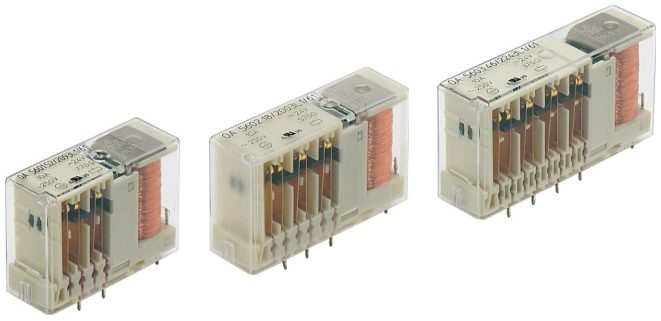
Safety relay

OA 5601, OA 5602, OA 5603

- acc. to DIN EN 50 205, DIN EN 61 810-1, DIN EN 60 664-1
- with positively driven contacts
- Clearance and creepage distances, contact-coil ≥ 8 mm
- high voltage resistance ≥ 4 kV
- high switching reliability due to crown contacts
- small height 39,5 mm
- high temperature range
  at OA 5601 and OA 5602: -25 ... +85°C
  at OA 5603: -25 ... +75°C
- high continiuous thermal current I_{th} = 10 A
- mechanical life > 30 x 10^6 switching cycles
- high voltage range 0,7 ... 1,6 U_N
- **according to EN 50 178:**
  double and reinforced insulation with contamination level 2
  Overvoltage category: III
- optionally wash proof
- Approvals: TÜV cULus CSA



OA 5601 OA 5602 OA 5603

Technical data

Relay type			OA 5601	OA 5602	OA 5603
1. 0	**Relay coil**				
1. 1	Nominal voltage	DC V	6, 12, 24, 48, 60, 110 or others on request		
1. 2	Nominal consumption	W	0,75	1	1,25[1]
2. 0	**Contacts**				
2. 1	Contact arrangement		2 NO / 2 NC 3 NO / 1 NC	2 NO / 4 NC 3 NO / 3 NC 4 NO / 2 NC	7 NO / 1 NC 2 NO / 6 NC
2. 2	Contact material		$AgSnO_2$ + 0,2 µm Au; AgNi10 + 0,2 µm Au optionally + 5 µm Au		
2. 3	Rated insulation voltage	AC V	250		
	Switching voltage min./max.	V	AC/DC 10 / DC 250, AC 400 (100 mV / AC/DC 60 V)[2]		
2. 4	Limiting continuous current I_{th} max.	A	6 x 10 (see operating voltage limit curve)		
	Switching current min./max.	A	10 mA[4] / 10 A (1 mA / 0,3 A)[2]		
2. 5	Switching power min./max.	VA	3 / 2500 (1 mVA / 7 VA)[2]		
	Switching power min./max.	W	01[4] ... 240 (1 mW / 7 W)[2] (see limit curve for arc-free operation)		
2. 6	Switching capacity				
	to IEC/EN 60 947-5-1 AC 15	AC V/A	NC 230 / 2 NO 230 / 5		
	DC 13	DC V/A	NC 24 / 4 NO 24 / 4		
	to UL 508		A 300		
2. 7	Electrical life		at 1 sec On, 1 sec Off (see contacts service life)		
	at AC 230 V 5 A cos φ=1	switching cycles	> 7 x 10^5, $AgSnO_2$ / > 5 x 10^5, AgNi10		
	at AC 230 V 10 A cos φ=1	switching cycles	> 3 x 10^5, $AgSnO_2$ / > 2 x 10^5, AgNi10		
2. 8	Switching frequency max.	switching cycles / s	10		
2. 9	Response time / Release time	ms	typically 27 / typically 5		
2.10	Contact force	cN	≥ 14		
2.14	Contact gap	mm	> 0,5[3]		
3. 0	**Other**				
3. 1	Mechanical life	switching cycles	> 30 x 10^6		
3. 2	Temperature range	°C	- 40 ... + 85	- 40 ... + 85	- 40 ... + 75
3. 3	Degree of protection		IP 40 IEC/EN 60 529		
3. 4	Housing		Thermoplast		
3. 5	Vibration resistance		10 ... 55 Hz, 0,35 mm ampl. IEC/EN 60 068-2-6		
3. 6	Climate resistance		25 / 085 / 04 (Climate category); A / B / D IEC/EN 60 068-1		
3. 8	Insulation according to IEC 60 664-1, EN 50 178				**double and reinforced insulation**
	Rated insulation voltage	AC V	250		**250**
	Contamination level		3		**2**
	Overvoltage category		III		**III**
	Test voltage Contact- Coil (1 min)	AC kV eff.	≥ 4		
	Contact-Contact (1 min)	AC kV eff.	≥ 4		
	Transient volt. Contact-Coil (1,2 - 50 µs)	kV	≥ 6		
	Clearance and creepage distances as per IEC/EN 60 730, IEC/EN 60 335				
	Contact-Coil:	mm	≥ 8		
	Contact-Contact:	mm	≥ 5,5		
3. 9	Weight	g	ca. 78	approx. 85	approx. 95

