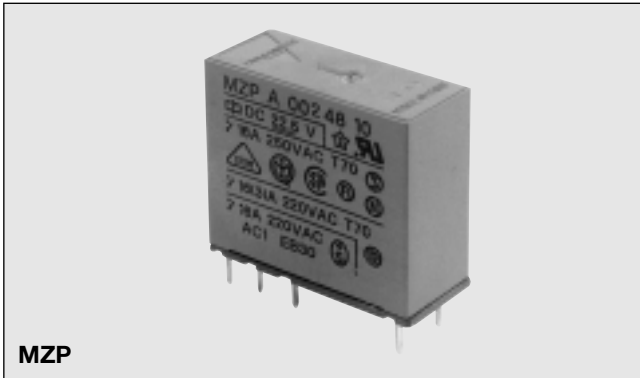


# Miniature Relays Series M

## 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 O<sub>2</sub>  
 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	<b>200</b>
2 normally closed contact (DPST -NC {2-form B})	10 A	<b>020</b>
2 change over contact DPDT {2-form C})	10 A	<b>002</b>

## 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	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)

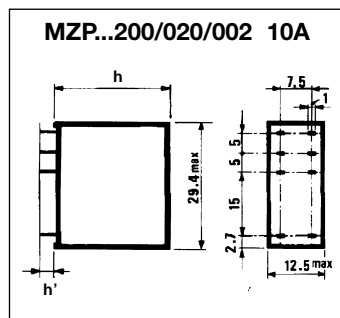
Coil ref. no.	Rated Voltage VAC	Winding resistance $\Omega$		Operating range		Must release VAC	Rated Current (mA)		Inductance H
		$\Omega$	$\pm \%$	min. VAC	Max. VAC		50Hz	60Hz	
90	6	12	10	4.8	6.6	≥ 15% of rated voltage	270.0	237.0	0.059
91	12	56	10	9.6	13.2		119.0	104.0	0.267
92	24	230	10	19.2	26.4		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

<b>Rating</b>	<b>10 A</b>	<b>Power</b> Max. switching power with resistive load in AC <sup>3)</sup> Max. switching power in DC Minimum switching current <sup>2)</sup> (typical value)	<b>250 VA</b> see diagram 3
<b>Material</b> (standard version) <sup>2)</sup>	<b>AgCdO</b>		
<b>Current</b> (at 250VAC) Rated current Max. switching current Overload current (4sec ON / 40sec OFF cycle)	<b>10 A</b> <b>12 A</b> <b>14 A</b>	<b>Life</b> (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	<b>100mA at 24VDC</b>
<b>Voltage</b> Rated voltage Max. switching voltage (VDE 0435)	<b>250 VAC</b> <b>380 VAC</b>		
			<b>7.5 x 10<sup>4</sup> cycles</b> <b>8 x 10<sup>4</sup> cycles</b> <b>3600 cycles/h</b> <b>50 x 10<sup>6</sup> cycles</b>

