

- According to DIN EN 61810-1, DIN EN 61810-3 (Type A)
- With forcibly guided contacts
- High switching reliability due to crown contacts
- Clearance and creepage distances:
Contact - coil ≥ 8 mm
Contact - contact ≥ 5.5 mm
- **Double and reinforced insulation with pollution degree 2**
- Overvoltage category: III
- High voltage resistance ≥ 4 kV
- High mechanical service life
- High temperature range
at OA 5601 and OA 5602: $-40 \dots +85$ °C
at OA 5603: $-40 \dots +75$ °C
- High continuous thermal current $I_{th} = 16$ A
- High voltage range $0.7 \dots 1.6 U_N$
- As option wash proof RT III

Applications

- To be used in circuits for safety applications
- Escalators and walkways
- Elevators for men and load
- Railway technology
- Medical technology

Approvals and Markings



Technical Data

| Relay type | OA 5601 | OA 5602 | OA 5603 |
|--|--|--|--|
| 1.0 Coil | | | |
| 1.1 Nominal voltage | DC 6, 12, 24, 48, 60, 110 V (others on request) | | |
| 1.2 Nominal consumption | 0.75 W | 1 W | 1.25 W ¹⁾ |
| 1.11 Voltage range | 0.7 ... 1.6 U _N | 0.7 ... 1.6 U _N | 0.7 ... 1.6 U _N |
| 1.3 Holding power (at 0.5 x U _N) | 0.19 W | 0.25 W | 0.32 W |
| 2.0 Contacts | | | |
| 2.1 Contact arrangement (Type A) | 3 NO / 1 NC 2 NO / 2 NC | 5 NO / 1 NC 4 NO / 2 NC 3 NO / 3 NC 2 NO / 4 NC | 7 NO / 1 NC 6 NO / 2 NC 5 NO / 3 NC 4 NO / 4 NC 3 NO / 5 NC 2 NO / 6 NC |
| 2.2 Contact material | AgSnO ₂ + 0.2 µm Au; AgNi + 0.2 µm Au, AgNi + 5 µm Au | | |
| 2.3 Rated insulation voltage | AC 250 V | | |
| Switching voltage min./max. | AC/DC 10 V / DC 250 V, AC 400 V (AC/DC 2 V / AC/DC 60 V) ²⁾ | | |
| 2.4 Limiting continuous current I _{th} max. (TÜV) ⁷⁾ | 3 x 16 A 3 x 10 A | 4 x 16 A 5 x 10 A | 4 x 16 A 7 x 10 A |
| Switching current min./max. | 10 mA ⁴⁾ / 16 A; (2 mA / 0.3 A) ²⁾ | | |
| 2.5 Switching power min./max. | 0.1 VA / 4000 VA; (10 mVA / 12 VA) ²⁾ | | |
| Switching power min./max. | 0.1 ⁴⁾ ... 400 W (10 mW / 12 W) ²⁾ (see limit curve for arc-free operation) | | |
| 2.6 Switching capacity to IEC/EN 60947-5-1 | | | |
| AC 15 ⁵⁾ | | NO: AC 250 V / 3 A NO: AC 250 V / 5 A | NC: AC 250 V / 2 A NC: AC 250 V / 2 A |
| AC 15 ⁶⁾ | | NO: DC 24 V / 2 A NO: DC 24 V / 6 A | NC: DC 24 V / 2 A NC: DC 24 V / 6 A |
| DC 13 ⁵⁾ | | A300 | |
| DC 13 ⁵⁾ at 0.1 Hz to UL 508 | | At 1 s ON, 1 s OFF (see contacts service life) | |
| 2.7 Electrical life | > 7 x 10 ⁵ switching cycles, AgSnO ₂ / > 5 x 10 ⁵ switching cycles, AgNi10 | | |
| at AC 230 V, 6 A, cosφ = 1 | > 5 x 10 ⁵ switching cycles, AgSnO ₂ / > 4 x 10 ⁵ switching cycles, AgNi10 | | |
| at AC 230 V, 10 A, cosφ = 1 | 10 switching cycles / s | | |
| 2.8 Switching frequency max. | Typically 27 ms / Typically 5 ms | | |
| 2.9 Response time / Release time | ≥ 14 cN | | |
| 2.10 Contact force | > 0.5 mm ³⁾ | | |
| 2.14 Contact gap | | | |
| 3.0 Other | | | |
| 3.1 Mechanical life | > 30 x 10 ⁶ switching cycles | | |
| 3.2 Temperature range | - 40 ... + 85 °C | - 40 ... + 85 °C | - 40 ... + 75 °C |
| 3.3 Degree of protection | Solder line proof RT II as option wash proof RT III | | |
| 3.4 Test procedure | A (group mounting) | | |
| 3.5 Vibration resistance | 10 ... < 60 Hz; 0,35 mm Amplitude; (all contacts) EN 60068-2-6 60 ... 200 Hz, ≤ 5g (NO contact) EN 60068-2-6 60 ... 200 Hz, ≤ 1,5g (NC contact) EN 60068-2-6 | | |
| 3.6 Climate resistance | 40 / 085 / 04; A / B / D EN 60068-1 | | |
| 3.7 Short circuit strength 1 kA / AC 250 V | AgSnO ₂ | NO: 16 A gG / gL / NC: 10 A gG / gL | EN 60947-5-1 |
| | AgNi | NO: 16 A gG / gL / NC: 6 A gG / gL | EN 60947-5-1 |