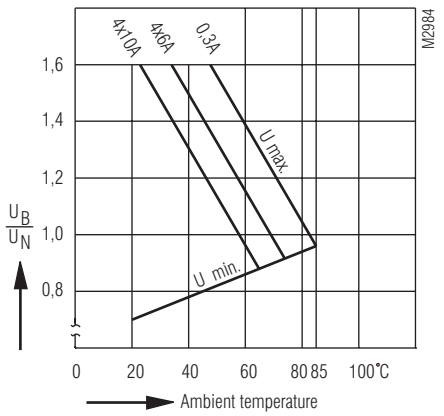
[1] For OA 5603.46 (2 NO / 6 NC) and OA 5603.56 (3 NO / 5 NC) nominal consumption is 1,65 W
[2] Values for AgNi10-Contacts + 5 µm Au [3] over entire service life, even when under fault and at 1,6 U_N [4] Typical values

All technical data in this list relate to the state at the moment of edition.
We reserve the right tor technical improvements and changes at any time.

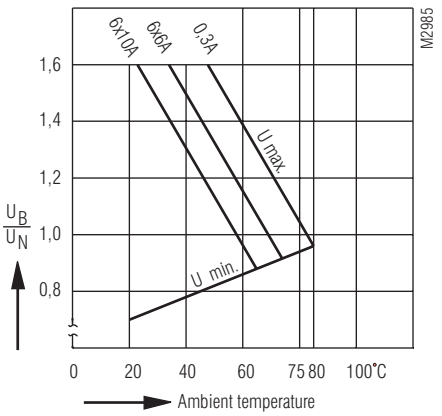
Design versions

		OA 5601					OA 5602						OA 5603											
U_N (DC V)	Voltage range	R_{Coil} Ω±10%	OA 5601				R_{Coil} Ω±10%	OA 5602					R_{Coil} Ω±10%	OA 5603							R_{Coil} Ω±10%	OA 5603			
			.52		.48			.18		.50		.54		.63		.59		.58		.57			.56		.46	
			NO	NC	NO	NC		NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC		NO	NC	NO	NC
	(DC V)	OA 5601	2	2	3	1	OA 5602	3	3	2	4	4	2	OA 5603	7	1	6	2	5	3	4	4	OA 5603	3	5	2	6
	$AgSnO_2$-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

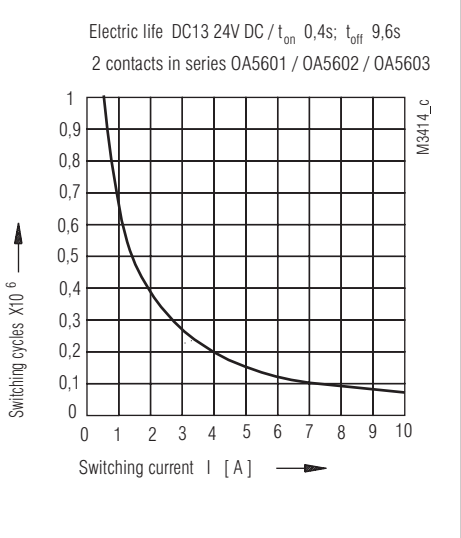
Characteristics



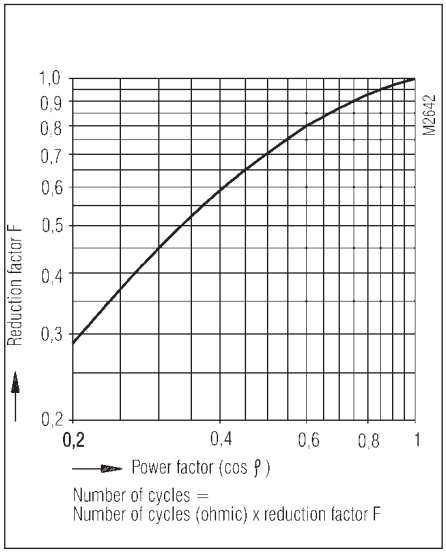
Operating voltage limit curve OA 5601 / OA 5602



