

- Cadmium - free contacts
- Height 15.7 mm
- 5000 V / 10mm Reinforced insulation
- For PCB and plug-in sockets
- 80A High inrush version
- Accessories: sockets and modules
- AC and DC Coils
- Recyclable packing



RoHS Compliant ✓

Contacts

| | | |
|--------------------------|--|---------------------|
| Contact arrangement | SPDT (1C/O), SPST-NO (1NO) | |
| Contact material | AgNi, AgSnO ₂ | |
| Max. switching voltage | AC | 440V |
| Min. switching voltage | 5V AgNi, 10V AgSnO ₂ | |
| Rated load | AC1 | 16A / 250VAC |
| | DC1 | 16A / 24VDC |
| Min. switching current | 5mA AgNi, 10mA AgSnO ₂ | |
| Max. inrush current | 30A AgSnO ₂ (Code 30), 80A AgSnO ₂ , (Code 50) | |
| Rated current | 16A | |
| Max. breaking capacity | AC1 | 4000VA |
| Min. breaking capacity | 0.3W AgNi, 1W AgSnO ₂ | |
| Contact resistance | ≤ 100 m Ω | |
| Max. operating frequency | at rated load | AC1 600 cycles/hour |
| | no load | 72,000 cycles/hour |

Coil

| | | |
|-------------------------|----------------------------------|--|
| Rated voltage | AC / DC | 12...240VAC 50/60Hz / 3...110V |
| Must release voltage | AC / DC | ≥ 0.15 U _n / ≥ 0.1 U _n |
| Operating range | See tables 1, 2 and figures 4, 5 | |
| Rated power consumption | AC / DC | 0.75VA / 0.4...0.48W |

Insulation EN60664-1

| | | |
|-----------------------------|--------------------------------|-----------------------------------|
| Insulation category | C250 / B400 | |
| Insulation rated voltage | 400 VAC | |
| Rated surge voltage | 4,000 VAC 1.2/50μs | |
| Overvoltage category | III IEC 61810-5 (PN-IEC 664-1) | |
| Insulation pollution degree | 3 | |
| Dielectric strength | coil to contact | 5,000VAC |
| | contact to contact | 1,000 VAC / 2,000VAC SPST-NO type |
| Contact - coil distance | clearance & creepage | ≥ 10mm |

General Data

| | | |
|--------------------------|---------------|-------------------------------------|
| Operating / Release time | typ. | 7ms / 3ms |
| Electrical life | Resistive AC1 | > 0.7 x 10 ⁵ 16A, 250VAC |
| | cosφ | See figure 2 |
| | DC L/R=40 ms | > 10 ⁵ 0.15 A, 220VDC |
| Mechanical life | ops. | > 3 x 10 ⁷ |

Environmental

| | | |
|--------------------------------|------------------|----------------------------------|
| Environmental protection | RTII IEC 61810-7 | |
| Cover protection | IP40 or IP67 | |
| Solder bath temperature / time | max. | 270°C / 5s |
| Ambient temperature | operating | AC -40 to +70°C, DC -40 to +85°C |
| | storage | -40 to +85°C |
| Shock resistance | 30g | |
| Vibration resistance | 10g 10...150 Hz | |
| Dimensions | L x W x H | 29 x 12.7 x 15.7mm |
| Weight | approx. | 14g |

Ordering Code

D M 8 5 - 2 0 1 1 - 3 5 - 1 0 2 4

Series

Contact material

20: AgNi
30: AgSnO₂
50: Solid AgSnO₂*
* SPST-NO only

Contact arrangement

11: SPDT (1C/O)
21: SPST-NO (1NO)

Environmental protection

2: In cover, IP40
3: In cover, IP67 (waterproof)

Mounting & terminations

5: For PCB and sockets

Coil code:

See table
1 & 2

DC Coil Data

Table 1

| Coil code | Rated voltage (VDC) | Coil resistance $\Omega \pm 10\%$ (at 20°C) | Coil operating voltage range (VDC@ 20°C) | |
|-------------|---------------------|---|--|-------------|
| | | | min. | max. |
| 1003 | 3 | 22 | 2.1 | 7.6 |
| 1005 | 5 | 60 | 3.5 | 12.7 |
| 1006 | 6 | 90 | 4.2 | 15.3 |
| 1009 | 9 | 200 | 6.3 | 22.9 |
| 1012 | 12 | 360 | 8.4 | 30.6 |
| 1018 | 18 | 710 | 12.6 | 45.9 |
| 1024 | 24 | 1440 | 16.8 | 61.2 |
| 1036 | 36 | 3140 | 25.2 | 91.8 |
| 1048 | 48 | 5700 | 33.6 | 122.4 |
| 1060 | 60 | 7500 | 42.0 | 153.0 |
| 1110 | 110 | 25200 | 77.0 | 280.0 |

Standard coil rated voltages marked with bold type

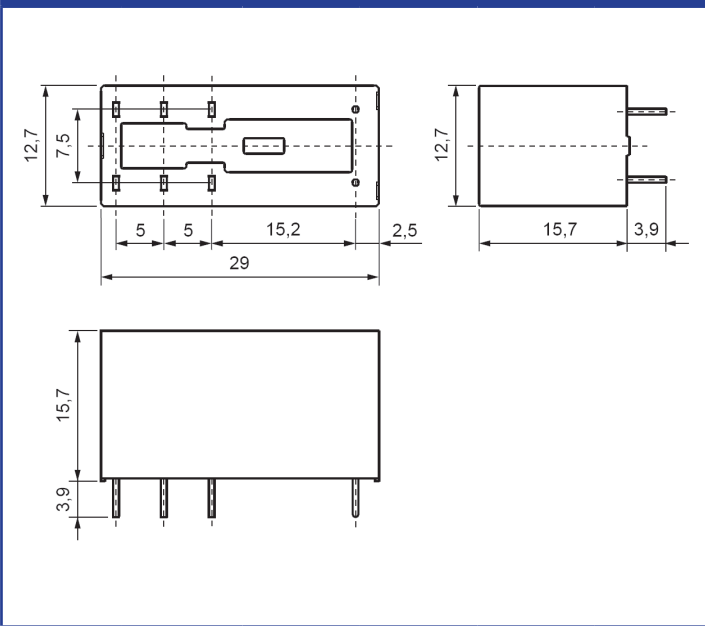
AC Coil Data - 50/60Hz

Table 2

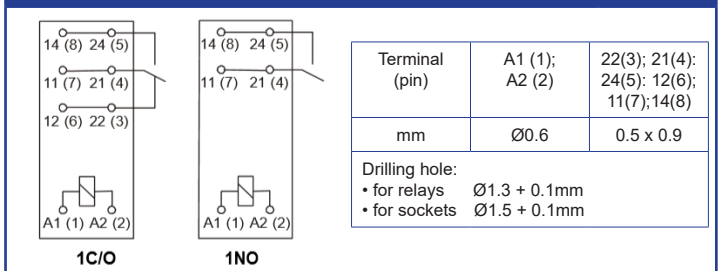
| Coil code | Rated voltage (VAC) | Coil resistance $\Omega \pm 10\%$ (at 0°C) | Coil operating voltage range (VAC@ 20°C) | |
|-------------|---------------------|--|--|--------------|
| | | | min. | max. |
| 5012 | 12 | 100 | 9.6 | 13.2 |
| 5024 | 24 | 400 | 19.2 | 28.8 |
| 5048 | 48 | 1550 | 38.4 | 57.6 |
| 5060 | 60 | 2600 | 48.0 | 72.0 |
| 5110 | 110 | 8900 | 88.0 | 132.0 |
| 5115 | 115 | 9600 | 92.0 | 138.0 |
| 5120 | 120 | 10200 | 96.0 | 144.0 |
| 5220 | 220 | 35500 | 176.0 | 264.0 |
| 5230 | 230 | 38500 | 184.0 | 276.0 |
| 5240 | 240 | 42500 $\pm 15\%$ | 192.0 | 288.0 |

