

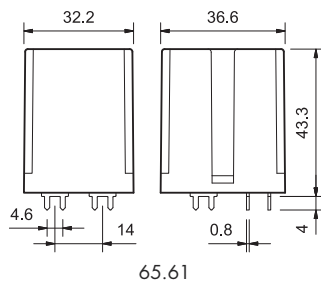
## Features

20 A Power relays  
1 NO + 1 NC (SPST-NO + SPST-NC)

65.31 Flange mount  
Faston 250 connections

65.61 PCB mount

- AC coils & DC coils
- Cadmium Free option available



\* With the  $\text{AgSnO}_2$  material the maximum peak current is 120 A - 5 ms on NO contact.

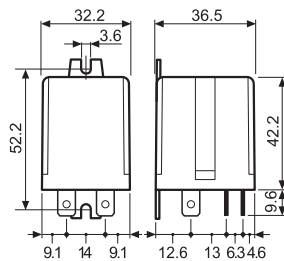
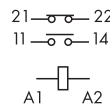
FOR UL RATINGS SEE:

"General technical information" page V

65.31



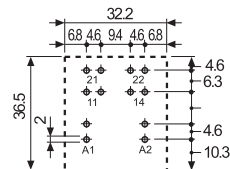
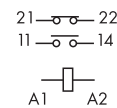
- 20 A rated contacts
- Flange mount/Faston 250 (6.3x0.8 mm) connection



65.61



- 20 A rated contacts
- PCB mount - bifurcated terminals



Copper side view

| Contact specification                                 |                 | 65.31                                               | 65.61                                               |
|-------------------------------------------------------|-----------------|-----------------------------------------------------|-----------------------------------------------------|
| Contact configuration                                 |                 | 1NO+1NC (SPST-NO+SPST-NC)                           | 1NO+1NC (SPST-NO+SPST-NC)                           |
| Rated current/Maximum peak current                    | A               | 20/40*                                              | 20/40*                                              |
| Rated voltage/Maximum switching voltage V AC          |                 | 250/400                                             | 250/400                                             |
| Rated load AC1                                        | VA              | 5,000                                               | 5,000                                               |
| Rated load AC15 (230 V AC)                            | VA              | 1,000                                               | 1,000                                               |
| Single phase motor rating (230 V AC)                  | kW              | 1.1                                                 | 1.1                                                 |
| Breaking capacity DC1: 30/110/220 V                   | A               | 20/0.8/0.5                                          | 20/0.8/0.5                                          |
| Minimum switching load                                | mW (V/mA)       | 1,000 (10/10)                                       | 1,000 (10/10)                                       |
| Standard contact material                             |                 | AgCdO                                               | AgCdO                                               |
| Coil specification                                    |                 | 65.31                                               | 65.61                                               |
| Nominal voltage ( $U_N$ )                             | V AC (50/60 Hz) | 6 - 12 - 24 - 48 - 60 - 110 - 120 - 230 - 240 - 400 | 6 - 12 - 24 - 48 - 60 - 110 - 120 - 230 - 240 - 400 |
|                                                       | V DC            | 6 - 12 - 24 - 48 - 60 - 110 - 125 - 220             | 6 - 12 - 24 - 48 - 60 - 110 - 125 - 220             |
| Rated power AC/DC                                     | VA (50 Hz)/W    | 2.2/1.3                                             | 2.2/1.3                                             |
| Operating range                                       | AC              | $(0.8 \dots 1.1)U_N$                                | $(0.8 \dots 1.1)U_N$                                |
|                                                       | DC              | $(0.85 \dots 1.1)U_N$                               | $(0.85 \dots 1.1)U_N$                               |
| Holding voltage                                       | AC/DC           | $0.8 U_N / 0.6 U_N$                                 | $0.8 U_N / 0.6 U_N$                                 |
| Must drop-out voltage                                 | AC/DC           | $0.2 U_N / 0.1 U_N$                                 | $0.2 U_N / 0.1 U_N$                                 |
| Technical data                                        |                 | 65.31                                               | 65.61                                               |
| Mechanical life AC/DC                                 | cycles          | $10 \cdot 10^6 / 30 \cdot 10^6$                     | $10 \cdot 10^6 / 30 \cdot 10^6$                     |
| Electrical life at rated load AC1                     | cycles          | $80 \cdot 10^3$                                     | $80 \cdot 10^3$                                     |
| Operate/release time                                  | ms              | 10/12                                               | 10/12                                               |
| Insulation between coil and contacts (1.2/50 $\mu$ s) | kV              | 4                                                   | 4                                                   |
| Dielectric strength between open contacts             | V AC            | 1,500                                               | 1,500                                               |
| Ambient temperature range                             | $^{\circ}$ C    | -40...+75                                           | -40...+75                                           |
| Environmental protection                              |                 | RT I                                                | RT I                                                |
| Approvals (according to type)                         |                 | CE, SB, PG, M, CULUS, VDE                           | CE, SB, PG, M, CULUS, VDE                           |