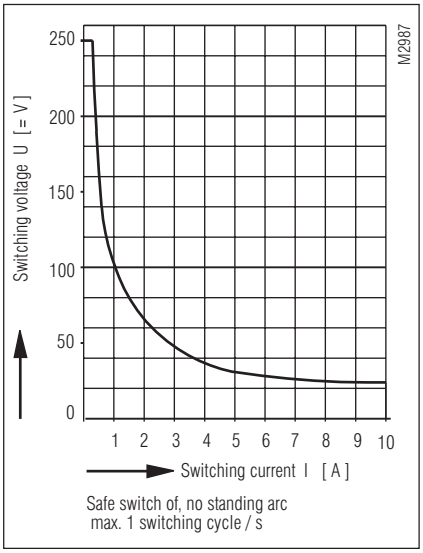
Operating voltage limit curve OA 5603



Contact service life



Reduction factor for inductive loads



Limit curve for arc-free operation (load limit curve)

Ordering example

OA 5601._ _ / _ _ _ _ _ _ / 61*)

- Pin configuration
- L = Solder line proof (IP 40)
  W = Wash proof
- Design version
- Contact arrangement
  .52 2 NO / 2 NC
  .48 3 NO / 1 NC

OA 5602._ _ / _ _ _ _ _ _ / 61*)

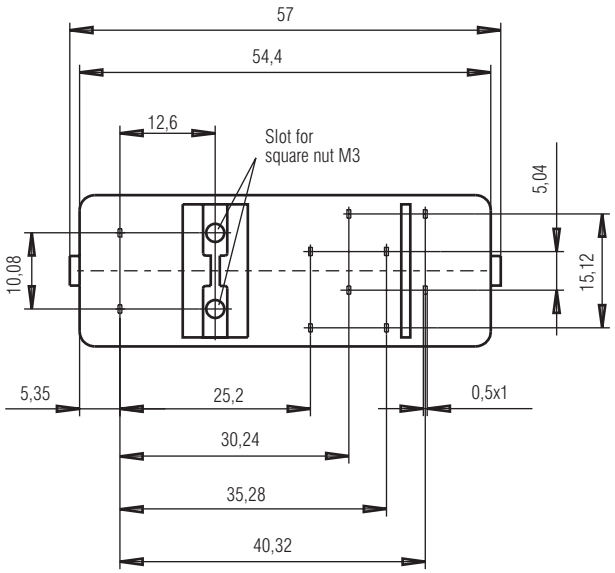
- Pin configuration
- L = Solder line proof (IP 40)
  W = Wash proof
- Design version
- Contact arrangement
  .18 3 NO / 3 NC
  .50 2 NO / 4 NC
  .54 4 NO / 2 NC

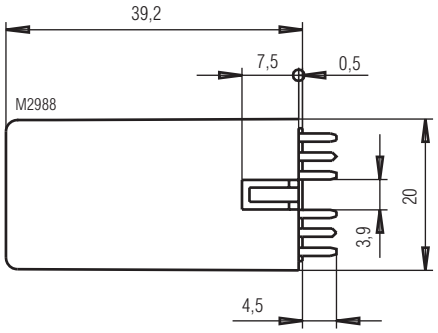
OA 5603._ _ / _ _ _ _ _ _ / 61*)

- Pin configuration
- L = Solder line proof (IP 40)
  W = Wash proof
- Design version
- Contact arrangement
  .63 7 NO / 1 NC
  .59 6 NO / 2 NC
  .58 5 NO / 3 NC
  .57 4 NO / 4 NC
  .56 3 NO / 5 NC
  .46 2 NO / 6 NC