¹⁾ For OA 5603.46 (2 NO / 6 NC) and OA 5603.56 (3 NO / 5 NC) nominal consumption is 1.65 W

²⁾ Typical values for AgNi10-Contacts + 5 µm Au ³⁾ Over entire service life acc. to DIN EN 61810-3

⁴⁾ Typical values for AgSnO₂ and AgNi

⁵⁾ Values for AgNi-Contacts ⁶⁾ Values for AgSnO₂-Contacts

⁷⁾ See operating voltage limit curve

Technical Data

| | | | | |
|--------------------------|--|--------------|--|--------------|
| 3.8 | Insulation acc. to IEC 60664-1, EN 50178 | | | |
| | Rated insulation voltage | | AC 250 V | |
| | Pollution degree | | 3 / 2 (double and reinforced insulation) | |
| | Overvoltage category | | III | |
| | Test voltage | | | |
| | Contact- Coil (1 min) | | ≥ AC 4 kV eff. | |
| | Contact-Contact (1min) | | ≥ AC 4 kV eff. | |
| | Contact open (1 min) | | ≥ AC 1.5 kV eff. | |
| | Transient voltage | | | |
| | Contact- Coil (1,2 - 50 μs) | | ≥ 6 kV | |
| | Clearance and creepage distances | | | |
| | Contact- Coil | | ≥ 8 mm | |
| | Contact-Contact | | ≥ 5.5 mm | |
| 3.9 | Weight | Approx. 78 g | Approx. 85 g | Approx. 95 g |
| 4.0 Packing | | | | |
| 4.1 | On cardboard in slipcase | 20 pieces | 15 pieces | 15 pieces |
| 4.2 | In case package | 100 pieces | 75 pieces | 75 pieces |
| 5.0 Solder method | | | | |
| 5.1 | Solder method /-temperature /-duration | | Wave soldering / 260 °C / 5 s | |

Design versions

| U _N (DCV) | Voltage range (DC V) | OA 5601 | | | | OA 5602 | | | | OA 5603 | | | | | | | |
|-------------------------|----------------------------|----------------------------|----------------------|----------------------|----------------------------|----------------------|----------------------|----------------------|----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------------|----------------------|----------------------|--|
| | | R _{Coil} Ω±10% | .52 2 NO, 2 NC | .48 3 NO, 1 NC | R _{Coil} Ω±10% | .18 3 NO, 3 NC | .50 2 NO, 4 NC | .54 4 NO, 2 NC | R _{Coil} Ω±10% | .63 7 NO, 1 NC | .59 6 NO, 2 NC | .58 5 NO, 3 NC | .57 4 NO, 4 NC | R _{Coil} Ω±10% | .56 3 NO, 5 NC | .46 2 NO, 6 NC | |

AgSnO₂-Contacts + 0.2 μm Au

| | | | | | | | | | | | | | | | | |
|-----|----------------|-------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|
| 6 | 4.2 ... 9.6 | 48 | 2091 | 2121 | 35 | 2001 | 2031 | 2061 | 29 | 2151 | 2181 | 2271 | 2211 | 21 | 2301 | 2241 |
| 12 | 8.4 ... 19.2 | 192 | 2092 | 2122 | 140 | 2002 | 2032 | 2062 | 112 | 2152 | 2182 | 2272 | 2212 | 88 | 2302 | 2242 |
| 24 | 16.8 ... 38.4 | 770 | 2093 | 2123 | 570 | 2003 | 2033 | 2063 | 460 | 2153 | 2183 | 2273 | 2213 | 370 | 2303 | 2243 |
| 48 | 33.6 ... 76.8 | 2880 | 2094 | 2124 | 2300 | 2004 | 2034 | 2064 | 1800 | 2154 | 2184 | 2274 | 2214 | 1400 | 2304 | 2244 |
| 60 | 42.0 ... 96.0 | 4800 | 2095 | 2125 | 3600 | 2005 | 2035 | 2065 | 2880 | 2155 | 2185 | 2275 | 2215 | 2230 | 2305 | 2245 |
| 110 | 77.0 ... 176.0 | 16000 | 2096 | 2126 | 12100 | 2006 | 2036 | 2066 | 9500 | 2156 | 2186 | 2276 | 2216 | 7150 | 2306 | 2246 |