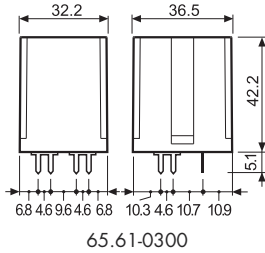
## Features

30 A Power relays  
1 NO (SPST-NO)

65.31-0300 Flange mount  
Faston 250 connections

65.61-0300 PCB mount

- $\geq 3$  mm contact gap
- AC coils & DC coils
- Cadmium Free option available



65.61-0300

\* Distance between contacts  $\geq 3$  mm (EN 60335-1).

\*\* With the  $\text{AgSnO}_2$  material the maximum peak current is 120 A - 5 ms on NO contact.

FOR UL RATINGS SEE:

"General technical information" page V

### 65.31-0300

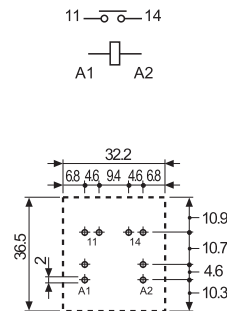
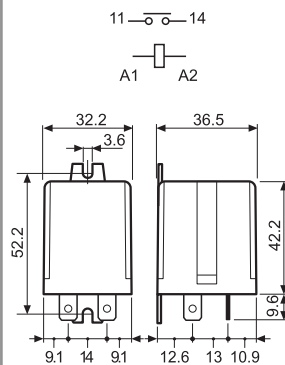


