |
| Contact gap | mm | ≥ 3 | ≥ 3 |
| Rated current/ Maximum peak current (for 5 ms) | A | 50/150 | 50/150 |
| Rated voltage/ Maximum switching voltage | V AC | 400/690 | 400/690 |
| Rated load AC1/AC7a (per pole) | VA | 20000 | 20000 |
| Rated load AC15 (per pole @ 230 V AC) | VA | 2300 | 2300 |
| Single-phase motor rating (230 V AC) | kW | 2.2 | 2.2 |
| Three-phase motor rating (480 V AC) | kW | — | 11 |
| Breaking capacity DC1: 24/110/220 V | A | 50/4/1 | 50/4/1 |
| Minimum switching load | mW (V/mA) | 1000 (10/10) | 1000 (10/10) |
| Standard contact material | | AgSnO ₂ | AgSnO ₂ |

Coil specification

| | | | |
|-----------------------------------|------|-------------------------------------|------------------------------|
| Nominal voltage (U _N) | V DC | 5 - 6 - 8 - 12 - 24 - 48 - 60 - 110 | |
| Rated power | W | 1.7 | 1.7 |
| Operating range (-40...+70)°C | DC | (0.90 ... 1.1)U _N | (0.90 ... 1.1)U _N |
| Energy-saving mode (-40...+85)°C | | | |
| Operating range for 1 s | | (0.95...2.5)U _N | (0.95...2.5)U _N |
| Holding voltage range | DC | (0.32...0.65)U _N | (0.32...0.65)U _N |
| Minimum holding power | W | 0.17 | 0.17 |
| Must drop-out voltage | DC | 0.05 U _N | 0.05 U _N |

Technical data

| | | | |
|------------------------------------------------|--------|-----------------------|-----------------------|
| Mechanical life | cycles | 1 · 10 ⁶ | 1 · 10 ⁶ |
| Electrical life at rated load AC7a | cycles | 30 · 10 ³ | 30 · 10 ³ |
| Operate/release time | ms | 25/5 | 25/5 |
| Ambient temperature range (energy-saving mode) | °C | -40...+70 (-40...+85) | -40...+70 (-40...+85) |
| Environmental protection | | RT II | RT II |

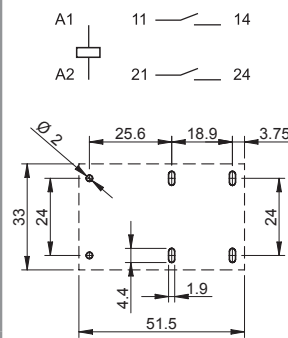
Approvals (according to type)



67.22-x300



- 2 NO
- Contact gap ≥ 3 mm
- PCB mount

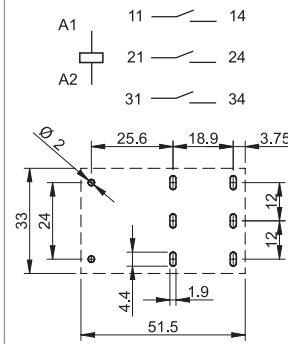


Copper side view

67.23-x300



- 3 NO
- Contact gap ≥ 3 mm
- PCB mount



Copper side view

**Printed circuit mount - 5.2 mm contact gap
50 A Power relay for photovoltaic inverters****Type 67.22-x500**

- 2 NO

Type 67.23-x500

- 3 NO

- Contact gap ≥ 5.2 mm (according to VDE 0126-1-1, EN 62109-1, EN 62109-2)
- Suitable for inverters with DC input up to 1500 V and AC output up to 690 V, installations up to 4000 m above sea level
- DC coils, with only 170 mW holding power
- Reinforced insulation between coil and contacts
- 1.5 mm gap between PCB and relay base
- Suitable for use at ambient temperatures up to 85 °C (with energy-saving coil energization) or 60 °C (with standard coil energization)
- Meets the EN 60335-1 requirements of resistance to heat and fire (GWIT 775 °C and GWFI 850 °C)
- Cadmium free contact materials:
 - AgNi version (for applications where lower contact resistance is needed)
 - AgSnO₂ version (for applications where higher inrush current values are expected)

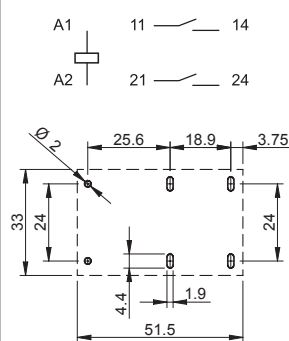
For outline drawing see page 8

Contact specification

Contact configuration

67.22-x500

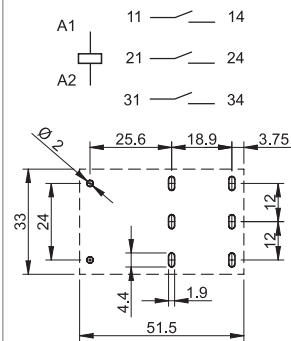
- 2 NO
- Contact gap ≥ 5.2 mm
- PCB mount