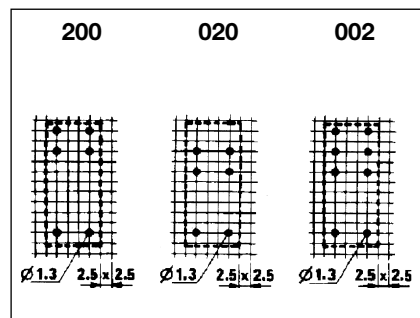
<sup>2)3)</sup> See pag. 48

## Dimensions



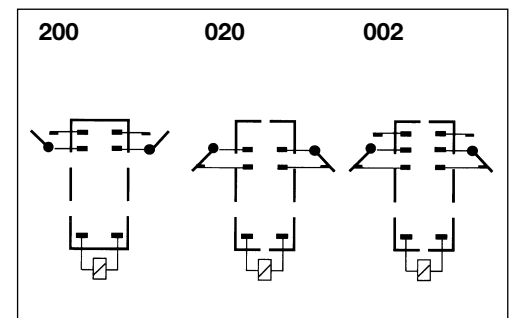
MZP: h = 25,2 mm  
h' = 4,3 - 5,3 mm

## Pin View



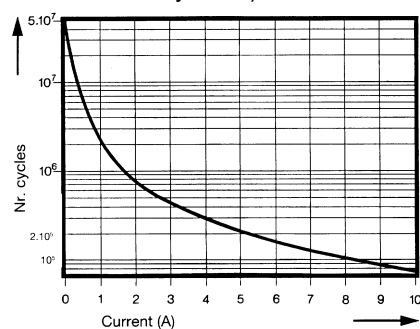
MZF/MZH: h = 26,5 mm  
h' = 2,8 - 3,8 mm

## Wiring Diagrams

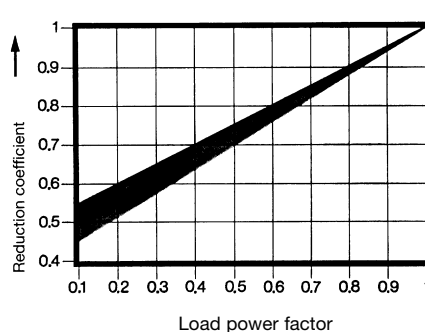


## Diagrams

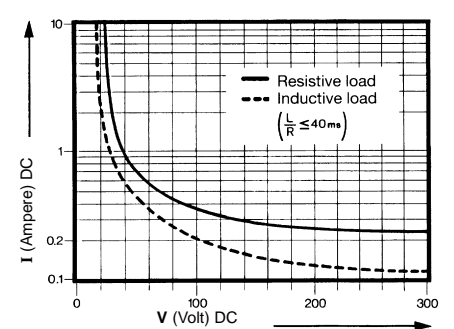
**1 Expected life at 250 VAC**  
(Resistive loads and repetition rate 1000 cycles/h)



**2 Reduction of expected life against load power factor cos φ**



**3 Max. switching power DC**



## Insulation

<b>Test voltage</b> (1min.)	
Coil/frame	<b>750 VAC</b>
Contacts/coil	<b>5000 VAC</b>
Contacts/frame	<b>5000 VAC</b>
Open contacts	<b>1000 VAC</b>
Contacts circuits	<b>4000 VAC</b>
off different polarity	<b>(MZ...200/020/002 5/10A)</b>
<b>Insulation group</b> (VDE 0110) <sup>4)</sup>	
Contacts/coil IGR	<b>C/660</b>
Contacts/frame IGR	<b>C/660</b>
Open/contacts IGR	<b>C/250</b>
Impulse test volt. 1.2µs-50µs (CEI 41-1) <sup>5)</sup>	<b>10 kV</b>
Air and surface gap between Coil-frame contacts	<b>&gt; 8 mm</b>
<b>Insulation resist. at 500 VDC</b>	<b>10<sup>6</sup> MΩ</b>

- <sup>2)</sup> 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 O<sub>2</sub> contacts for high inrush currents.
- <sup>3)</sup> Intended with opened knob for sealed version MZH... .
- <sup>4)</sup> 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

## 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:

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

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

## Approvals



ITALY



U.S.A.



CANADA



GERMANY



SWITZERLAND



SWEDEN



DENMARK



NORWAY



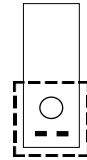
FINLAND

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**

## General Data

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

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.

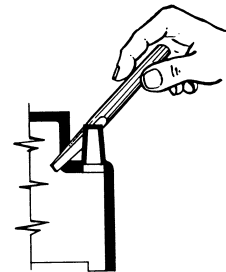


- <sup>5)</sup> Supplying the relay coil at the maximum voltage given in the table "Temperature Influence", the maximum ambient temperature value decreases from 70° to 40°C.

## 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.