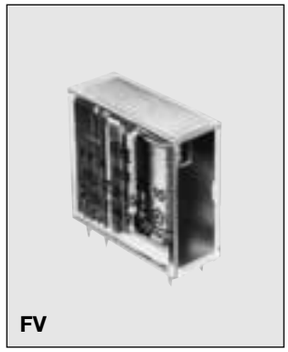
Miniature Relays Series F
Type FV
Monostable


FV


FVF/FVH

- **Miniature size**
- **PCB mounting**
- **Reinforced insulation 4 kV / 8 mm**
- **Switching capacity 10 A**
- **DC coils 3.2 to 154 VDC**
- **Change over or normally open contact**
- **General purpose, industrial electronics**
- **Types: Standard, flux-free or sealed**

Product Description

Sealing:
—: 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.

Ordering Key

FV H A 001 27 10

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

Type Selection

Contact configuration		Contact rating	Contact code
1 normally open contact	(SPST-NO {1-form A})	10 A	**100**
1 change over contact	(SPDT {1-form C})	10 A	**001**

Coil Characteristics, DC (20°C)

Coil reference number	Rated voltage VDC	Winding Resistance Ω	Winding Resistance ± %	Operating range Min. VDC	Operating range Max. VDC	Must release VDC
36	4.8	47	10	3.2	6.87	
20	6.4	80	10	4.2	9.00	
21	7.6	110	10	5.0	10.50	
22	10.0	180	10	6.5	13.50	
23	13.0	330	10	8.5	18.50	
24	16.0	475	15	10.5	22.00	≥ 5% of rated voltage
25	20.5	750	15	13.5	27.50	
26	26.5	1200	15	17.5	35.00	
27	31.0	1700	15	20.5	41.00	
28	40.0	2900	15	26.5	54.00	
29	53.0	4700	15	35.0	68.50	
30	64.0	7250	15	42.0	85.00	
31	75.0	9000	15	49.8	94.70	
38	126.0	24100	15	84.9	154.00	

CARLO GAVAZZI

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 the following formulas (only for DC relays):

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

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

Contact Characteristics

Rating	**10 A**
Material (standard version)[2]	**Ag CdO**
Current (for AC)	
Rated current	**10 A**
Max. switching current	**10 A**
Overload current (4 sec ON/40 sec OFF cycle time)	**15 A**
Min. switching current (standard contacts):	**100 mA at 24 VDC**
Voltage	
Rated voltage	**250 VAC**
Max. switching voltage (VDE 0435)	**380 VAC / 300 VDC**
Max. switching power with resistive load in AC[3]	**2500 VA**
Max. switching power in DC	**see diagram 1**
Life (see diagram 2)	
Expected life at max. resistive load AC	**10^5**
and repetition at : 1000 cycles/h DC	**10^6**
Max. electrical repetition rate	**1000 cycles/h**
Mech. life at 18000 cycles/h	**2 x 10^7 cycles**

General Data

Operating time at rated voltage (excl. bounces)	**≤ 8 ms**
Operating bounce time	**≤ 1 ms**
Release time (excl. bounces)	**≤ 4 ms**
Release bounce time[4]	**≤ 5 ms**
Vibration resistance[5]	**2.5 mm p.p. 5 to 45 Hz** **10 G, 45 to 150 Hz**
Ambient temp.[6] operating	**-40 °C to +70 °C**
storage	**-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**

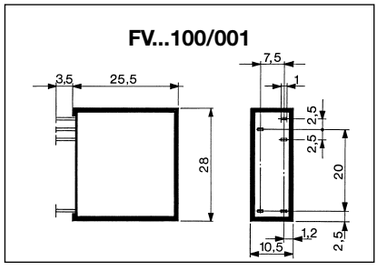
[2] If required, they may be supplied with 0,5µ flash gilded silver contacts for medium/low switching levels, as well as with 3µ gold plated silver contacts for very low switching level around 10 mV and 10 mA
[3] Itended with opened knob for sealed version FVH... .
[4][5] Special version ≤2,5 ms - 500 Hz max is available
[6] Feeding the relay at the maximum voltage given in the tables "Temperature Influence" the ambient temperature decreases from 70° to 40°C.

Insulation

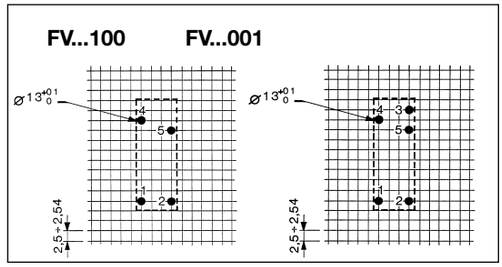
Test voltage (1 min.)	
Coil/frame	**750 VAC**
Contacts/coil	**4000 VAC**
Contacts/frame	**4000 VAC**
Open contacts	**750 VAC**

Insulation group (VDE 0110)		
Contacts/coil	IGR	**C/660**
Contacts/frame	IGR	**C/660**
Open contacts	IGR	**C/250**
Max. capacity		
Contacts/frame		**1.5 pF**
Open contacts		**2 pF**

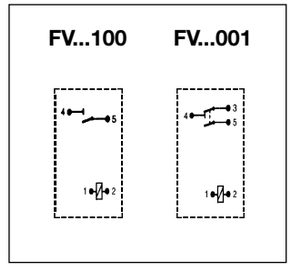
Dimensions



Pin View



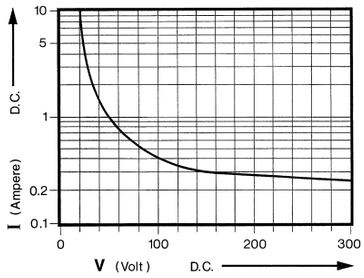
Wiring Diagrams



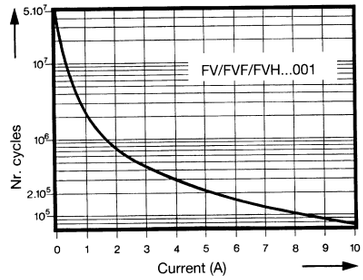
CARLO GAVAZZI

Diagrams

1 Max. switching power DC

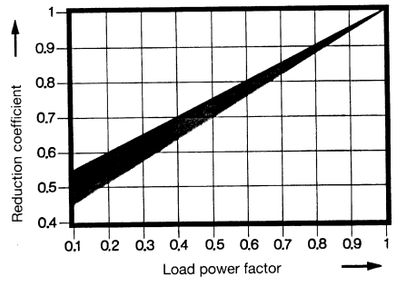


2 Expected switching cycles/ switching current at 250 VAC
For resistive loads and repetition rates of 1000 cycles/h



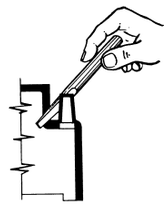
3 Reduction of expected life against load power factor cos φ

For all types



Application Hints

Use of sealed relays
The FVH relay types are completely sealed with inert gas, suitable for soldering and immersion washing-flux proof. Relays can be opened removing the label after soldering and washing operation this will reduce thermal stress. After washing, the FVH 001 series relay may be kept closed if loading current does not exceed 5A.



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

Approvals

U.S.A.	CANADA	GERMANY	SWEDEN	DENMARK	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**

Special Versions

Remanent bistable relay with one coil.