

Prewired position switches FF series



Technical data

Housing

Made of polymer glass-reinforced, self-extinguishing, shock proof thermo-plastic resin and with double isolation

2 m wired cable with 4x0,75 mm² wires marked SEV and IMQ

Protection degree: IP67

General data

Ambient temperature: from -25°C to +70°C (with cable)
from -25°C to +80°C (with connector)

Max operating frequency: 3600 operations cycles¹/hour

Mechanical endurance: 20 million operations cycles¹

(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

Markings and quality marks:



Approval UL: E131787

Conforms to the standards:

IEC 947-5-1, IEC 337-1, EN 60947-5-1, CEI EN 60947-5-1, CEI 17-45, IEC 204-1, EN 60204-1, CEI 44-5, EN 1088, EN 292, IEC 529, EN 60529, CEI 70-1, NFC 63-140, VDE 0660-200, VDE 0113

Approvals:

IEC 947-5-1, UL 508

Complying with the requirements requested by:

Low Voltage Directive 73/23/EEC and subsequent modifications and completions, Machinery Directive 98/37/EEC, Electromagnetic Compatibility 89/336/EEC and subsequent modifications and completions.

Positive contact opening complying with the standards: IEC 947-5-1, EN 60947-5-1, CEI EN 60947-5-1, VDE 0660-206.

Installation for safety applications:

Use only switches marked with the symbol \ominus . Safety circuit must always be connected with the **NC contacts** as stated in the **standard CEI EN 60947-5-1, encl. K, par. 2**. **The switch must be actuated with the minimum positive opening travel** shown in the travels diagrams on chapter 6.1 - page 2. **The switch must be actuated with the minimum positive opening force**, shown in brackets, underneath each article, near the value of the min. force. For a correct installation of these articles see examples on chapter 19

(*) See internal connection on chapter 6.1 - page 2

Electrical data

Utilization categories

Connector type	Electrical data	Utilization categories
with cable	Thermal current (Ith): 10 A Rated insulation voltage (Ui): 500 VAC 600 VDC Protection against short circuits: fuse 10 A 500 V type aM Pollution degree: 3	Alternate current: AC15 (50÷60 Hz) Ue (V) 120 250 400 Ie (A) 6 4 1 Direct current: DC13 Ue (V) 24 125 250 Ie (A) 2,5 0,55 0,27
with 4 poles M12 connectors	Thermal current (Ith): 4 A Rated insulation voltage (Ui): 250 VAC 300 VDC Protection against short circuits: fuse 4 A 500 V type Gg Pollution degree: 3	Alternate current: AC15 (50÷60 Hz) Ue (V) 120 250 Ie (A) 4 4 Direct current: DC13 Ue (V) 24 125 250 Ie (A) 2,5 0,55 0,27
with AMP connector	Thermal current (Ith): 10 A Rated insulation voltage (Ui): 250 VAC 300 VDC Protection against short circuits: fuse 10 A 500 V type Gg Pollution degree: 3	Alternate current: AC15 (50÷60 Hz) Ue (V) 120 250 Ie (A) 6 4 Direct current: DC13 Ue (V) 24 125 250 Ie (A) 2,5 0,55 0,27

Data type approved by UL

Utilization categories Q300, A600
 Data of the housing type 4X (indoor use only) and 6
 Conforms to the standard: UL 508