- 30 A rated contacts
- Flange mount/Faston 250 (6.3x0.8 mm) connection

### 65.61-0300



- 30 A rated contacts
- PCB mount - bifurcated terminals



Copper side view

| Contact specification                                 |                 |                                                     |                                 |
|-------------------------------------------------------|-----------------|-----------------------------------------------------|---------------------------------|
| Contact configuration                                 |                 | 1 NO (SPST-NO), $\geq 3$ mm*                        | 1 NO (SPST-NO), $\geq 3$ mm*    |
| Rated current/Maximum peak current                    | A               | 30/50**                                             | 30/50**                         |
| Rated voltage/Maximum switching voltage               | V AC            | 250/400                                             | 250/400                         |
| Rated load AC1                                        | VA              | 7,500                                               | 7,500                           |
| Rated load AC15 (230 V AC)                            | VA              | 1,250                                               | 1,250                           |
| Single phase motor rating (230 V AC)                  | kW              | 1.5                                                 | 1.5                             |
| Breaking capacity DC1: 30/110/220 V                   | A               | 30/1.1/0.7                                          | 30/1.1/0.7                      |
| Minimum switching load                                | mW (V/mA)       | 1,000 (10/10)                                       | 1,000 (10/10)                   |
| Standard contact material                             |                 | AgCdO                                               | AgCdO                           |
| Coil specification                                    |                 |                                                     |                                 |
| Nominal voltage ( $U_N$ )                             | V AC (50/60 Hz) | 6 - 12 - 24 - 48 - 60 - 110 - 120 - 230 - 240 - 400 |                                 |
|                                                       | V DC            | 6 - 12 - 24 - 48 - 60 - 110 - 125 - 220             |                                 |
| Rated power AC/DC                                     | VA (50 Hz)/W    | 2.2/1.3                                             | 2.2/1.3                         |
| Operating range                                       | AC              | $(0.8 \dots 1.1) U_N$                               | $(0.8 \dots 1.1) U_N$           |
|                                                       | DC              | $(0.85 \dots 1.1) U_N$                              | $(0.85 \dots 1.1) U_N$          |
| Holding voltage                                       | AC/DC           | $0.8 U_N / 0.6 U_N$                                 | $0.8 U_N / 0.6 U_N$             |
| Must drop-out voltage                                 | AC/DC           | $0.2 U_N / 0.1 U_N$                                 | $0.2 U_N / 0.1 U_N$             |
| Technical data                                        |                 |                                                     |                                 |
| Mechanical life AC/DC                                 | cycles          | $10 \cdot 10^6 / 30 \cdot 10^6$                     | $10 \cdot 10^6 / 30 \cdot 10^6$ |
| Electrical life at rated load AC1                     | cycles          | $50 \cdot 10^3$                                     | $50 \cdot 10^3$                 |
| Operate/release time                                  | ms              | 15/4                                                | 15/4                            |
| Insulation between coil and contacts (1.2/50 $\mu$ s) | kV              | 4                                                   | 4                               |
| Dielectric strength between open contacts             | V AC            | 2,500                                               | 2,500                           |
| Ambient temperature range                             | $^{\circ}$ C    | -40...+75                                           | -40...+75                       |
| Environmental protection                              |                 | RT I                                                | RT I                            |
| Approvals (according to type)                         |                 |                                                     |                                 |

## Ordering information

Example: 65 series power relay, PCB with bifurcated terminals, 1 NO + 1 NC (SPST-NO + SPST-NC) contact, 12 V DC coil.

|          |          |          |                                                       |          |          |          |          |          |          |          |          |                                        |          |                                             |          |
|----------|----------|----------|-------------------------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------------------------------------|----------|---------------------------------------------|----------|
| <b>6</b> | <b>5</b> | <b>.</b> | <b>6</b>                                              | <b>1</b> | <b>.</b> | <b>9</b> | <b>.</b> | <b>0</b> | <b>1</b> | <b>2</b> | <b>.</b> | <b>A</b>                               | <b>B</b> | <b>C</b>                                    | <b>D</b> |
|          |          |          | <b>Series</b>                                         |          |          |          |          |          |          |          |          | <b>A: Contact material</b>             |          | <b>D: Special versions</b>                  |          |
|          |          |          | <b>Type</b>                                           |          |          |          |          |          |          |          |          | 0 = Standard AgCdO                     |          | 0 = Standard                                |          |
|          |          |          | 3 = Faston 250 (6.3x0.8 mm)<br>with rear flange mount |          |          |          |          |          |          |          |          | 4 = AgSnO <sub>2</sub>                 |          | 9 = Type 65.31 without rear flange<br>mount |          |
|          |          |          | <b>No. of poles</b>                                   |          |          |          |          |          |          |          |          | 0 = 1 NO + 1 NC<br>(SPST-NO + SPST-NC) |          | <b>C: Options</b>                           |          |
|          |          |          | 1 = 1 NO + 1 NC (SPST-NO + SPST-NC)                   |          |          |          |          |          |          |          |          | 3 = NO (≥ 3 mm contact gap)            |          | 0 = None                                    |          |
|          |          |          | <b>Coil version</b>                                   |          |          |          |          |          |          |          |          |                                        |          |                                             |          |
|          |          |          | 8 = AC (50/60 Hz)                                     |          |          |          |          |          |          |          |          |                                        |          |                                             |          |
|          |          |          | 9 = DC                                                |          |          |          |          |          |          |          |          |                                        |          |                                             |          |
|          |          |          | <b>Coil voltage</b>                                   |          |          |          |          |          |          |          |          |                                        |          |                                             |          |
|          |          |          | See coil specifications                               |          |          |          |          |          |          |          |          |                                        |          |                                             |          |

**Selecting features and options: only combinations in the same row are possible.**  
Preferred selections for best availability are shown in **bold**.