Copper side view

67.23-x500

- 3 NO
- Contact gap ≥ 5.2 mm
- PCB mount



Copper side view

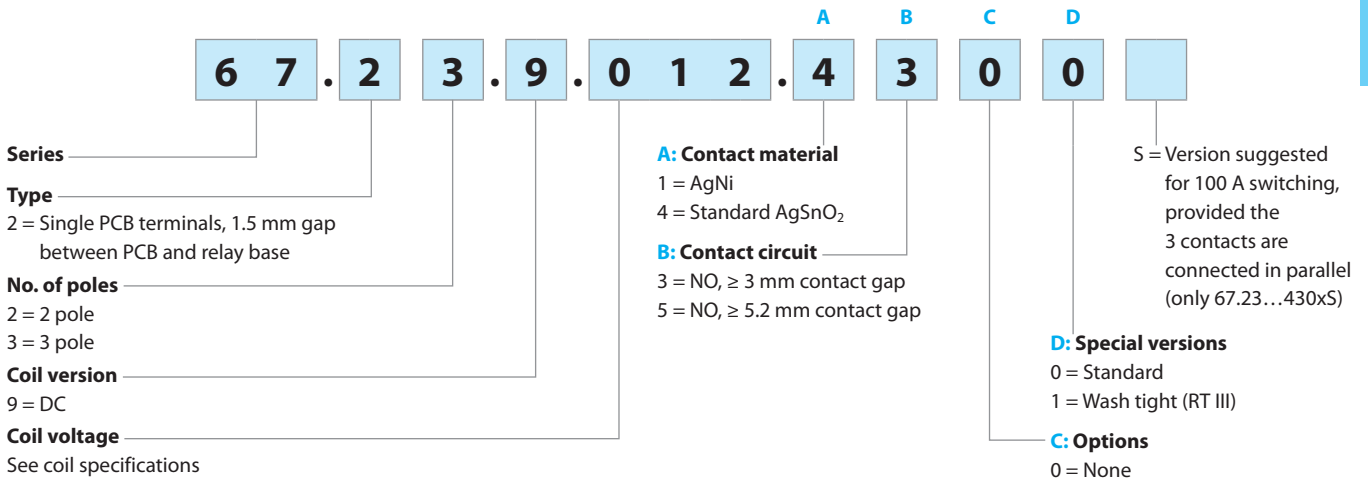
| | | | |
|---------------------------------------------------|-----------|-------------------------------------|------------------------------|
| Contact configuration | | 2 NO (DPST-NO) | 3 NO (3PST-NO) |
| Contact gap | mm | ≥ 5.2 | ≥ 5.2 |
| Rated current/ Maximum peak current (for 5 ms) | A | 50/150 | 50/150 |
| Rated voltage/ Maximum switching voltage | V AC | 400/690 | 400/690 |
| Rated load AC1/AC7a (per pole) | VA | 20000 | 20000 |
| Rated load AC15 (per pole @ 230 V AC) | VA | 2300 | 2300 |
| Single-phase motor rating (230 V AC) | kW | 2.2 | 2.2 |
| Three-phase motor rating (480 V AC) | kW | — | 11 |
| Breaking capacity DC1: 24/110/220 | A | 50/7/2 | 50/7/2 |
| Minimum switching load | mW (V/mA) | 1000 (10/10) | 1000 (10/10) |
| Standard contact material | | AgSnO ₂ | AgSnO ₂ |
| Coil specification | | | |
| Nominal voltage (U _N) | V DC | 5 - 6 - 8 - 12 - 24 - 48 - 60 - 110 | |
| Rated power | W | 2.7 | 2.7 |
| Operating range (-40...+60)°C | DC | (0.90 ... 1.1)U _N | (0.90 ... 1.1)U _N |
| Energy-saving mode (-40...+85)°C | | | |
| Operating range for 1 s | | (0.95...2.5)U _N | (0.95...2.5)U _N |
| Holding voltage range | DC | (0.25...0.5)U _N | (0.25...0.5)U _N |
| Minimum holding power | W | 0.17 | 0.17 |
| Must drop-out voltage | DC | 0.05 U _N | 0.05 U _N |
| Technical data | | | |
| Mechanical life | cycles | 1 · 10 ⁶ | 1 · 10 ⁶ |
| Electrical life at rated load AC7a | cycles | 30 · 10 ³ | 30 · 10 ³ |
| Operate/release time | ms | 30/4 | 30/4 |
| Ambient temperature range (energy-saving mode) | °C | -40...+60 (-40...+85) | -40...+60 (-40...+85) |
| Environmental protection | | RT II | RT II |

Approvals (according to type)



Ordering information

Example: 67 series solar relay, single PCB terminals, 2 pole NO, ≥ 3 mm contact gap.



