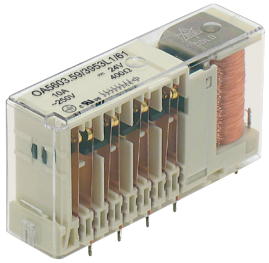
PCB relays

Safety relay according to DIN EN 50 578 (signal relay for railway applications) OA 5603.59/39 _ _L1, OA 5603.46/39_ _ L1

0277435



- Acc. to DIN EN 61810-1, DIN EN 61810-3 (Type A), DIN EN 50578 (UIC 736)
- 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: - 40 ... + 75°C
- High continiuous thermal current I_{th} = 10 A

Application

- To be used in electrical circuits for safety applications.
- For railway signalling circuits according to DIN EN 50578 (UIC 736 R: 2004 Typ C)

Approvals and Markings

Type Approved
TÜVRheinland CERTIFIED
www.tuv.com ID 0004000000

Technical Data

Relay type			OA 5603
1.0	**Relay coil**		
1.1	Nominal voltage	DC V	6; 12; 24; 48; 60; 110 (others on request)
1.2	Nominal consumption	W	1.45 (.59) 1.8 (.46)
1.11	Voltage range	U_N	0.75 ... 1.4
1.13	Holding power (at 0.5 U_N)	W	0.36 (.59) 0.45 (.46)
1.14	Airgap in magnetic circuit	mm	> 0.1
2.0	**Contacts**		
2.1	Contact arrangement (Type A)		6 NO / 2 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 V	250
	Switching voltage min./max.	V	AC/DC 10 / DC 250, AC 400 (AC/DC 2 V / 60 V) [1]
2.4	Limiting continuous current I_{th}	A	6 x 10 (see operating voltage limit curve)
	Switching current min./max.	A	> 10 mA[3] / 10 (2 mA / 0,3 A) [1]
2.5	Switching power min./max.	VA	0.1 / 2500 (10 mVA / 12 VA) [1]
	Switching power min./max	W	0.1[3] / 240 (10 mW / 12 W) [1] (see limit curve for arc-free operation)
2.6	Switching capacity to IEC/EN 60947-5-1		
	AC 15 [4]	AC V/A	NO: 250 / 3 NC: 250 / 2
	AC 15 [5]	AC V/A	NO: 250 / 5 NC: 250 / 2
	DC 13 [4]	DC V/A	NO: 24 / 2 NC: 24 / 2
	DC 13 [4] at 0.1 Hz	DC V/A	NO: 24 / 6 NC: 24 / 6
	to UL 508		B300
2.7	Electrical life		at 1 s On, 1 s Off (see contacts service life)
	at AC 230 V, 6 A, cosφ = 1	switching cycles	> 7 x 10^5 $AgSnO_2$ > 5 x 10^5 AgNi
	at AC 230 V, 8 A, cosφ = 1	switching cycles	> 5 x 10^5 $AgSnO_2$ > 4 x 10^5 AgNi
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	≥ 17
2.14	Contact gap	mm	> 1.2 [2]
3.0	**Other**		
3.1	Mechanical life	switching cycles	≥ 30 x 10^6
3.2	Temperatue range	°C	- 40 ... + 75
3.3	Degree of protection, housing		Solder line proof RT II, as option wash proof RT III
3.4	Test procedure		A (group mounting)
3.5	Vibration resistance		5 ... 50 Hz; amplitude; 2 g max. UIC736E / EN 50578
3.6	Climate resistance		40 / 075 / 04; A / B / D IEC/EN 60068-1
3.7	Short circuit strength 1 kA / AC 250 V	$AgSnO_2$	NO: 10 A gL / NC: 10 A gL IEC/EN 60947-5-1
		AgNi	NO: 10 A gL / NC: 6 A gL IEC/EN 60947-5-1

[1] Values for AgNi-contacts + 5 µm Au
[2] over entire service life
[3] Typical values
[4] Values for AgNi-Contacts
[5] Values for $AgSnO_2$-contacts

Technical Data

3.8	Insulation acc. to IEC 60664-1, EN 50178		
	Rated insulation voltage	AC V	250
	Pollution degree		3 / 2 (double and reinforced insulation)
	Overvoltage category		III
	Test voltage		
	Contact-coil (1 min)	AC kV eff.	≥ 4
	Contact-contact (1min)	AC kV eff.	≥ 4
	Open contact acc. to DIN EN 61810-1	AC kV eff.	1,5
	Transient voltage		
	Contact-coil (1,2 - 50 µs)	kV	≥ 6
	Clearance and creepage distances		
	Contact- Coil	mm	≥ 8
	Contact- Contact	mm	≥ 5,5
3.9	Weight	g	95
4.0	**Packing**		
4.1	on cardboard	piece	15
4.2	in case package	piece	75
5.0	**Solder method**		
5.1	Solder method /-temperature /-duration	°C / s	Wave soldering / 260 / 5

