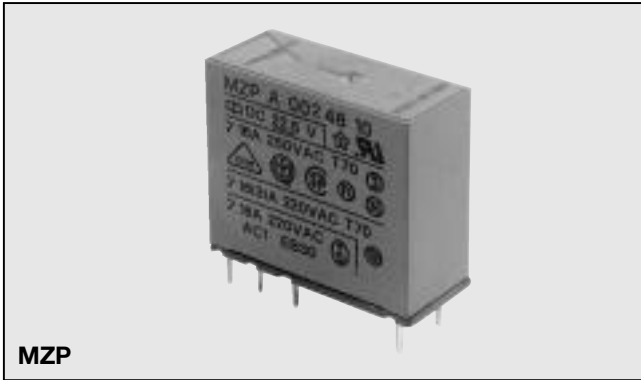


Miniature Relays Series M

Type MZ 2 poles 10A

Monostable



- Miniature size
- PCB mounting
- Reinforced insulation 4 kV / 8 mm
- Switching capacity 10 A
- DC coils 1.87 to 160 VDC
- AC coils 4.8 to 264 VAC
- General purpose, industrial electronics
- Types: Standard, flux-free or sealed
- Switching AC/DC load

Product Description

Sealing

P: Standard, suitable for soldering and manual washing.
F: Flux-free, suitable for automatic soldering and partial immersion or spray washing.

H: Sealed with inert gas according to IP 67, suitable for automatic soldering and/or partial immersion or spray washing.

For **General data**, notes and special versions see page 48

Ordering Key

MZ P A 200 47 10

Type _____
Sealing _____
Version (A = Standard) _____
Contact code _____
Coil reference number _____
Contact rating _____

Version

A = 5.0 mm / Ag CdO (standard)
 C = 5.0 mm / hard gold plated
 D = 5.0 mm / flash gilded
 S = 5.0 mm / Ag Sn O₂
 Available only on request Ag Ni

Type Selection

Contact configuration	Contact rating	Contact code
2 normally open contact (DPST -NO {2-form A})	10 A	200
2 normally closed contact (DPST -NC {2-form B})	10 A	020
2 change over contact DPDT {2-form C})	10 A	002

Coil Characteristics DC (20°C)

Coil reference number	Rated Voltage		Winding resistance		Operating range			Must release VDC
	200/002 VDC	020 VDC	Ω	± %	Min. VDC 200/002	020	Max.VDC	
40	2.6	2.5	11	10	1.98	1.87	3.50	≥ 5% of rated voltage
41	4.3	4.1	30	10	3.30	3.13	5.75	
42	5.9	5.6	55	10	4.52	4.28	7.80	
43	8.5	8.0	110	10	6.49	6.14	11.00	
44	10.5	10.0	170	10	7.99	7.56	13.70	
45	13.0	12.5	280	10	9.98	9.49	17.60	
46	17.0	16.0	450	10	13.0	12.30	22.50	
47	21.5	20.5	720	15	16.3	15.50	28.60	
48	23.5	22.5	860	15	18.0	17.10	30.80	
49	27.0	26.0	1150	15	20.7	19.70	35.70	
50	34.5	32.5	1750	15	26.2	24.90	44.00	
51	42.5	40.5	2700	15	32.6	30.90	55.00	
52	54.5	51.5	4300	15	41.8	39.60	69.30	
53	68.0	64.5	6450	15	52.0	49.20	84.70	
54	87.5	83.0	9900	15	67.2	63.60	104.00	
55	101.0	95.0	12550	15	77.0	73.00	117.00	
56	115.0	109.0	16200	15	87.9	83.30	136.00	
57	132.0	125.0	23500	15	101.0	96.00	160.00	

Coil Characteristics AC (20°C)

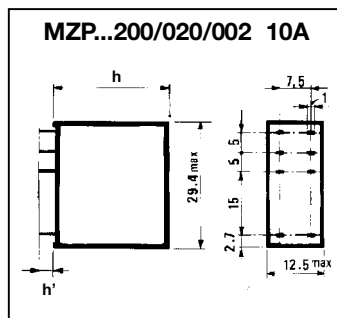
Coil ref. no.	Rated Voltage VAC	Winding resistance		Operating range		Must release VAC	Rated Current (mA)		Inductance H
		Ω	$\pm \%$	min. VAC	Max. VAC		50Hz	60Hz	
90	6	12	10	4.8	6.6	≥ 15% of rated voltage	270.0	237.0	0.059
91	12	56	10	9.6	13.2		119.0	104.0	0.267
92	24	230	10	19.2	26.4		57.0	50.0	1.123
93	48	870	15	38.4	52.8		30.5	26.7	4.170
94	60	1500	15	48.0	66.0		23.8	21.0	6.450
95	110	5300	15	88.0	129.0		12.3	10.8	22.400
96	220	20000	15	176.0	242.0		5.9	5.2	100.200
97	240	25000	15	192.0	264.0		5.7	5.0	107.800

Contact Characteristics

Rating	10 A	Power Max. switching power with resistive load in AC ³⁾ Max. switching power in DC Minimum switching current ²⁾ (typical value)	250 VA see diagram 3 100mA at 24VDC
Material (standard version) ²⁾	AgCdO		
Current (at 250VAC) Rated current Max. switching current Overload current (4sec ON / 40sec OFF cycle)	10 A 12 A 14 A	Life (see diagram 1) Typical electrical life at max. resistive load 1000 cycles/h 500 cycles/h Max. electrical repetition rate Mech. life at 18000 cycles/h	7.5 x 10⁴ cycles 8 x 10⁴ cycles 3600 cycles/h 50 x 10⁶ cycles
Voltage Rated voltage Max. switching voltage (VDE 0435)	250 VAC 380 VAC		