Technical data

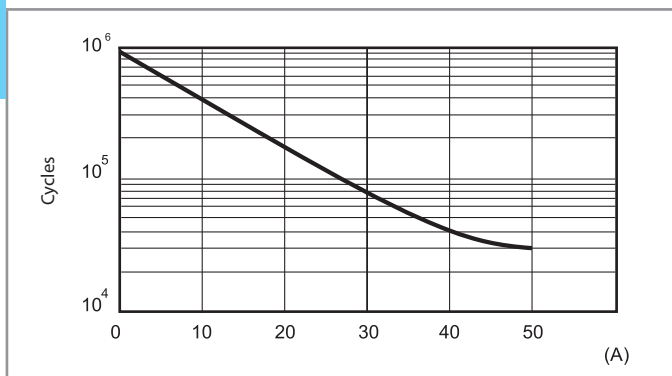
| Insulation according to EN 61810-1 | | | | |
|-----------------------------------------------------------------------------|-------------------------|-------------------------------------|-----------------------------------|--------------------|
| Nominal voltage of supply system | V AC | 400/690 3-phase | 400 1-phase | 230/400 |
| Rated insulation voltage | V AC | 630 | 400 | 400 |
| Pollution degree | | 3 | | |
| Insulation between coil and contact set | | | | |
| Type of Insulation | | Reinforced | | |
| Overvoltage category | | III | | |
| Rated impulse voltage | kV (1.2/50 μs) | 6 | | |
| Dielectric strength | V AC | 4000 | | |
| Insulation between adjacent contacts | | | | |
| Type of Insulation | | Basic | | |
| Overvoltage category | | III | | |
| Rated impulse voltage | kV (1.2/50)μs | 6 | | |
| Dielectric strength | V AC | 2500 | | |
| Insulation between open contacts | | | | |
| Type of disconnection | | Micro-disconnection* | | Full-disconnection |
| Overvoltage category | | — | | III |
| Rated impulse voltage | kV (1.2/50)μs | — | | 4 |
| Dielectric strength | V AC | 2500 (67.xx-x300)/3000 (67.xx-x500) | | |
| Insulation between coil terminals | | | | |
| Rated impulse voltage (surge) differential mode (according to EN 61000-4-5) | kV(1.2/50 μs) | 4 | | |
| Other data | | | | |
| Bounce time: NO | ms | 2 | | |
| Vibration resistance (10...150)Hz: NO | g | 15 | | |
| Shock resistance | g | 35 | | |
| Power lost to the environment | without contact current | W | 1.7 (67.xx-x300)/2.7 (67.xx-x500) | |
| | with rated current | W | 8.5 (67.xx-x300)/9.5 (67.xx-x500) | |
| Recommended distance between relays mounted on PCB | mm | ≥ 20 | | |
| Short circuit protection | | | | |
| Rated conditional short circuit current | kA | 5 | | |
| Back-up fuse for motor load | A | 30 (delayed type) | | |

* with overvoltage category II: Full-disconnection

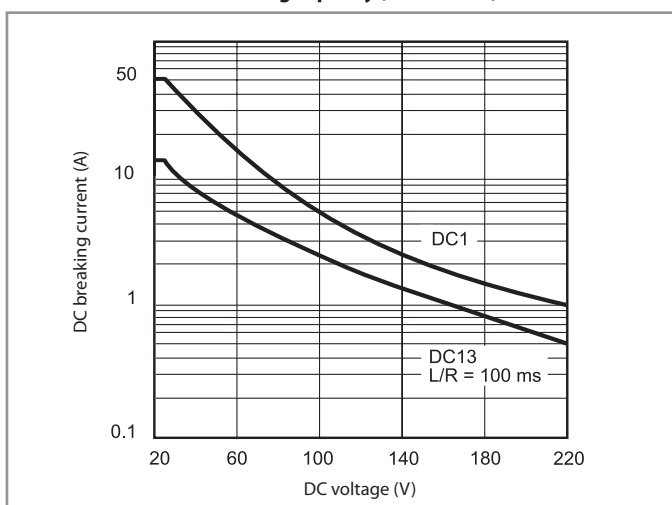
Contact specification

F 67 - Electrical life v contact current (AC1/AC7a load)