Standard coil rated voltages marked with bold type

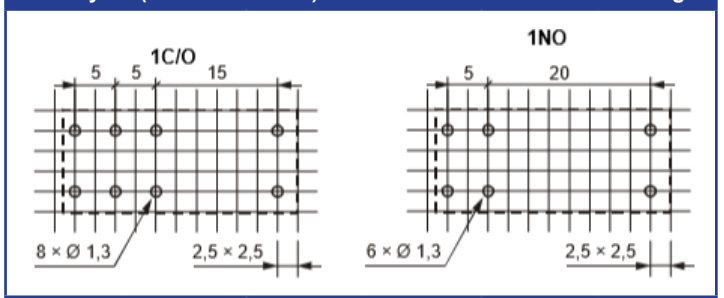
Dimensions mm

Fig. 1


Connection Diagrams (pin side view)

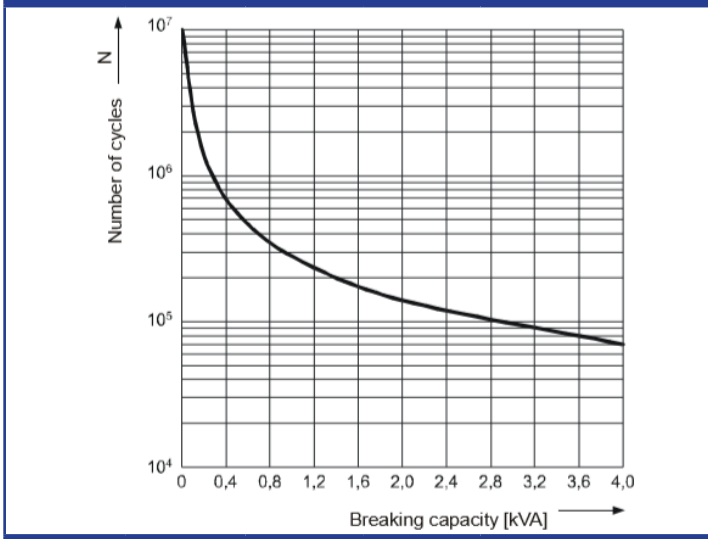
Fig. 2


PCB Layout (solder side view)

Fig. 3


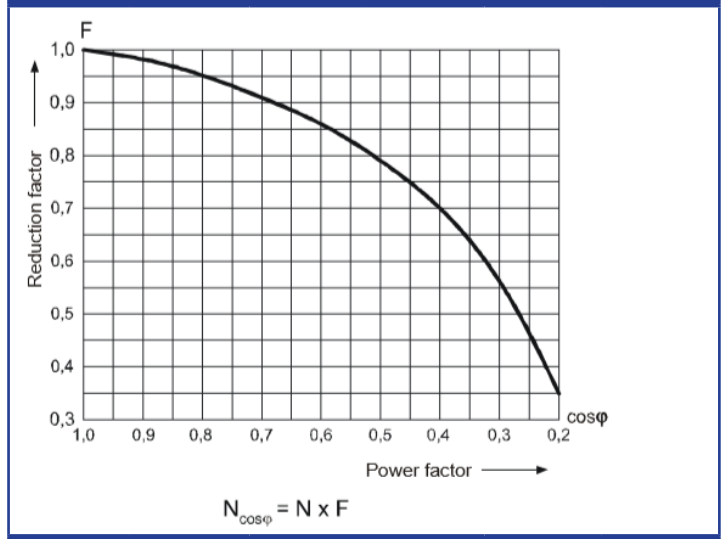
Electrical life at AC resistive load.
Switching frequency: 600 Cycles per hour

Fig. 4



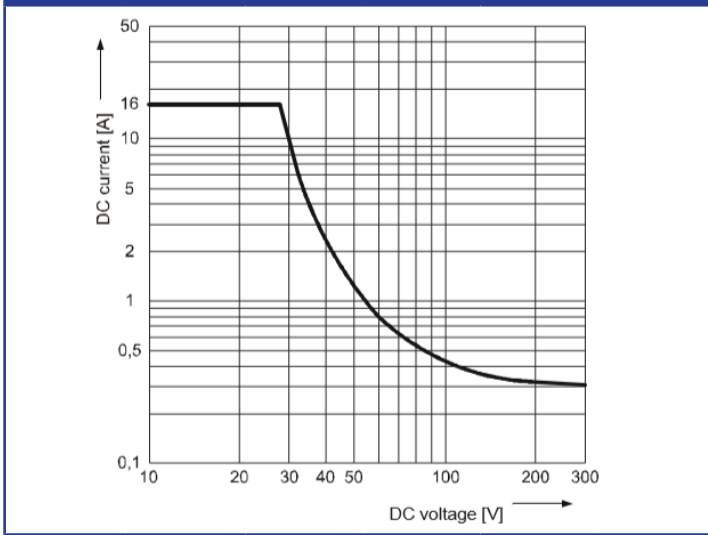
Electrical life reduction factor at AC inductive load