*) / 61 cURus approval

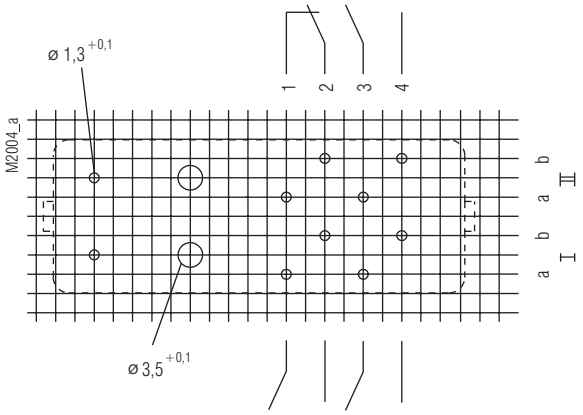
OA 5601 Dimensions, pin configuration, connection diagrams



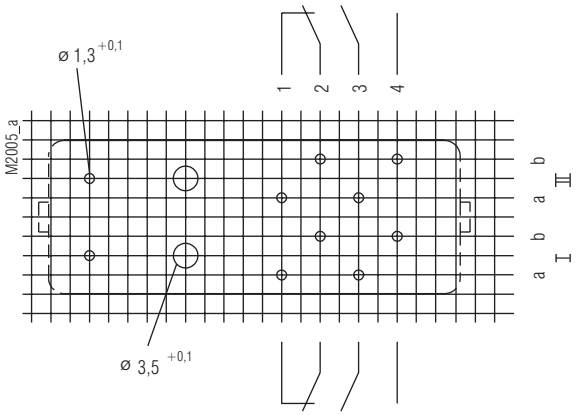


Drilling plan (solder side)

Pin arrangement OA5601.48 3NO/1NC

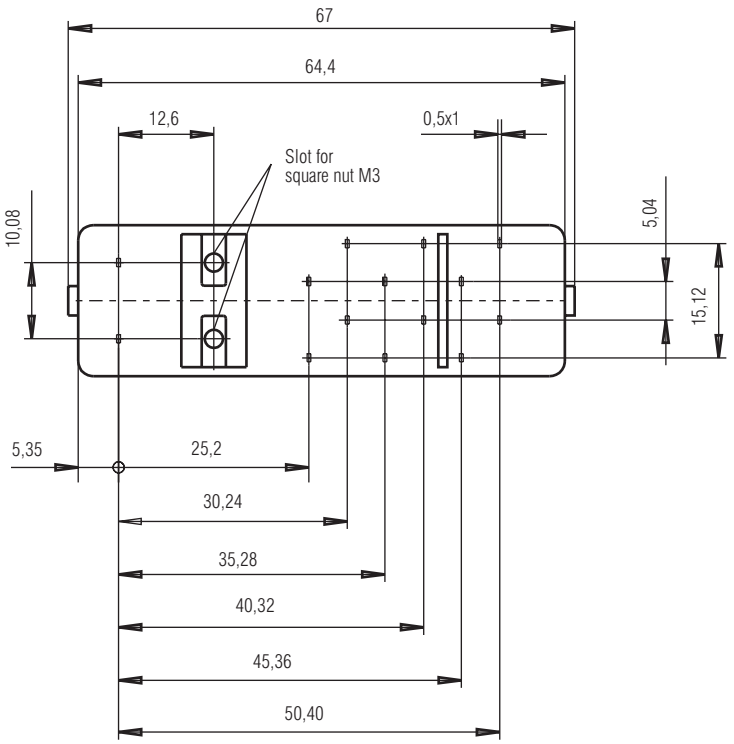


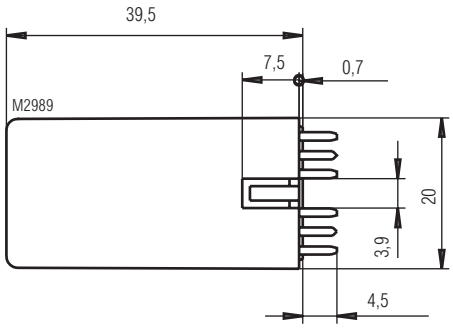
Pin arrangement OA5601.52 2NO/2NC



Connection for basic grid divensions 2,5 mm as well as 2,54 mm according to IEC/EN 60 097 and IEC 60 326 average