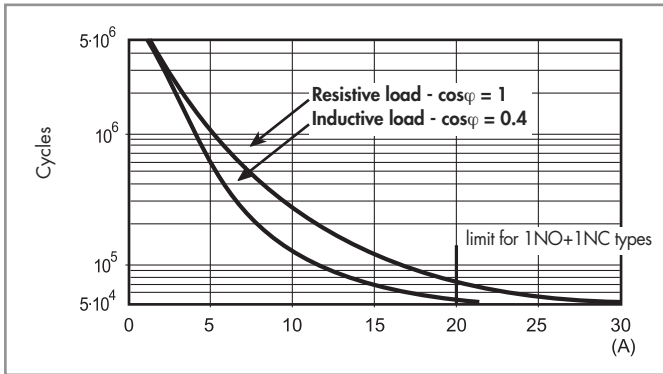
| Type  | Coil version | A            | B            | C        | D            |
|-------|--------------|--------------|--------------|----------|--------------|
| 65.31 | AC-DC        | <b>0</b> - 4 | <b>0</b> - 3 | <b>0</b> | <b>0</b> - 9 |
| 65.61 | AC-DC        | <b>0</b> - 4 | <b>0</b> - 3 | <b>0</b> | <b>0</b>     |

## Technical data

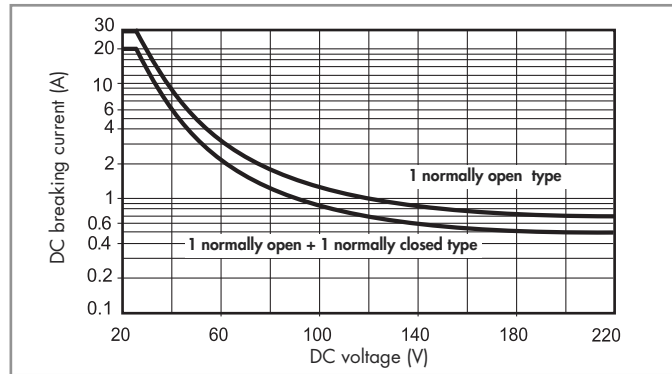
| Insulation according to EN 61810-1                 |                         | 1 NO + 1 NC                               |                    | 1 NO                |                      |
|----------------------------------------------------|-------------------------|-------------------------------------------|--------------------|---------------------|----------------------|
| Nominal voltage supply system                      | V AC                    | 230/400                                   |                    | 230/400             |                      |
| Rated insulation voltage                           | V AC                    | 250                                       | 400                | 250                 | 400                  |
| Pollution degree                                   |                         | 3                                         | 2                  | 3                   | 2                    |
| <b>Insulation between coil and contact set</b>     |                         |                                           |                    |                     |                      |
| Type of insulation                                 |                         | Basic                                     |                    | Basic               |                      |
| Overtoltage category                               |                         | III                                       |                    | III                 |                      |
| Rated impulse voltage                              | kV (1.2/50 μs)          | 4                                         |                    | 4                   |                      |
| Dielectric strength                                | V AC                    | 2,500                                     |                    | 2,500               |                      |
| <b>Insulation between open contacts</b>            |                         |                                           |                    |                     |                      |
| Type of disconnection                              |                         | Micro-disconnection                       |                    | Full-disconnection  |                      |
| Overtoltage category                               |                         | —                                         |                    | III                 |                      |
| Rated impulse voltage                              | kV (1.2/50 μs)          | —                                         |                    | 4                   |                      |
| Dielectric strength                                | V AC/kV (1.2/50 μs)     | 1,500/2                                   |                    | 2,500/4             |                      |
| <b>Conducted disturbance immunity</b>              |                         |                                           |                    |                     |                      |
| Burst (5...50)ns, 5 kHz, on A1 - A2                |                         | EN 61000-4-4                              |                    | level 4 (4 kV)      |                      |
| Surge (1.2/50 μs) on A1 - A2 (differential mode)   |                         | EN 61000-4-5                              |                    | level 4 (4 kV)      |                      |
| <b>Other data</b>                                  |                         |                                           |                    |                     |                      |
| Bounce time: NO/NC                                 | ms                      | 5/6 (1 normally open + 1 normally closed) |                    | 7/— (normally open) |                      |
| Vibration resistance (10...150)Hz: NO/NC           | g                       | 20/13                                     |                    |                     |                      |
| Shock resistance                                   | g                       | 20                                        |                    |                     |                      |
| Power lost to the environment                      | without contact current | W                                         | 1.3                |                     |                      |
|                                                    | with rated current      | W                                         | 2.1 (65.31, 65.61) |                     | 3.1 (65.31/.61.0300) |
| Recommended distance between relays mounted on PCB | mm                      | ≥ 5                                       |                    |                     |                      |