AgNi 10-Contacts + 0.2 μm Au

| | | | | | | | | | | | | | | | | |
|-----|----------------|-------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|
| 6 | 4.2 ... 9.6 | 48 | 2101 | 2131 | 35 | 2011 | 2041 | 2071 | 29 | 2161 | 2191 | 2281 | 2221 | 21 | 2311 | 2251 |
| 12 | 8.4 ... 19.2 | 192 | 2102 | 2132 | 140 | 2012 | 2042 | 2072 | 112 | 2162 | 2192 | 2282 | 2222 | 88 | 2312 | 2252 |
| 24 | 16.8 ... 38.4 | 770 | 2103 | 2133 | 570 | 2013 | 2043 | 2073 | 460 | 2163 | 2193 | 2283 | 2223 | 370 | 2313 | 2253 |
| 48 | 33.6 ... 76.8 | 2880 | 2104 | 2134 | 2300 | 2014 | 2044 | 2074 | 1800 | 2164 | 2194 | 2284 | 2224 | 1400 | 2314 | 2254 |
| 60 | 42.0 ... 96.0 | 4800 | 2105 | 2135 | 3600 | 2015 | 2045 | 2075 | 2880 | 2165 | 2195 | 2285 | 2225 | 2230 | 2315 | 2255 |
| 110 | 77.0 ... 176.0 | 16000 | 2106 | 2136 | 12100 | 2016 | 2046 | 2076 | 9500 | 2166 | 2196 | 2286 | 2226 | 7150 | 2316 | 2256 |

AgNi 10-Contacts + 5 μm Au

| | | | | | | | | | | | | | | | | |
|-----|----------------|-------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|
| 6 | 4.2 ... 9.6 | 48 | 2111 | 2141 | 35 | 2021 | 2051 | 2081 | 29 | 2171 | 2201 | 2291 | 2231 | 21 | 2321 | 2261 |
| 12 | 8.4 ... 19.2 | 192 | 2112 | 2142 | 140 | 2022 | 2052 | 2082 | 112 | 2172 | 2202 | 2292 | 2232 | 88 | 2322 | 2262 |
| 24 | 16.8 ... 38.4 | 770 | 2113 | 2143 | 570 | 2023 | 2053 | 2083 | 460 | 2173 | 2203 | 2293 | 2233 | 370 | 2323 | 2263 |
| 48 | 33.6 ... 76.8 | 2880 | 2114 | 2144 | 2300 | 2024 | 2054 | 2084 | 1800 | 2174 | 2204 | 2294 | 2234 | 1400 | 2324 | 2264 |
| 60 | 42.0 ... 96.0 | 4800 | 2115 | 2145 | 3600 | 2025 | 2055 | 2085 | 2880 | 2175 | 2205 | 2295 | 2235 | 2230 | 2325 | 2265 |
| 110 | 77.0 ... 176.0 | 16000 | 2116 | 2146 | 12100 | 2026 | 2056 | 2086 | 9500 | 2176 | 2206 | 2296 | 2236 | 7150 | 2326 | 2266 |

Ordering Example

OA 5601. ___ / ___ / 61*)

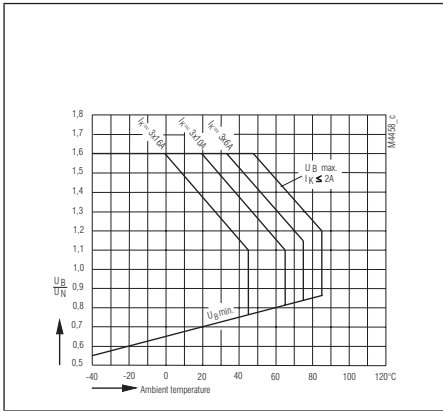
- Variants
 - 1 = Standard
 - 2 = With square nuts M3
- L = Solder line proof RT II
- W = Wash proof RT III
- Design version
- Contact arrangement (Type A)
 - .52 2 NO / 2 NC
 - .48 3 NO / 1 NC

Notes

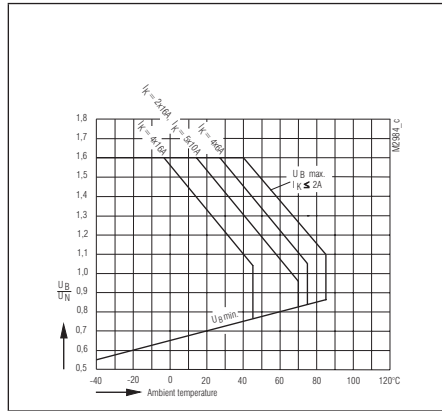
For the use and processing of our PCB relays, please refer to the **application and processing instructions** at www.dold.com