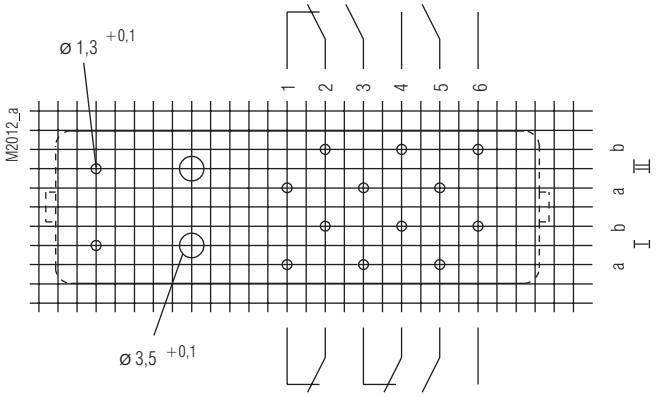
OA 5602 Dimensions, pin configuration, connection diagrams



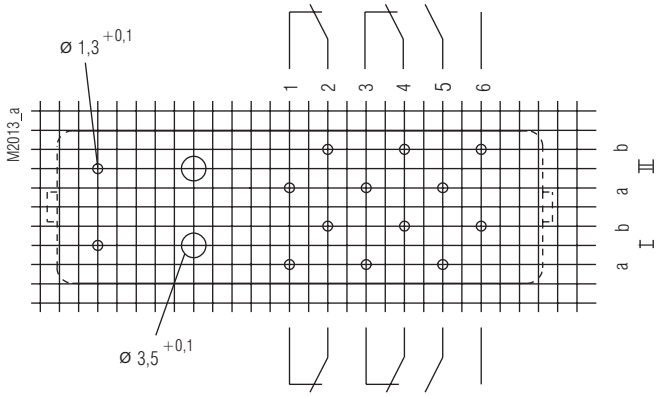


Drilling plan (solder side)