Design Versions

		OA 5603			
U_N (DC V)	Voltage range (DC V)	R_{Coil} Ω ± 10%	.59 6NO, 2NC	R_{Coil} Ω ± 10%	.46 2NO, 6NC
AgNi-Kontakte + 5 µm Au					
6	4.5 ... 8.4	25	3951	20	3961
12	9.0 ... 16.8	100	3952	80	3962
24	18.0 ... 33.6	400	3953	320	3963
48	36.0 ... 67.2	1 590	3954	1 280	3964
60	45.0 ... 84.0	2 480	3955	2 000	3965
110	82.5 ... 154.0	8 350	3956	6 720	3966

Ordering example

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

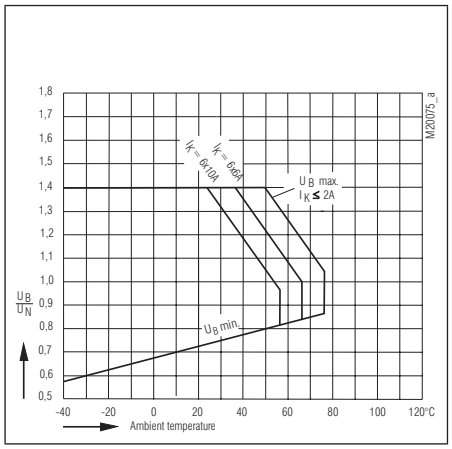
- Pinbelegung
- L = Solder line proof RT II
  W = Wash proof
- Design version
- Contacts (Type A)
  .59 6 NO, 2 NC
  .46 2 NO, 6 NC
- Relay type