*) / 61 cURus approval

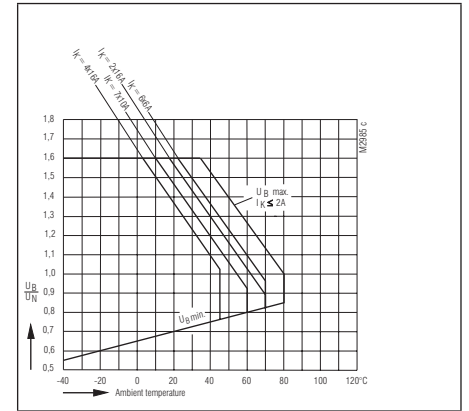
Characteristics



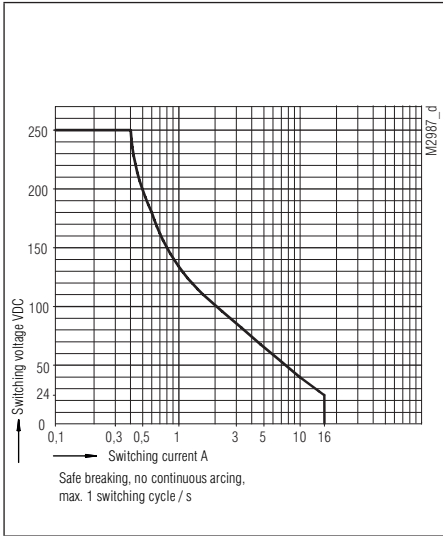
Operating voltage limit curve OA 5601



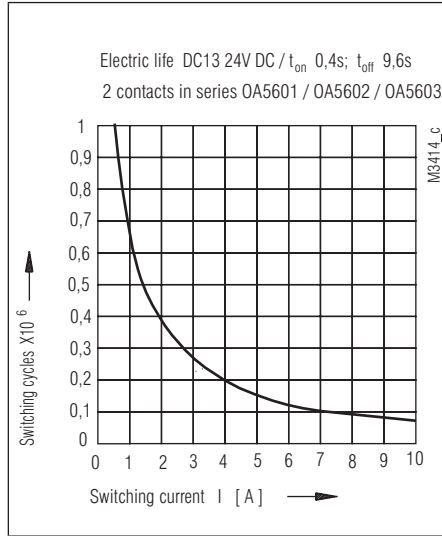
Operating voltage limit curve OA 5602



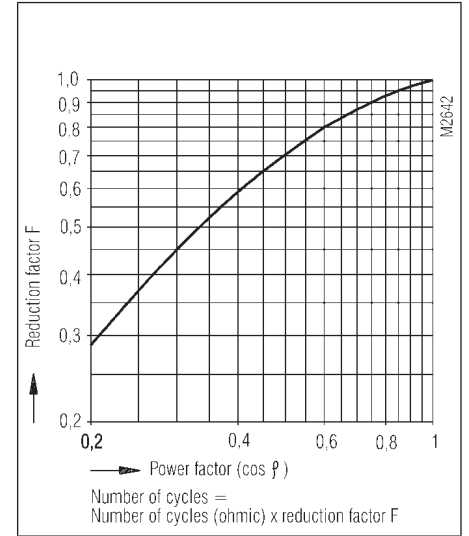
Operating voltage limit curve OA 5603



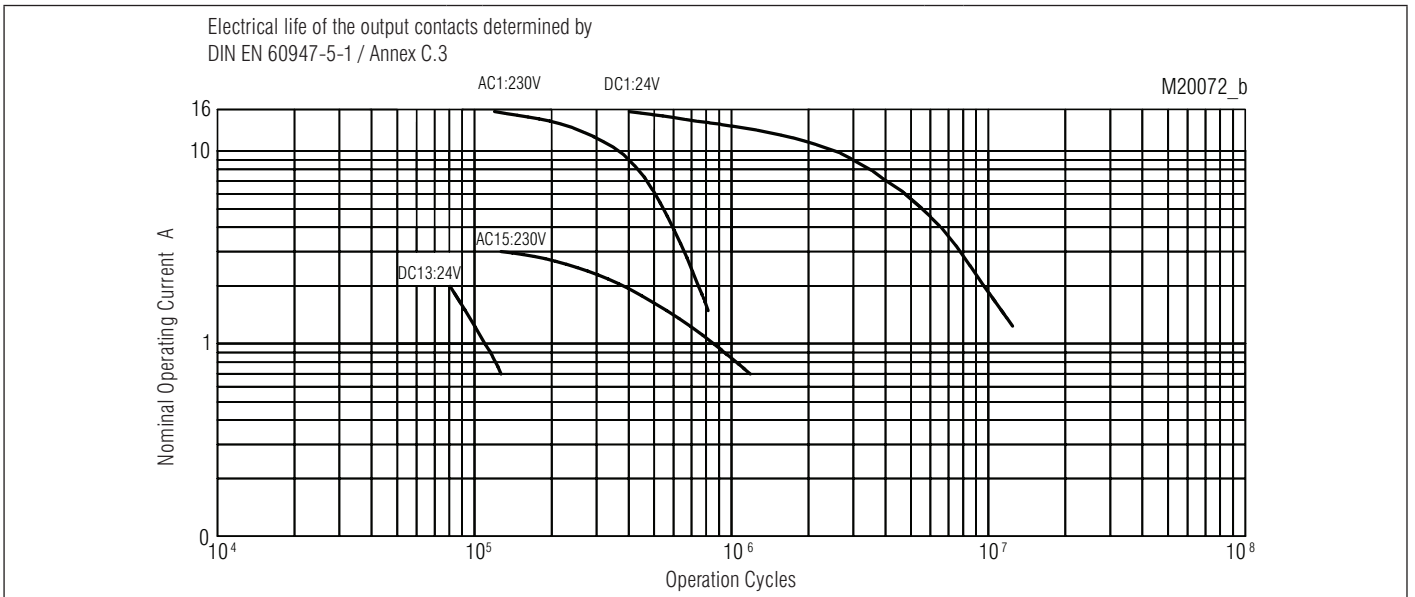
Arc limit curve