A

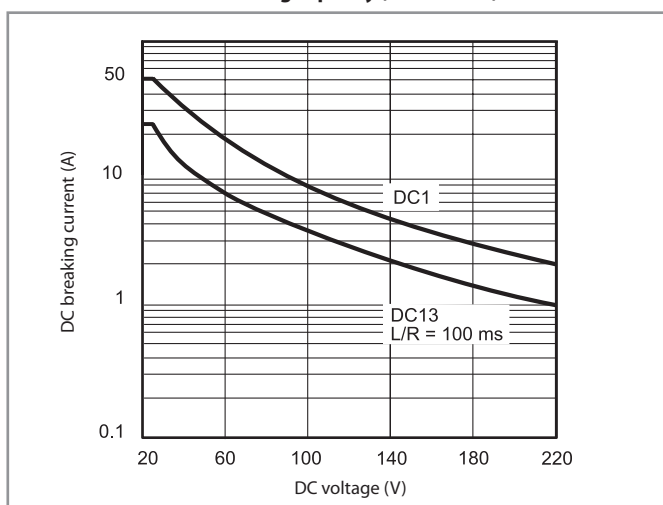


H 67 - Maximum DC breaking capacity (67.xx-x300)



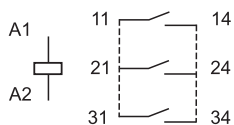
When switching a resistive (DC1) or inductive (DC13) load having voltage and current values under the corresponding curve, an electrical life of > 30000 cycles can be expected.

H 67 - Maximum DC breaking capacity (67.xx-x500)



When switching a resistive (DC1) or inductive (DC13) load having voltage and current values under the corresponding curve, an electrical life of > 30000 cycles can be expected.

Connection of contacts in parallel



Connecting in parallel the contacts, with appropriate dimensioning of tracks on PC board, allow the relays to carry and switch loads up to 100 A:
 - 100 A, with 67.23...4300S version
 - 80 A, with 67.23...1300 version

Coil specifications

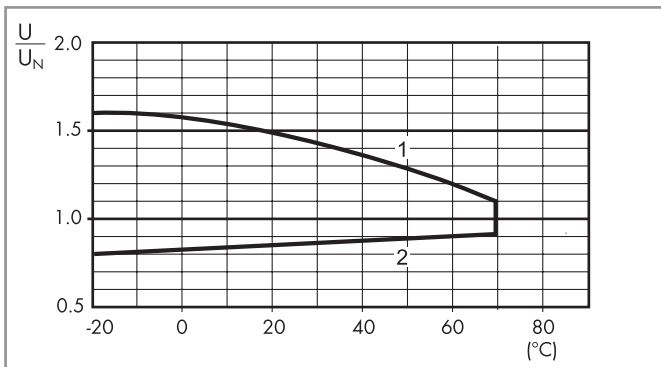
DC coil data, 67.xx-x300

| Nominal voltage U_N | Coil code | Operating range (@ 70 °C max) | | Holding voltage U_h | Resistance R | Rated coil consumption I at U_N I_N |
|--------------------------|-----------|-------------------------------|-----------|--------------------------|-------------------|-----------------------------------------------|
| | | U_{min} | U_{max} | | | |
| V | | V | V | V | Ω | mA |
| 5 | 9.005 | 4.5 | 5.5 | 1.6 | 14.7 | 340 |
| 6 | 9.006 | 5.4 | 6.6 | 1.9 | 21.5 | 279 |
| 8 | 9.008 | 7.2 | 8.8 | 2.6 | 37.6 | 213 |
| 12 | 9.012 | 10.8 | 13.2 | 3.8 | 85 | 141 |
| 24 | 9.024 | 21.6 | 26.4 | 7.7 | 340 | 71 |
| 48 | 9.048 | 43.2 | 52.8 | 15.4 | 1355 | 35 |
| 60 | 9.060 | 54 | 66 | 19.2 | 2120 | 28 |
| 110 | 9.110 | 99 | 121 | 35.2 | 7120 | 15 |