*) / 61 cURus approval

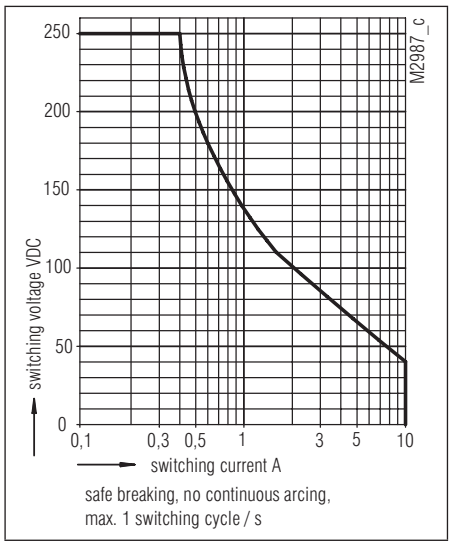
Note

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

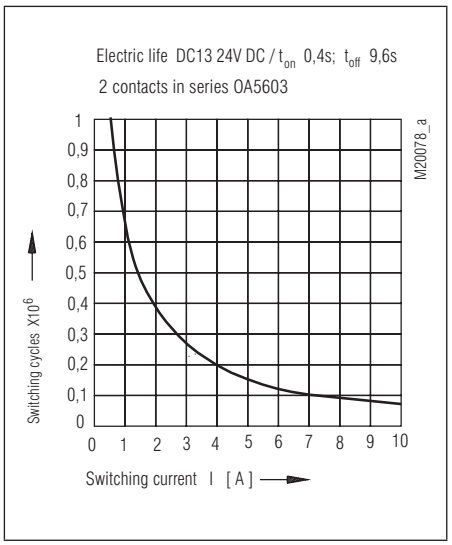
Characteristics



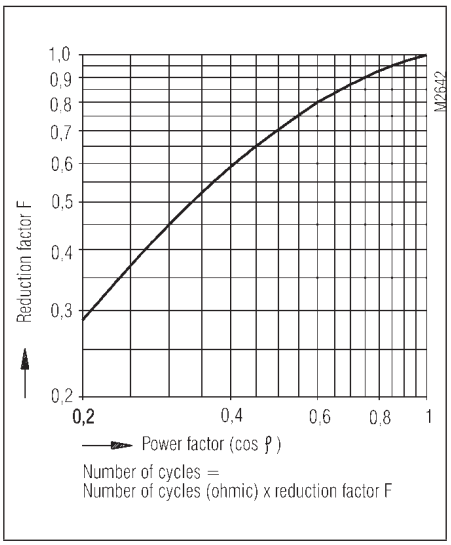
Operating voltage limit curve



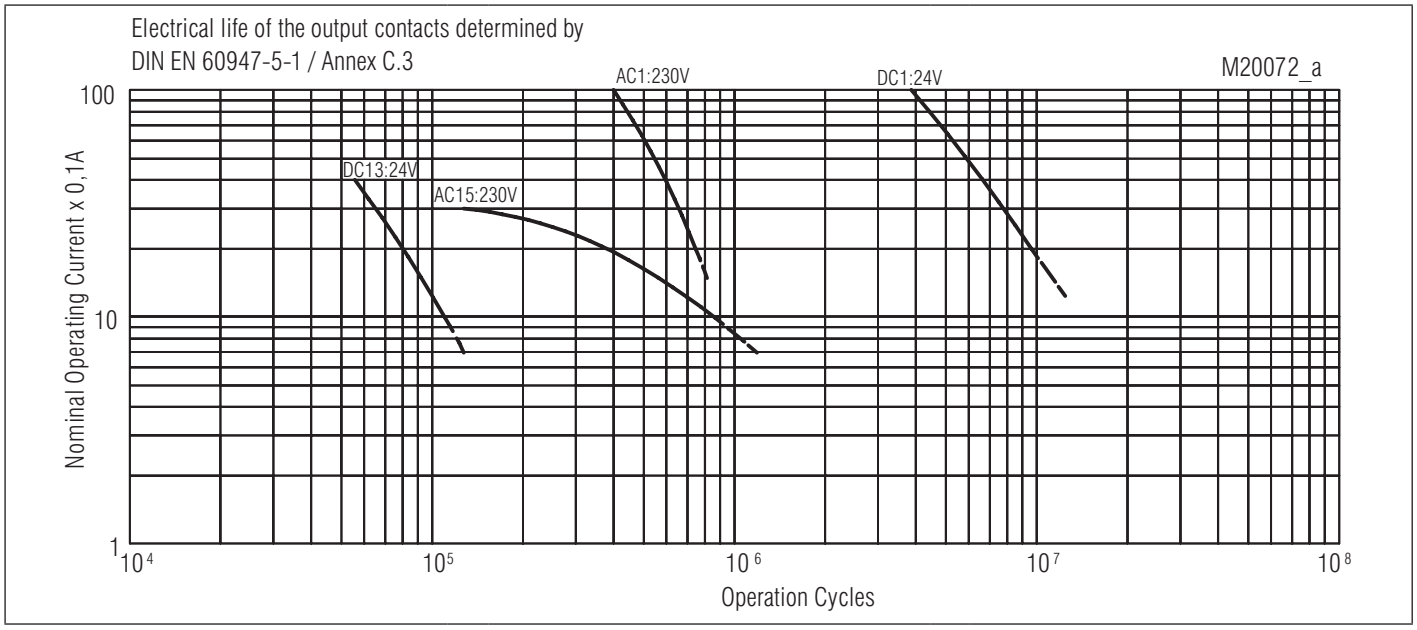
Arc limit curve
(load limit curve)