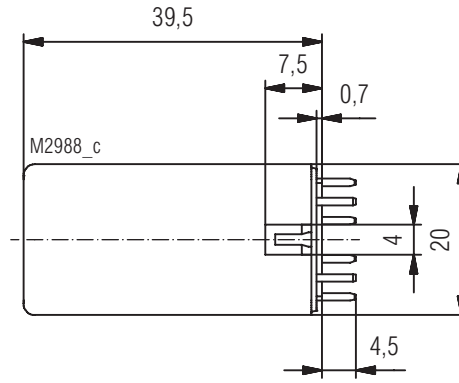
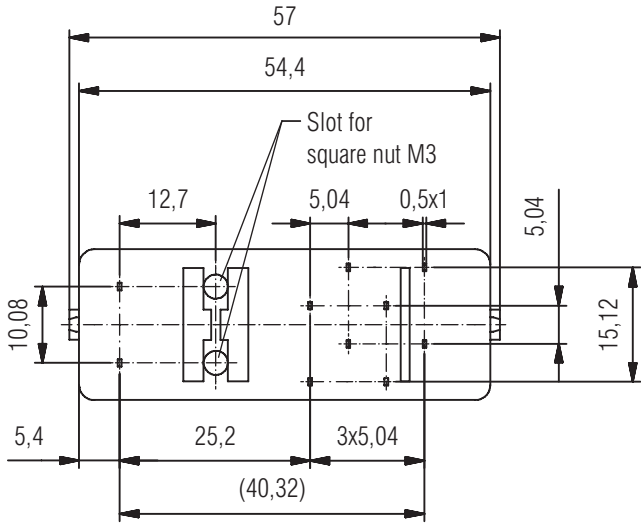
Electrical life



Reduction factor for inductive loads

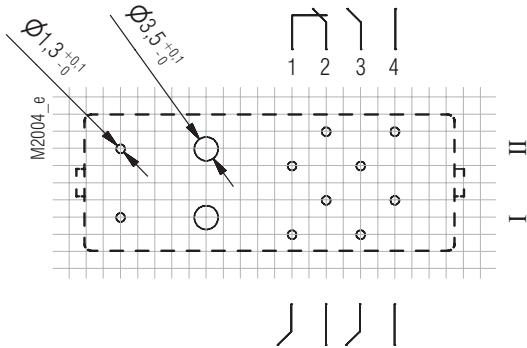


Electrical life for contact material AgNi

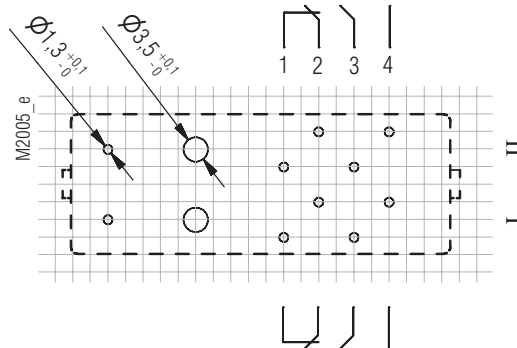


Drilling plan (solder side)

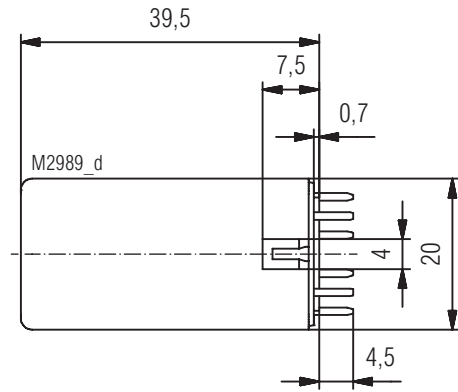
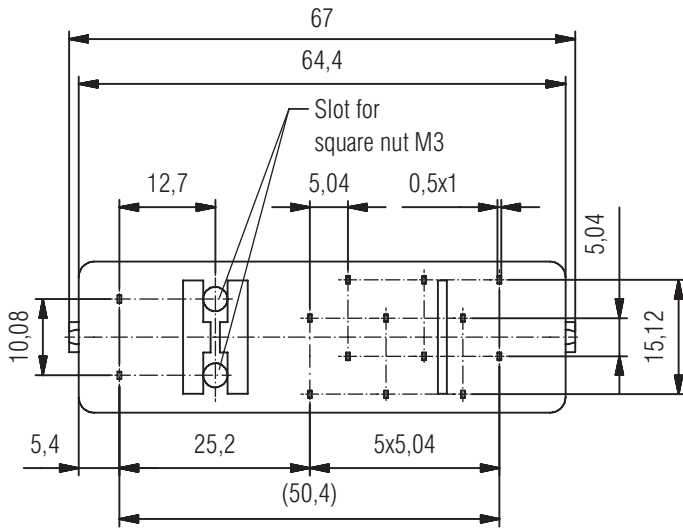
Pin arrangement OA5601.48 3NO/1NC