DC coil data, 67.xx-x500

| Nominal voltage U_N | Coil code | Operating range (@ 60 °C max) | | Holding voltage U_h | Resistance R | Rated coil consumption I at U_N I_N |
|--------------------------|-----------|-------------------------------|-----------|--------------------------|-------------------|-----------------------------------------------|
| | | U_{min} | U_{max} | | | |
| V | | V | V | V | Ω | mA |
| 5 | 9.005 | 4.5 | 5.5 | 1.25 | 9.3 | 538 |
| 6 | 9.006 | 5.4 | 6.6 | 1.5 | 13.5 | 444 |
| 8 | 9.008 | 7.2 | 8.8 | 2 | 23.7 | 338 |
| 12 | 9.012 | 10.8 | 13.2 | 3 | 53.5 | 224 |
| 24 | 9.024 | 21.6 | 26.4 | 6 | 213 | 113 |
| 48 | 9.048 | 43.2 | 52.8 | 12 | 855 | 56 |
| 60 | 9.060 | 54 | 66 | 15 | 1335 | 45 |
| 110 | 9.110 | 99 | 121 | 27.5 | 4500 | 24 |

R 67 - Operating range v ambient temperature, 67.xx-x300
with standard (continuous) coil energization (-40...+70)°C



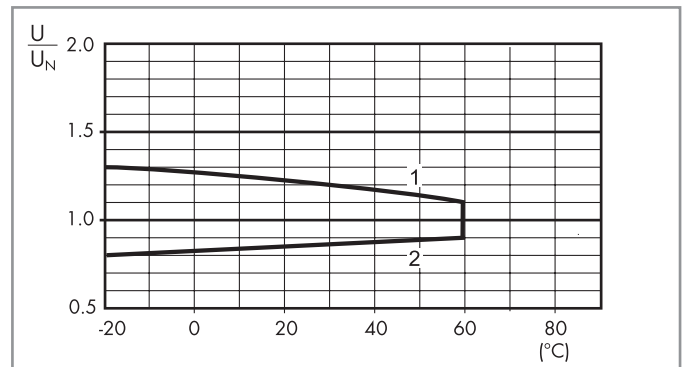
- 1 - Max. permitted coil voltage.
- 2 - Min. pick-up voltage with coil at ambient temperature.

Energy saving mode

In some applications, such as photovoltaic inverters, it may be necessary to minimize the overall relay power dissipation and to permit use at higher ambient temperature levels (up to 85 °C). This can be achieved by initially applying a coil voltage within the Energy saving mode Operating range (see diagram to the right) and then rapidly (< 1 s) reducing the coil voltage to a level within the Holding voltage range. The lower the Holding voltage, the lower is the continuous power dissipation of the coil (0.17 W minimum).

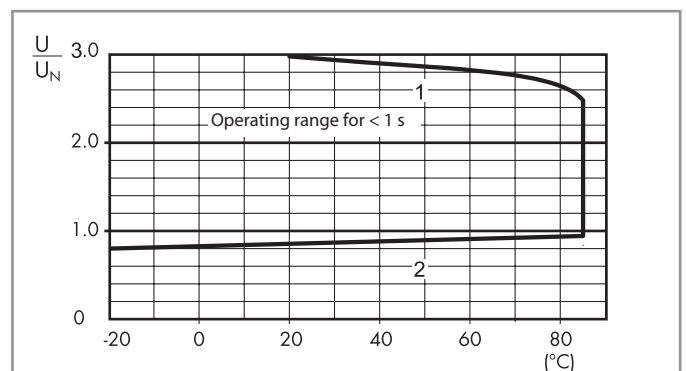
Coil voltages as high as 2.5 U_N may be used, when necessary, to reduce the contact operate time.

R 67 - Operating range v ambient temperature, 67.xx-x500
with standard (continuous) coil energization (-40...+60)°C



- 1 - Max. permitted coil voltage.
- 2 - Min. pick-up voltage with coil at ambient temperature.

R 67 - Operating range v ambient temperature, 67.xx-x300/x500
in energy saving mode (-40...+85)°C

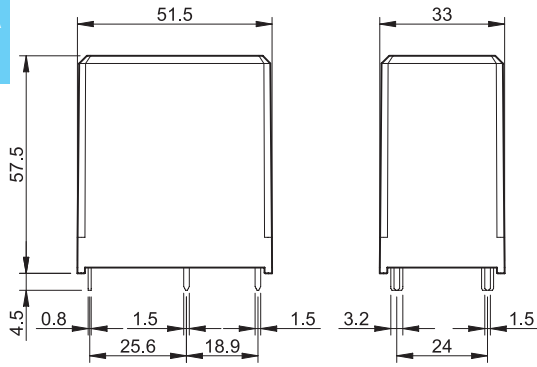


- 1 - Max. permitted coil voltage.
- 2 - Min. pick-up voltage with coil at ambient temperature.

Outline drawings

A

Type 67.22



Type 67.23