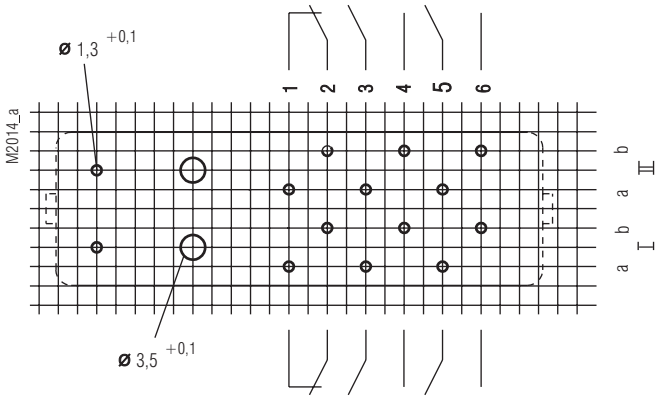
Pin arrangement OA5602.18 3NO/3NC



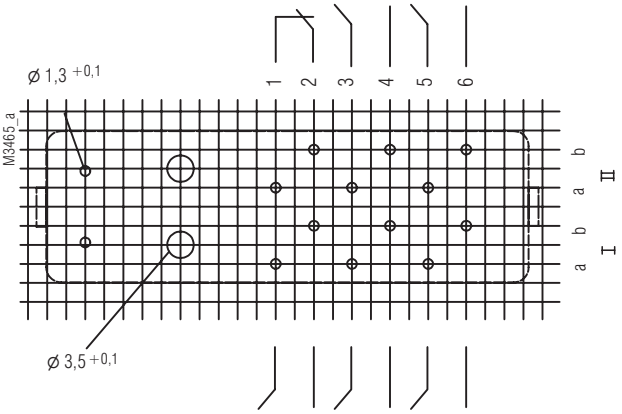
Pin arrangement OA5602.50 2NO/4NC



Pin arrangement OA5602.54 4NO/2NC

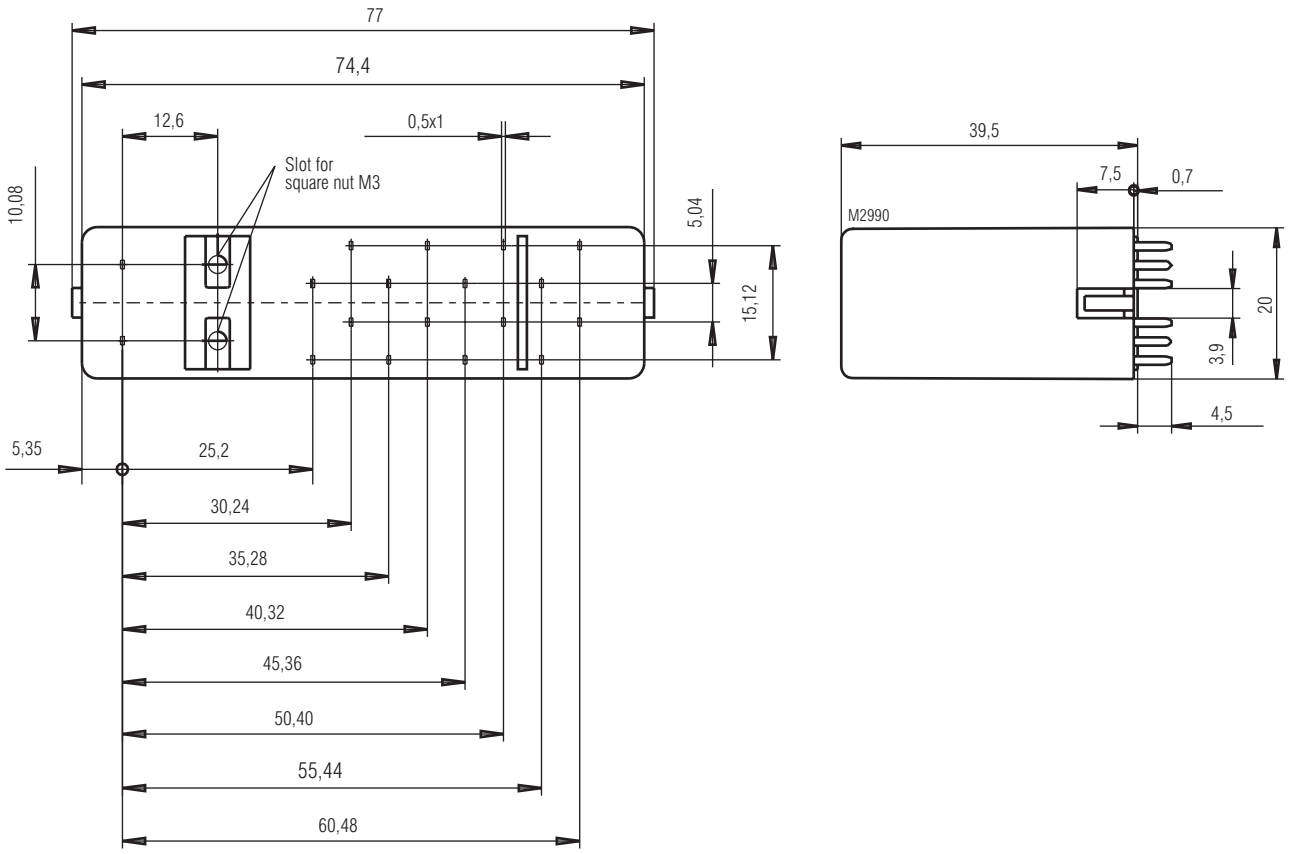


Pin arrangement OA5602.60 5NO/1NC



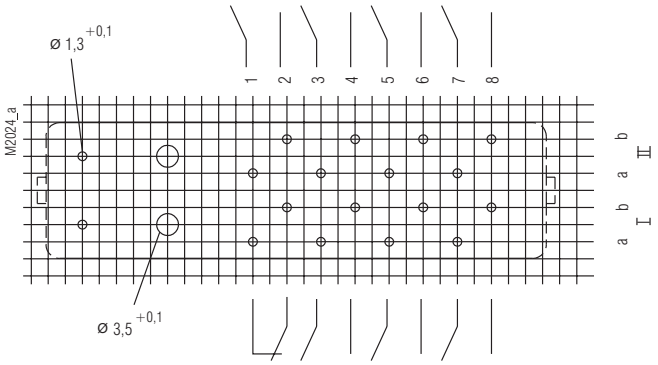
Connection for basic grid divensions 2,5 mm as well as 2,54 mm according to IEC/EN 60 097 and IEC 60 326 average

OA 5603 Dimensions, pin configuration, connection diagrams

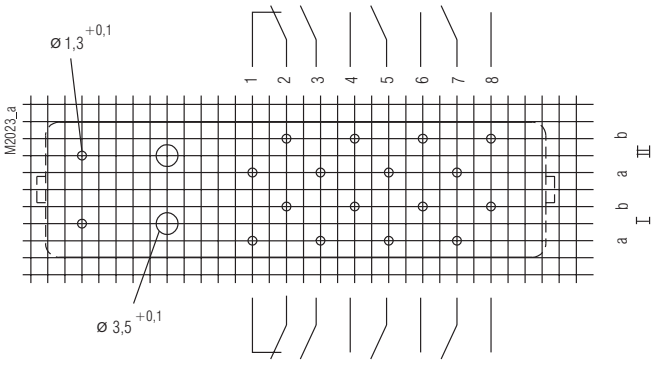


Drilling plan (solder side)