Please contact our technical service for the list of our type approved products

How to order

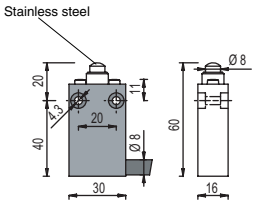
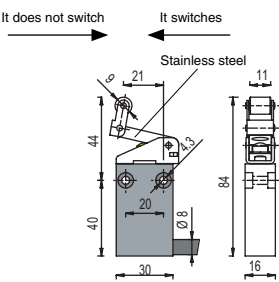
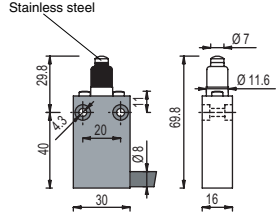
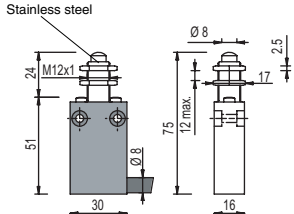
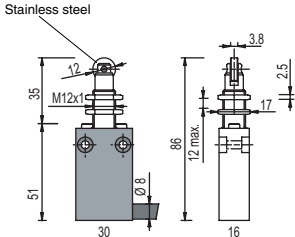
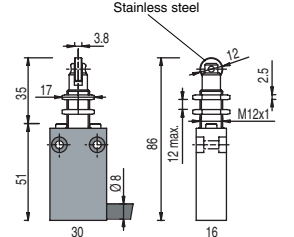
Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office

FF 4101-2DN1G

Housing		Type of contacts	
FF	polymer housing		silver contacts (standard)
Contact blocks		G	silver contacts gold plated (1 µm)
41	1NO+1NC, snap action	Suffix	
45	1NO+1NC, snap action		no suffix (standard)
46	1NO+1NC, slow action	1	with stainless steel roller: - ø 14 mm for actuators 31, 40 - ø 20 mm for actuators 51, 52, 54, 55, 56, 57
48	1NO+1NC, slow action	Type of connector or cable	
Actuator		N	cable EN 50265-2-1 black (standard)
01	short plunger	G	cable CEI 20-22 II (grey)
02	one-way lever	M	connector M12 4 poles
08	short roller lever	A	connector AMP superseal 1,5
...	Output direction	
Type of connection		D	from right
1	cable length 1 m	S	from bottom
2	cable length 2 m		
...		
0	cable length 10 m		
K	with connector		

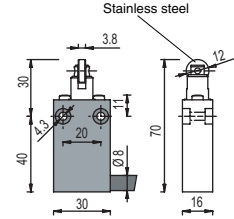
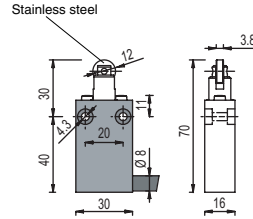
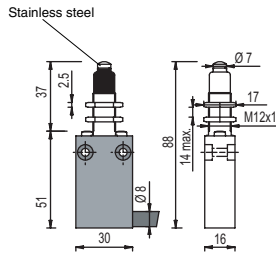
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FF series
polymer housing

					
FF series polymer housing			Fixed only by threaded head	Fixed only by threaded head	Fixed only by threaded head
					
Contact blocks					
41	Zb	snap action	FF 4101-2DN 1NO+1NC	FF 4102-2DN 1NO+1NC	FF 4108-2DN 1NO+1NC
45	Zb	snap action	FF 4501-2DN ⊕ 1NO+1NC	FF 4502-2DN ⊕ 1NO+1NC	FF 4508-2DN ⊕ 1NO+1NC
46	Zb	slow action	FF 4601-2DN ⊕ 1NO+1NC	FF 4602-2DN ⊕ 1NO+1NC	FF 4608-2DN ⊕ 1NO+1NC
48	Zb	slow action	FF 4801-2DN ⊕ 1NO+1NC	FF 4802-2DN ⊕ 1NO+1NC	FF 4808-2DN ⊕ 1NO+1NC
Max speed			0,5 m/s	0,5 m/s with 30° cam	0,5 m/s
Min. force			10 N (20 N)	5 N (15 N)	10 N (20 N)
Travel diagrams			chap. 6.1 - page 2 - group 1	chap. 6.1 - page 2 - group 2	chap. 6.1 - page 2 - group 1
Contact blocks					
41	Zb	snap action	FF 4110-2DN 1NO+1NC	FF 4111-2DN 1NO+1NC	FF 4112-2DN 1NO+1NC
45	Zb	snap action	FF 4510-2DN ⊕ 1NO+1NC	FF 4511-2DN ⊕ 1NO+1NC	FF 4512-2DN ⊕ 1NO+1NC
46	Zb	slow action	FF 4610-2DN ⊕ 1NO+1NC	FF 4611-2DN ⊕ 1NO+1NC	FF 4612-2DN ⊕ 1NO+1NC
48	Zb	slow action	FF 4810-2DN ⊕ 1NO+1NC	FF 4811-2DN ⊕ 1NO+1NC	FF 4812-2DN ⊕ 1NO+1NC
Max speed			0,5 m/s	0,1 m/s with 30° cam	0,1 m/s with 30° cam
Min. force			10 N (20 N)	10 N (20 N)	10 N (20 N)
Travel diagrams			chap. 6.1 - page 2 - group 1	chap. 6.1 - page 2 - group 1	chap. 6.1 - page 2 - group 1