Pin arrangement OA5601.52 2NO/2NC

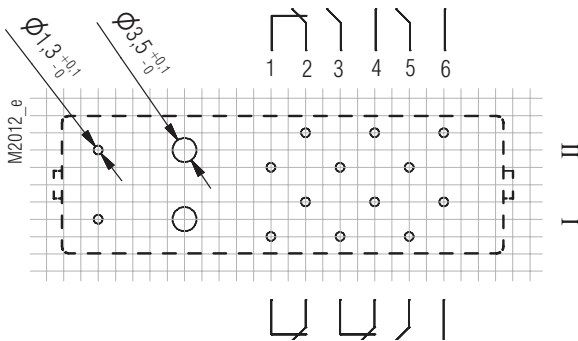


Connection for basic grid divisions 2.5 mm as well as 2.54 mm according to IEC/EN 60097 and IEC 60326 average

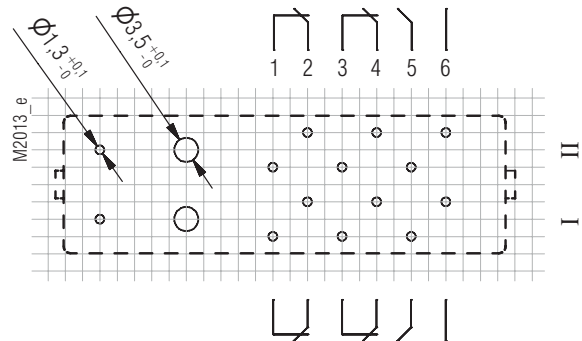


Drilling plan (solder side)