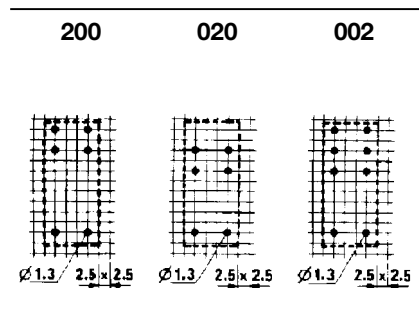
²⁾³⁾ See pag. 48

Dimensions



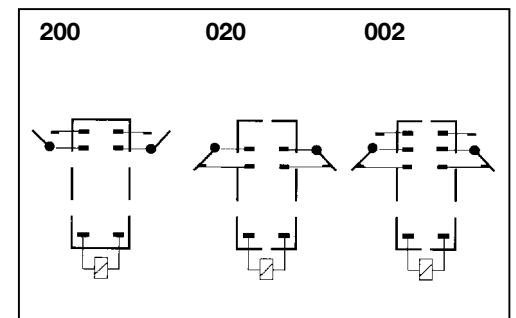
MZP: h = 25,2 mm
h' = 4,3 - 5,3 mm

Pin View



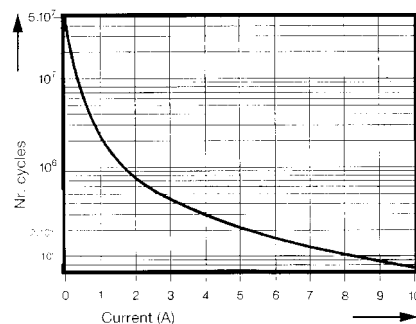
MZF/MZH: h = 26,5 mm
h' = 2,8 - 3,8 mm

Wiring Diagrams



Diagrams

1 Expected life at 250 VAC
(Resistive loads and repetition rate 1000 cycles/h)



2 Reduction of expected life against load power factor cos φ

Load power factor

3 Max. switching power DC

I (Ampere) DC

V (Volt) DC



Insulation

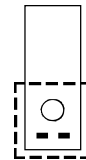
Test voltage (1min.)	
Coil/frame	750 VAC
Contacts/coil	5000 VAC
Contacts/frame	5000 VAC
Open contacts	1000 VAC
Contacts circuits	4000 VAC
off different polarity	(MZ...200/020/002 5/10A)
Insulation group (VDE 0110) ⁴⁾	
Contacts/coil IGR	C/660
Contacts/frame IGR	C/660
Open/contacts IGR	C/250
Impulse test volt. 1.2µs-50µs (CEI 41-1) ⁵⁾	10 kV
Air and surface gap between Coil-frame contacts	> 8 mm
Insulation resist. at 500 VDC	10⁸ MΩ

- ²⁾ If required, they may be supplied with 0.5µ flash gilded silver contacts for med./low switching levels, with 3 µ gold plated silver contacts also very low switching levels around 10 mV and 10 mA well as Ag Sn O₂ contacts for high inrush currents.
- ³⁾ Intended with opened knob for sealed version MZH... .
- ⁴⁾ IGR insulation groups shown in the table are valid only if also PCB tracks are kept at minimum distances from each other and from accessible metal parts of the relays

General Data

Operating time at rated voltage(excl. bounces)	10 ms max.
Release time (excl. bounces)	5 ms max.
Vibration resistance	2.5 mm p.p. 5 to 45 Hz 10 g, 45 to 200 Hz
Ambient temp. ⁵⁾ operating storage	-40 °C to +70 °C -40 °C to +80 °C
Shock resistance	10 G, 11 ms
Inside protection according to IEC 144	IP 67 sealed IP 40 not sealed
Climatic category (IEC 68-1)	40/070/21
Weight	15 to 18 g
Working class / type of serv.	C / continuous

magnetic circuit, as prescribed by VDE 0110. Therefore, within the marked zone on the printed circuit board (see sketch at side), there must be no conducting strips.



- ⁵⁾ Supplying the relay coil at the maximum voltage given in the table "Temperature Influence", the maximum ambient temperature value decreases from 70° to 40°C.

Temperature Influence

Operating voltages for step excitation. Minimum operating voltage is referred to +20 °C/ +68 °F ambient temperature; maximum operating voltage is referred to +40 °C/+104 °F ambient temperature.

t °C	t °F	K1	K2
0	32	0.92	1.15
10	50	0.96	1.12
20	68	1.00	1.09
30	86	1.04	1.05
40	104	1.08	1.00
50	122	1.12	0.94
60	140	1.16	0.88
70	158	1.20	0.81

Values of minimum and maximum operating voltage in respect to ambient temperature (t) may be obtained applying following formulas:

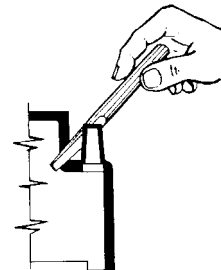
$$V_{\min t} = K1 \cdot V_{\min 20}$$

$$V_{\max t} = K2 \cdot V_{\max 40}$$

Application Hints

Use of sealed relays

The MZH relay types are in sealed version, IEC 68 Part 2-17 (DIN 40046) QC2-test, suitable for automatic process of soldering and for either total immersion washing or pressure spraying. If maximum utilization is made of full switching capacity, it is recommended that the relay be opened after the washing process, at the point provided for this purpose.



Product safety

Operations outside the stated ratings shown in this catalogue may result in a possible failure or unsafe operating conditions.

Approvals



ITALY



U.S.A.



CANADA



VDE



SWITZERLAND



SWEDEN



DENMARK



NORWAY



FINLAND

The approvals stated are not generally applicable to all relay versions of a particular type. For further information please apply for relevant data sheets ref. **3.84.00.10.X**