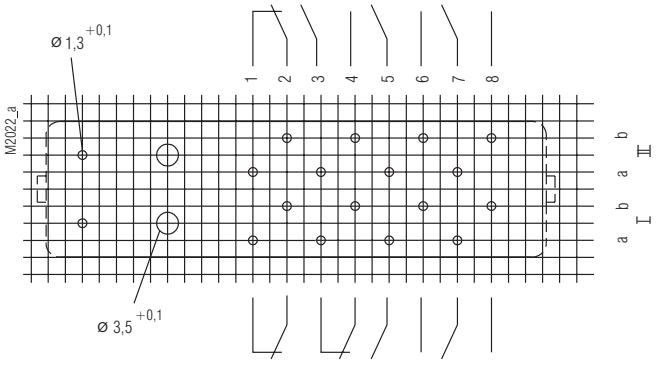
Pin arrangement OA5603.63 7NO/1NC



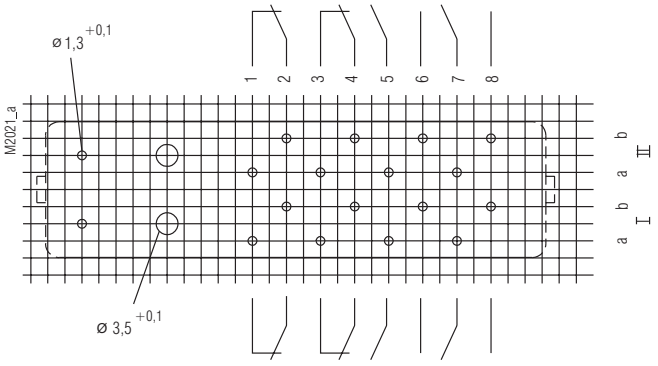
Pin arrangement OA5603.59 6NO/2NC



Pin arrangement OA5603.58 5NO/3NC



Pin arrangement OA5603.57 4NO/4NC

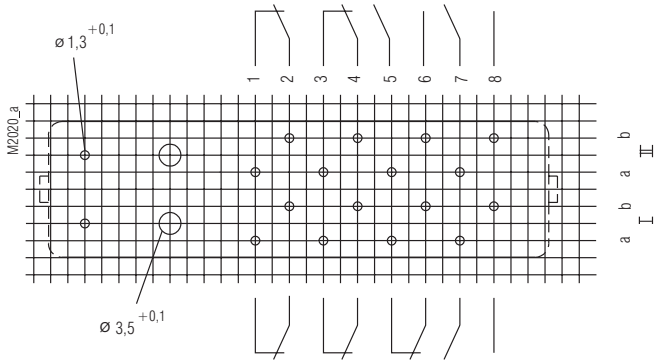


Connection for basic grid divensions 2,5 mm as well as 2,54 mm according to IEC/EN 60 097 and IEC 60 326 average

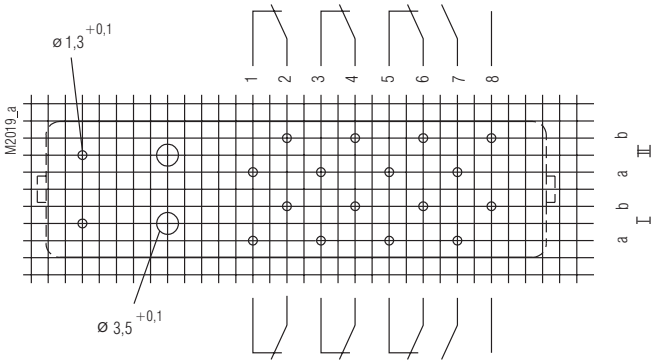
OA 5603 Connection diagrams

Drilling plan (solder side)

Pin arrangement OA5603.56 3NO/5NC



Pin arrangement OA5603.46 2NO/6NC



Connection for basic grid divensions 2,5 mm as well as 2,54 mm according to IEC/EN 60 097 and IEC 60 326 average