Reduction factor for inductive loads

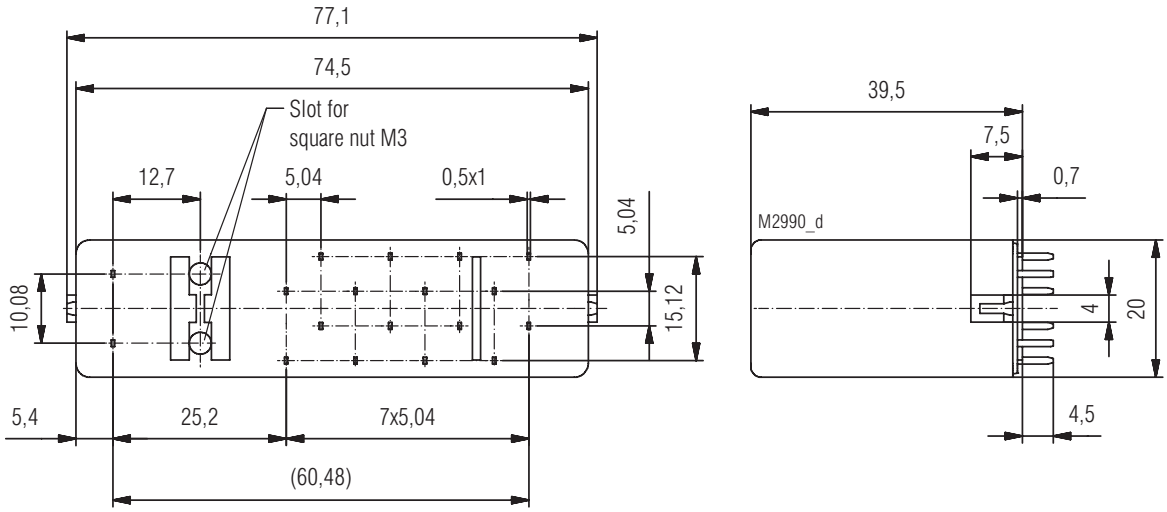


Reduction factor for inductive loads



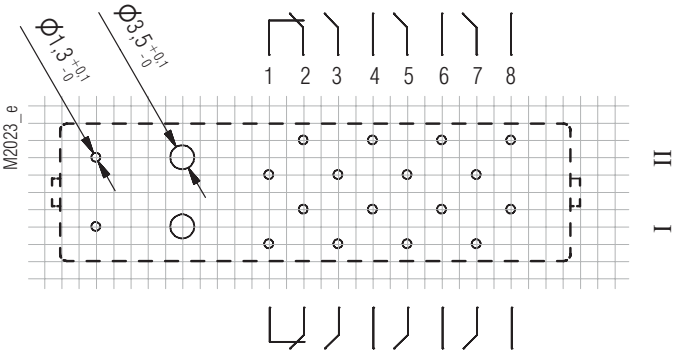
Electrical life for contact material AgNi

Dimensions, Pin Configuration, Connection Diagrams

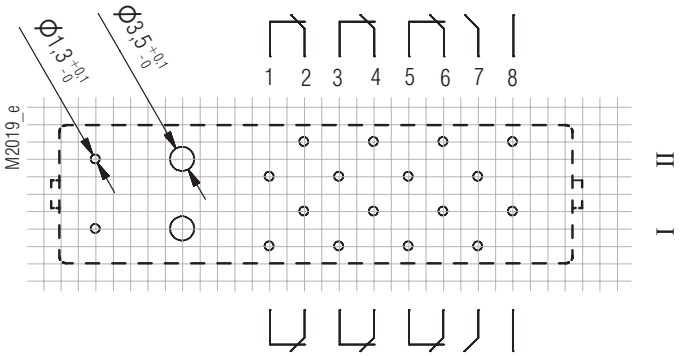


Drilling plan (solder side)

Pin arrangement OA5603.59 6S/2Ö

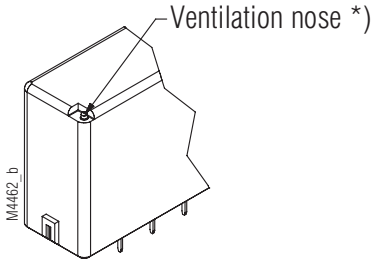


Pin arrangement OA5603.46 2S/6Ö



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

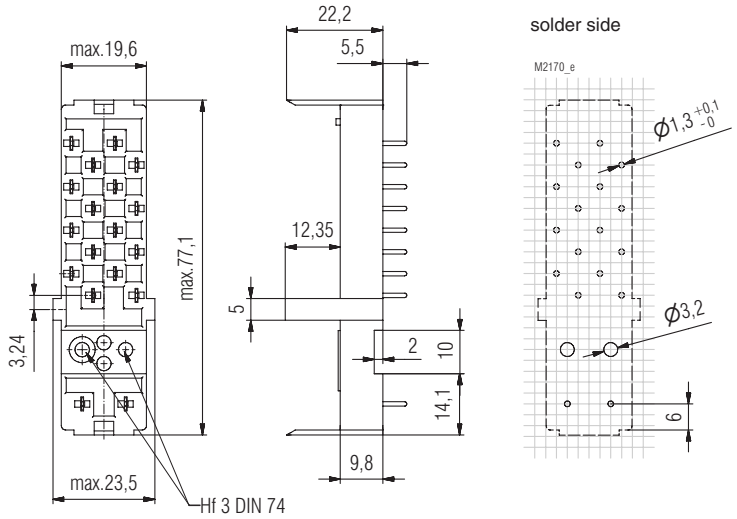
Notes



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

Accessories

Relais socket ET 1415.013/61 for OA 5603
Article number: 0041070



Removal tool ET 1415.943 for relay OA 5603
Article number: 0063096