FF series
polymer housing

With external rubber gasket.
Fixed only by threaded head

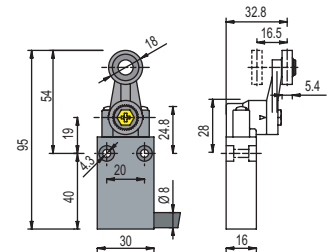
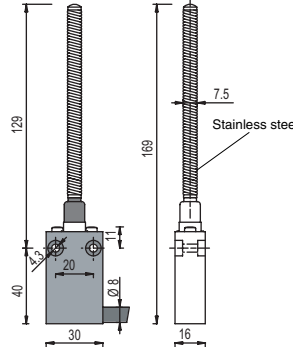
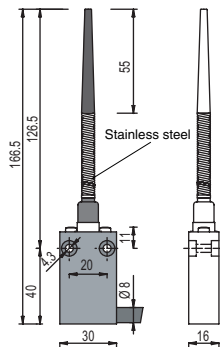


Contact blocks

41	Zb	snap action	FF 4113-2DN	1NO+1NC	FF 4115-2DN	1NO+1NC	FF 4117-2DN	1NO+1NC
45	Zb	snap action	FF 4513-2DN	1NO+1NC	FF 4515-2DN	1NO+1NC	FF 4517-2DN	1NO+1NC
46	Zb	slow action	FF 4613-2DN	1NO+1NC	FF 4615-2DN	1NO+1NC	FF 4617-2DN	1NO+1NC
48	Zb	slow action	FF 4813-2DN	1NO+1NC	FF 4815-2DN	1NO+1NC	FF 4817-2DN	1NO+1NC
Max speed			0,5 m/s		0,1 m/s with 30° cam		0,1 m/s with 30° cam	
Min. force			10 N (20 N)		10 N (20 N)		10 N (20 N)	
Travel diagrams			chap. 6.1 - page 2 - group 1		chap. 6.1 - page 2 - group 1		chap. 6.1 - page 2 - group 1	

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FF series
polymer housing



Contact blocks

41	Zb	snap action	FF 4120-2DN	1NO+1NC	FF 4125-2DN	1NO+1NC	FF 4130-2DN	1NO+1NC
45	Zb	snap action	FF 4520-2DN	1NO+1NC	FF 4525-2DN	1NO+1NC	FF 4530-2DN	1NO+1NC
46	Zb	slow action					FF 4630-2DN	1NO+1NC
48	Zb	slow action	FF 4820-2DN	1NO+1NC	FF 4825-2DN	1NO+1NC	FF 4830-2DN	1NO+1NC
Max speed			1 m/s		1 m/s		1,5 m/s with 30° cam	
Min. force			7 Ncm		6 Ncm		6,5 Ncm (10 Ncm)	
Travel diagrams			chap. 6.1 - page 2 - group 3		chap. 6.1 - page 2 - group 3		chap. 6.1 - page 2 - group 4	