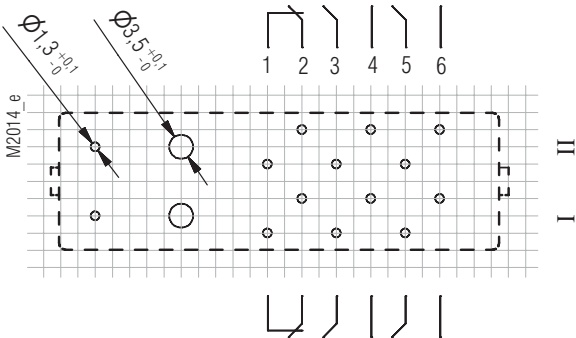
Pin arrangement OA5602.18 3NO/3NC



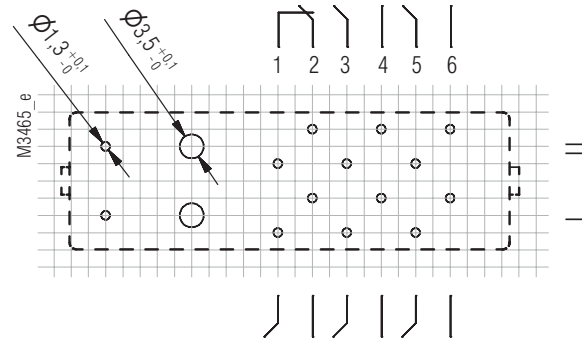
Pin arrangement OA5602.50 2NO/4NC



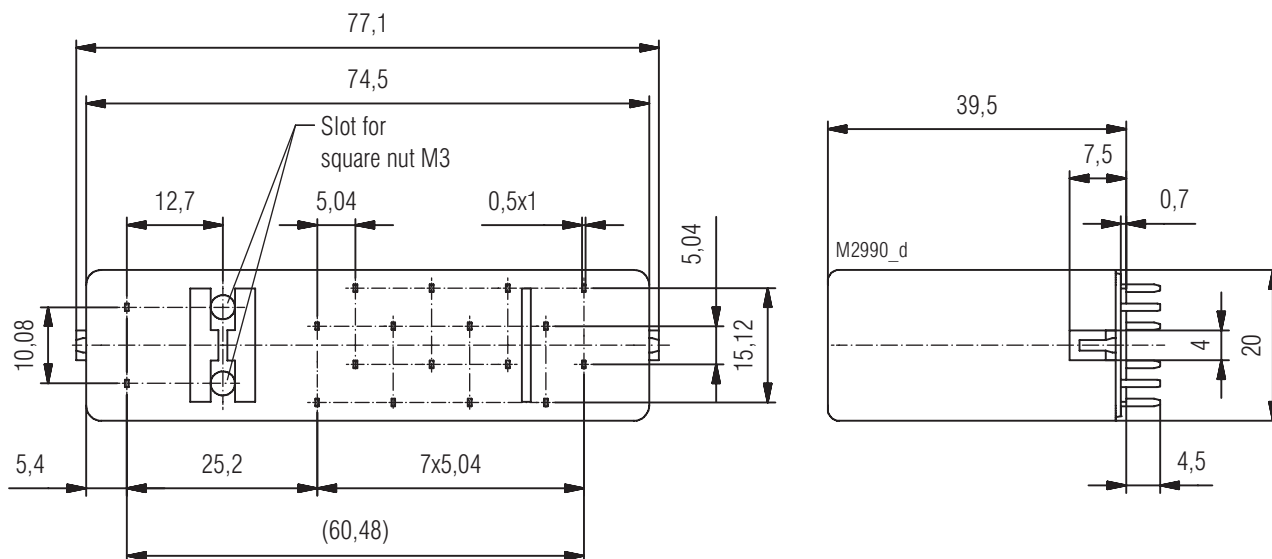
Pin arrangement OA5602.54 4NO/2NC



Pin arrangement OA5602.60 5NO/1NC

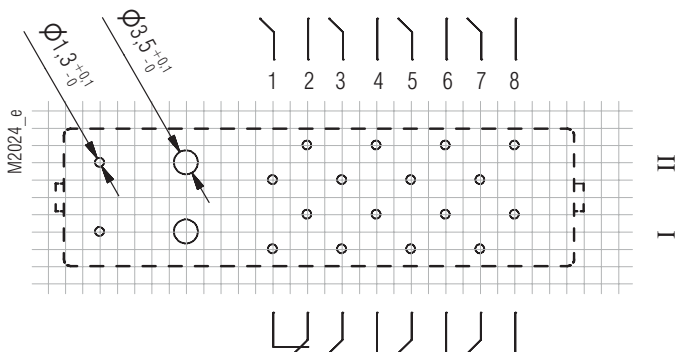


Connection for basic grid dimensions 2.5 mm as well as 2.54 mm according to IEC/EN 60097 and IEC 60326 average

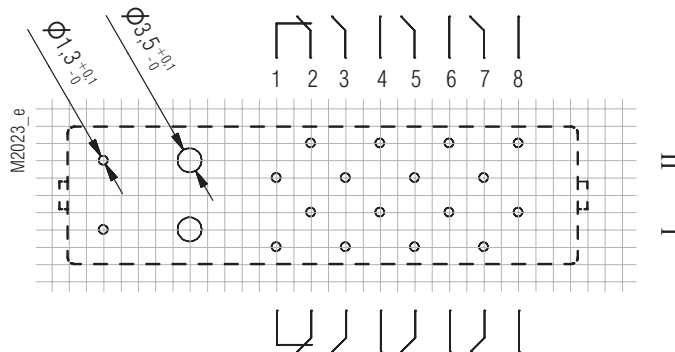


Drilling plan (solder side)

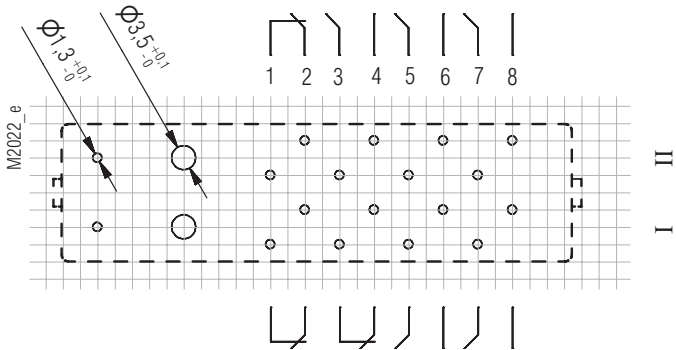
Pin arrangement OA5603.63 7NO/1NC



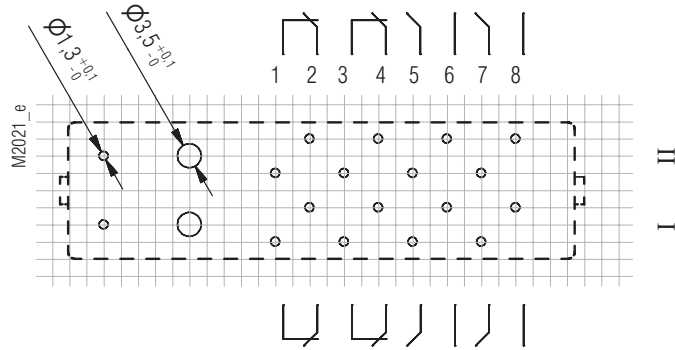
Pin arrangement OA5603.59 6NO/2NC



Pin arrangement OA5603.58 5NO/3NC



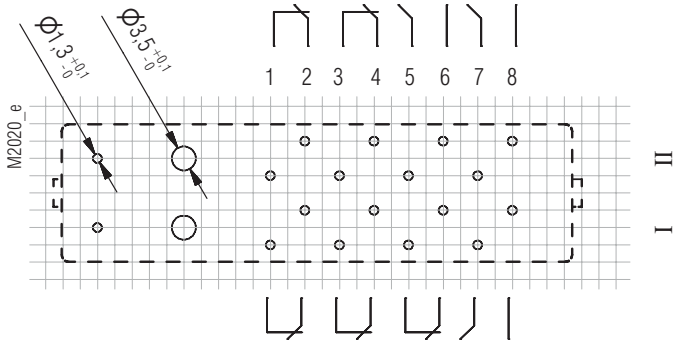
Pin arrangement OA5603.57 4NO/4NC



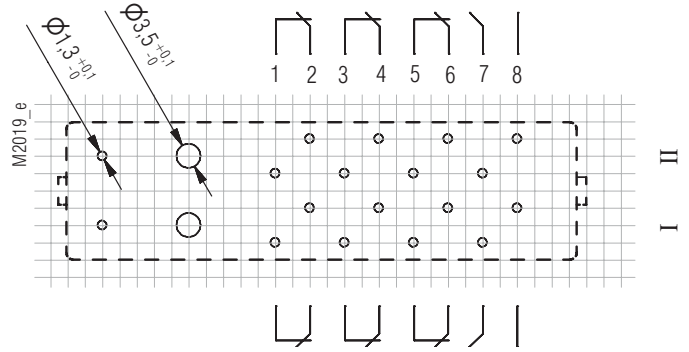
Connection for basic grid dimensions 2.5 mm as well as 2.54 mm according to IEC/EN 60097 and IEC 60326 average