## Contact specification

F 65 - Electrical life (AC) v contact current



H 65 - Maximum DC1 breaking capacity



- When switching a resistive load (DC1) having voltage and current values under the curve, an electrical life of  $\geq 80 \cdot 10^3$  can be expected.
- In the case of DC13 loads, the connection of a diode in parallel with the load will permit a similar electrical life as for a DC1 load.  
Note: the release time for the load will be increased.

## Coil specifications

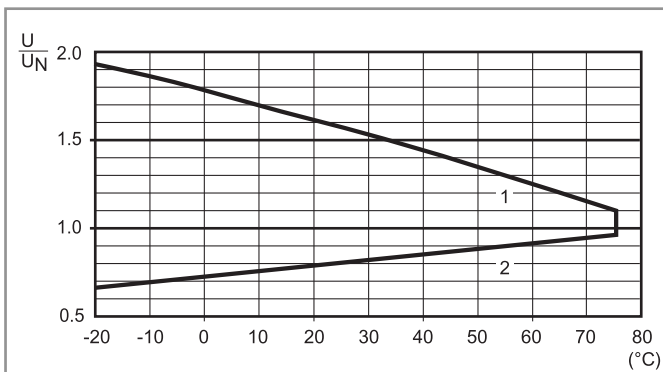
DC coil data

| Nominal voltage<br>$U_N$<br>V | Coil code | Operating range |                | Resistance<br>R<br>$\Omega$ | Rated coil consumption<br>I at $U_N$<br>mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|--------------------------------------------|
|                               |           | $U_{min}$<br>V  | $U_{max}$<br>V |                             |                                            |
| 6                             | 9.006     | 5.1             | 6.6            | 28                          | 214                                        |
| 12                            | 9.012     | 10.2            | 13.2           | 110                         | 109                                        |
| 24                            | 9.024     | 20.4            | 26.4           | 445                         | 54                                         |
| 48                            | 9.048     | 40.8            | 52.8           | 1,770                       | 27.1                                       |
| 60                            | 9.060     | 51              | 66             | 2,760                       | 21.7                                       |
| 110                           | 9.110     | 93.5            | 121            | 9,420                       | 11.7                                       |
| 125                           | 9.125     | 106             | 138            | 12,000                      | 10.4                                       |
| 220                           | 9.220     | 187             | 242            | 37,300                      | 5.8                                        |