FF series
polymer housing

				Square rod 3x3 		
Contact blocks						
41	Zb	snap action	FF 4131-2DN 1NO+1NC	FF 4133-2DN 1NO+1NC	FF 4134-2DN 1NO+1NC	
45	Zb	snap action	FF 4531-2DN \oplus 1NO+1NC	FF 4533-2DN 1NO+1NC	FF 4534-2DN 1NO+1NC	
46	Zb	slow action	FF 4631-2DN \oplus 1NO+1NC	FF 4633-2DN 1NO+1NC	FF 4634-2DN 1NO+1NC	
48	Zb	slow action	FF 4831-2DN \oplus 1NO+1NC	FF 4833-2DN 1NO+1NC	FF 4834-2DN 1NO+1NC	
Max speed			1,5 m/s with 30° cam	1,5 m/s	1,5 m/s	
Min. force			6,5 Ncm (10 Ncm)	6,5 Ncm	6,5 Ncm	
Travel diagrams			chap. 6.1 - page 2 - group 4	chap. 6.1 - page 2 - group 4	chap. 6.1 - page 2 - group 4	
				Stainless steel \varnothing 3 round rod 		
Contact blocks						
41	Zb	snap action	FF 4140-2DN 1NO+1NC	FF 4150-2DN 1NO+1NC	FF 4151-2DN 1NO+1NC	
45	Zb	snap action	FF 4540-2DN \oplus 1NO+1NC	FF 4550-2DN 1NO+1NC	FF 4551-2DN \oplus 1NO+1NC	
46	Zb	slow action	FF 4640-2DN \oplus 1NO+1NC	FF 4650-2DN 1NO+1NC	FF 4651-2DN \oplus 1NO+1NC	
48	Zb	slow action	FF 4840-2DN \oplus 1NO+1NC	FF 4850-2DN 1NO+1NC	FF 4851-2DN \oplus 1NO+1NC	
Max speed			1,5 m/s with 30° cam	1,5 m/s	1,5 m/s with 30° cam	
Min. force			6,5 Ncm (10 Ncm)	6,5 Ncm	6,5 Ncm (10 Ncm)	
Travel diagrams			chap. 6.1 - page 2 - group 4	chap. 6.1 - page 2 - group 4	chap. 6.1 - page 2 - group 4	

FF series
polymer housing

FF series polymer housing								
41	Zb	snap action	FF 4152-2DN	1NO+1NC	FF 4154-2DN	1NO+1NC	FF 4155-2DN	1NO+1NC
45	Zb	snap action	FF 4552-2DN	1NO+1NC	FF 4554-2DN	1NO+1NC	FF 4555-2DN	1NO+1NC
46	Zb	slow action	FF 4652-2DN	1NO+1NC	FF 4654-2DN	1NO+1NC	FF 4655-2DN	1NO+1NC
48	Zb	slow action	FF 4852-2DN	1NO+1NC	FF 4854-2DN	1NO+1NC	FF 4855-2DN	1NO+1NC
Max speed			1,5 m/s with 30° cam		1,5 m/s with 30° cam		1,5 m/s with 30° cam	
Min. force			6,5 Ncm (10 Ncm)		6,5 Ncm (10 Ncm)		6,5 Ncm (10 Ncm)	
Travel diagrams			chap. 6.1 - page 2 - group 4		chap. 6.1 - page 2 - group 4		chap. 6.1 - page 2 - group 4	

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FF series
polymer housing

FF series polymer housing								
41	Zb	snap action	FF 4156-2DN	1NO+1NC	FF 4157-2DN	1NO+1NC	FF 4169-2DN	1NO+1NC
45	Zb	snap action	FF 4556-2DN	1NO+1NC	FF 4557-2DN	1NO+1NC	FF 4569-2DN	1NO+1NC
46	Zb	slow action	FF 4656-2DN	1NO+1NC	FF 4657-2DN	1NO+1NC	FF 4669-2DN	1NO+1NC
48	Zb	slow action	FF 4856-2DN	1NO+1NC	FF 4857-2DN	1NO+1NC	FF 4869-2DN	1NO+1NC
Max speed			1,5 m/s with 30° cam		1,5 m/s with 30° cam		1,5 m/s	
Min. force			6,5 Ncm (10 Ncm)		6,5 Ncm (10 Ncm)		6,5 Ncm	
Travel diagrams			chap. 6.1 - page 2 - group 4		chap. 6.1 - page 2 - group 4		chap. 6.1 - page 2 - group 4	

⊕* positive opening with lever adjusted on the max. See chapter 5.2 - page 9