Drilling plan (solder side)

Pin arrangement OA5603.56 3NO/5NC

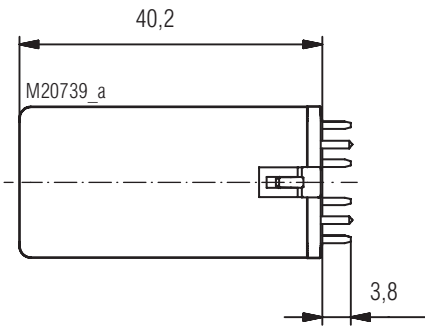


Pin arrangement OA5603.46 2NO/6NC

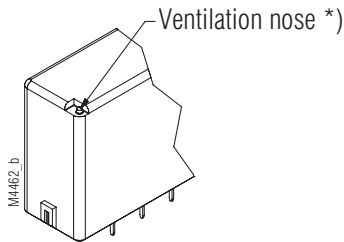


Connection for basic grid dimensions 2.5 mm as well as 2.54 mm according to IEC/EN 60097 and IEC 60326 average

OA 5601, OA 5602, OA 5603 Dimensions wash proof version (RT III) with Vergussplatte



Notes



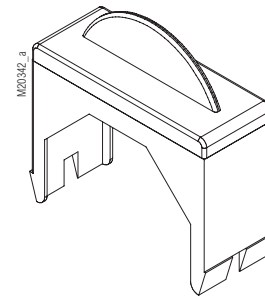
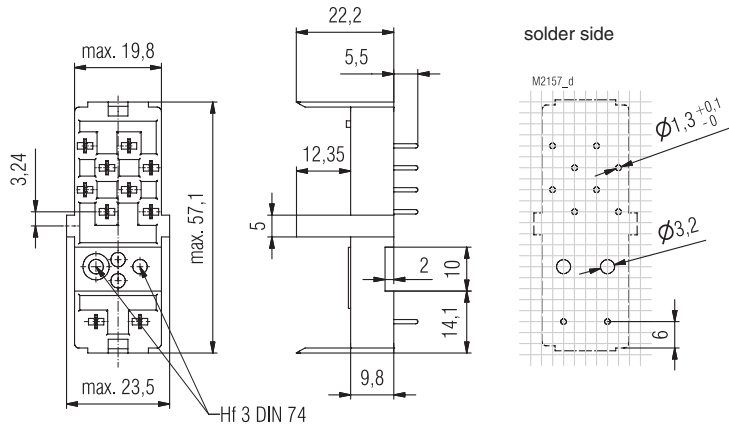
*) When using the maximum switching capacity it is recommended to open the wash proof relay at the indicated position.

Relay socket ET 1415.011/61 for OA 5601

Article number: 0041069

Removal tool ET 1415.941 for relay OA 5601

Article number: 0063094

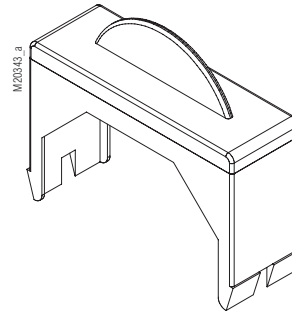
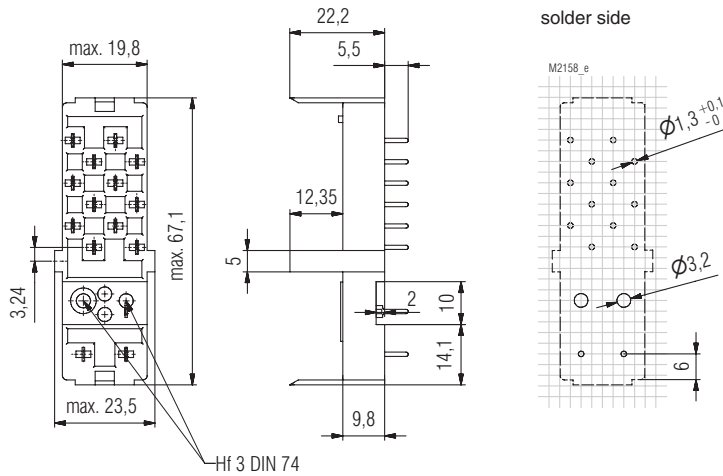


Relay socket ET 1415.012/61 for OA 5602

Article number: 0041065

Removal tool ET 1415.942 for relay OA 5602

Article number: 0063095



Relay socket ET 1415.013/61 for OA 5603

Article number: 0041070

Removal tool ET 1415.943 for relay OA 5603

Article number: 0063096