AC coil data

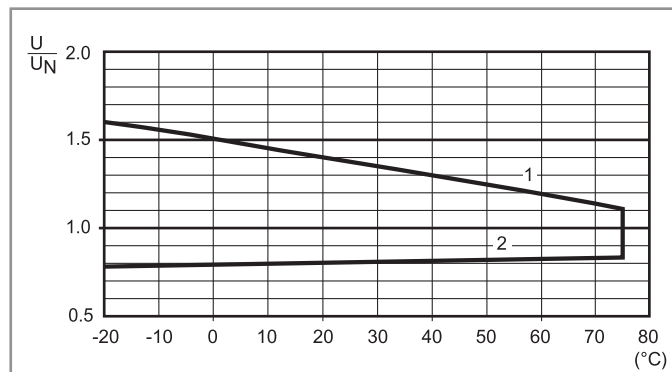
| Nominal voltage<br>$U_N$<br>V | Coil code | Operating range |                | Resistance<br>R<br>$\Omega$ | Rated coil consumption<br>I at $U_N$ (50Hz)<br>mA |
|-------------------------------|-----------|-----------------|----------------|-----------------------------|---------------------------------------------------|
|                               |           | $U_{min}$<br>V  | $U_{max}$<br>V |                             |                                                   |
| 6                             | 8.006     | 4.8             | 6.6            | 4.6                         | 367                                               |
| 12                            | 8.012     | 9.6             | 13.2           | 19                          | 183                                               |
| 24                            | 8.024     | 19.2            | 26.4           | 74                          | 90                                                |
| 48                            | 8.048     | 38.4            | 52.8           | 290                         | 47                                                |
| 60                            | 8.060     | 48              | 66             | 450                         | 37                                                |
| 110                           | 8.110     | 88              | 121            | 1,600                       | 20                                                |
| 120                           | 8.120     | 96              | 132            | 1,940                       | 18.6                                              |
| 230                           | 8.230     | 184             | 253            | 7,250                       | 10.5                                              |
| 240                           | 8.240     | 192             | 264            | 8,500                       | 9.2                                               |
| 400                           | 8.400     | 320             | 440            | 19,800                      | 6                                                 |

R 65 - DC coil operating range v ambient temperature



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

R 65 - AC coil operating range v ambient temperature



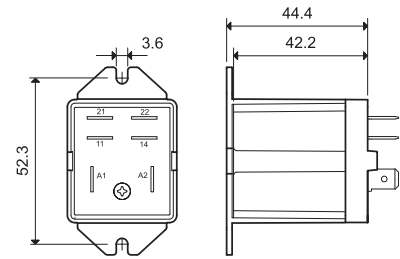
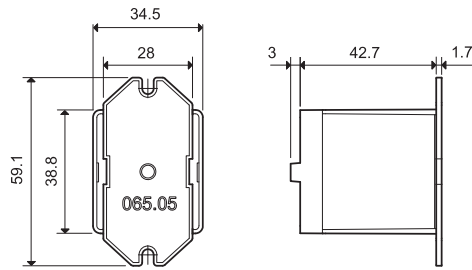
- 1 - Max. permitted coil voltage.
- 2 - Min. pick-up voltage with coil at ambient temperature.

## Accessories



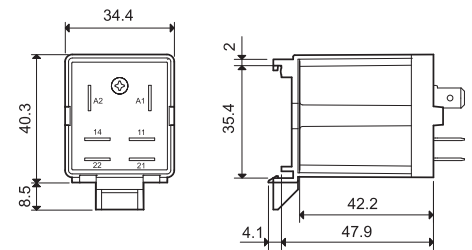
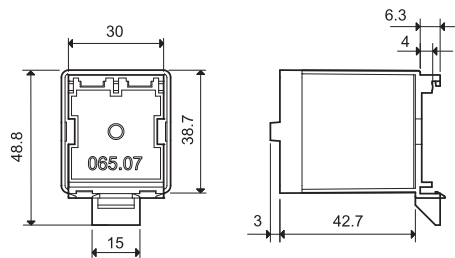
### Top flange mount for types 65.31.xxxx.xxx9

065.05



### Top 35 mm rail (EN 60715) mount for types 65.31.xxxx.xxx9

065.07



### Rear 35 mm rail (EN 60715) mount for types 65.31.xxxx.xxx9

065.08