Fig. 5



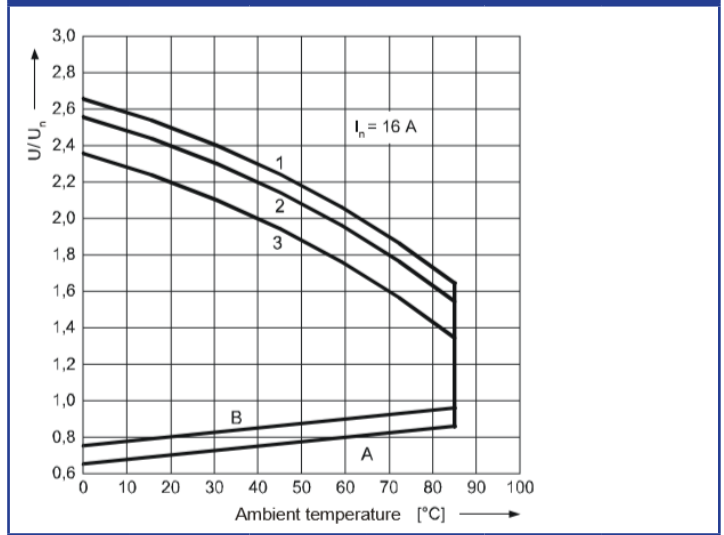
Max. DC resistive load breaking capacity

Fig. 6



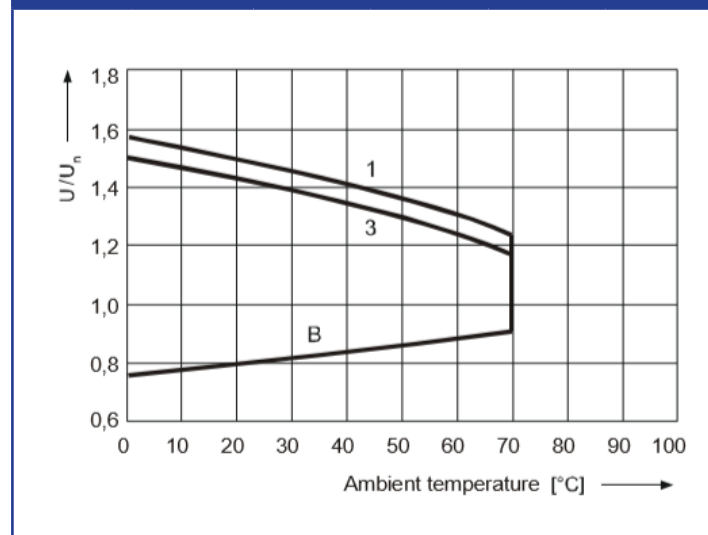
Coil operating range DC

Fig. 7



Coil operating range AC 50Hz

Fig. 8



Relay mounting

Relays DM85 are designed for:

- Direct PCB mounting by soldering
- DIN Rail, or panel mounting, screw terminal plug-in sockets, D14F-2Z-C* with clip JH-15PS. LED indicator & protecting modules DM***-BK are available for D14F-2Z-C* sockets
- Plug-in sockets for PCB mounting D14F-2Z-A1 or D14F-2Z-A2 with clip JH-15PS

When using the DM85 in a socket, with a load current above 8A, the socket terminals must be connected in parallel. Refer to Connection Diagram (Fig.2).

Description of Fig. 7 and 8

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

B - relations between make voltage and ambient temperature after initial coil heating up with 1.1 Un, at continuous load of I on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:

- 1 - no load
- 2 - 50% of rated load
- 3 - rated load