

Prewired position switches **FB** series



Technical data

Housing

Made of metal, coated with baked epoxy powder
2 m wired cable with 5x0,75 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 IMQ: EM670
(contact blocks 41)
EM671
(contact blocks 46)
Approval UL: E131787
Approval EZU: 1010151

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 ⊕. 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

			Utilization categories			
with cable	Thermal current (I _{th}):	10 A	Alternate current: AC15 (50÷60 Hz)			
	Rated insulation voltage (U _i):	500 VAC 600 VDC	U _e (V)	120	250	400
	Protection against short circuits:	fuse 10 A 500 V type aM	I _e (A)	6	4	1
	Pollution degree:	3	Direct current: DC13			
			U _e (V)	24	125	250
			I _e (A)	2,5	0,55	0,27
with 5 poles M12 connectors	Thermal current (I _{th}):	4 A	Alternate current: AC15 (50÷60 Hz)			
	Rated insulation voltage (U _i):	250 VAC 300 VDC	U _e (V)	120	250	
	Protection against short circuits:	fuse 4 A 500 V type Gg	I _e (A)	4	4	
	Pollution degree:	3	Direct current: DC13			
			U _e (V)	24	125	250
			I _e (A)	2,5	0,55	0,27

Data type approved by IMQ and EZU

Rated insulation voltage (Ui): 500 VAC
 Thermal current (Ith): 10 A
 Protection against short circuits: fuse 10 A 500 V type aM
 Protection degree of the housing: IP67
 MA terminals (seamed clamps)
 Pollution degree 3
 Utilization category : AC15
 Operation voltage (Ue): 400 VAC (50 Hz)
 Operation current (Ie): 3 A
 Forms of the contact element: Zb (contact blocks 41 and 46)
 Positive opening of contacts on contact block 46
 Conforms to the standards: EN60947-1, EN60947-1 A11, EN60947-5-1
 and fundamental requirements of the Low Voltage Directive 73/23
 EEC and 93/68 EEC.

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

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

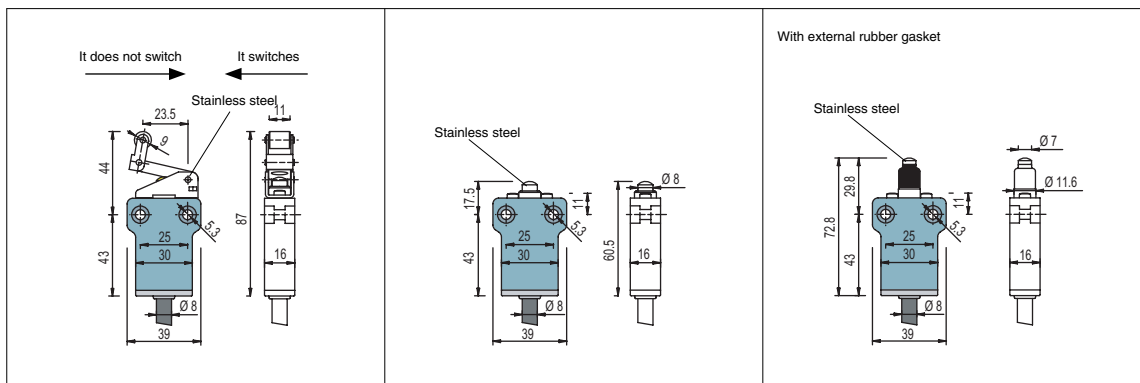
Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office

6.3

FB 4101-2DN1G

Housing		Type of contacts	
FB	metal 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 5 poles
08	short roller lever	Output direction	
...	D	from right
Type of connection		S	from bottom
1	cable length 1 m		
2	cable length 2 m		
...		
0	cable length 10 m		
K	with connector		

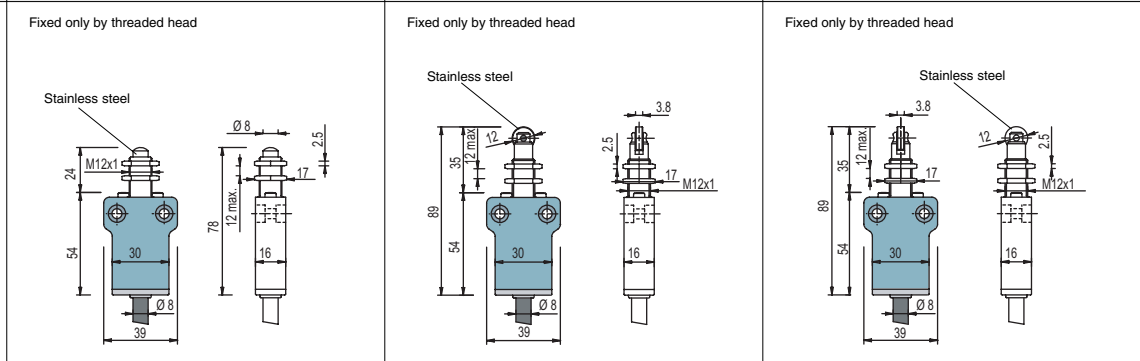
FB series metal housing



Contact blocks

41	Zb	snap action	FB 4102-2SN	1NO+1NC	FB 4103-2SN	1NO+1NC	FB 4108-2SN	1NO+1NC
45	Zb	snap action	FB 4502-2SN	1NO+1NC	FB 4503-2SN	1NO+1NC	FB 4508-2SN	1NO+1NC
46	Zb	slow action	FB 4602-2SN	1NO+1NC	FB 4603-2SN	1NO+1NC	FB 4608-2SN	1NO+1NC
48	Zb	slow action	FB 4802-2SN	1NO+1NC	FB 4803-2SN	1NO+1NC	FB 4808-2SN	1NO+1NC
Max speed			0,5 m/s with 30° cam		0,5 m/s		0,5 m/s	
Min. force			5 N (15 N)		10 N (20 N)		10 N (20 N)	
Travel diagrams			chap. 6.1 - page 2 - group 2		chap. 6.1 - page 2 - group 1		chap. 6.1 - page 2 - group 1	

FB series metal housing

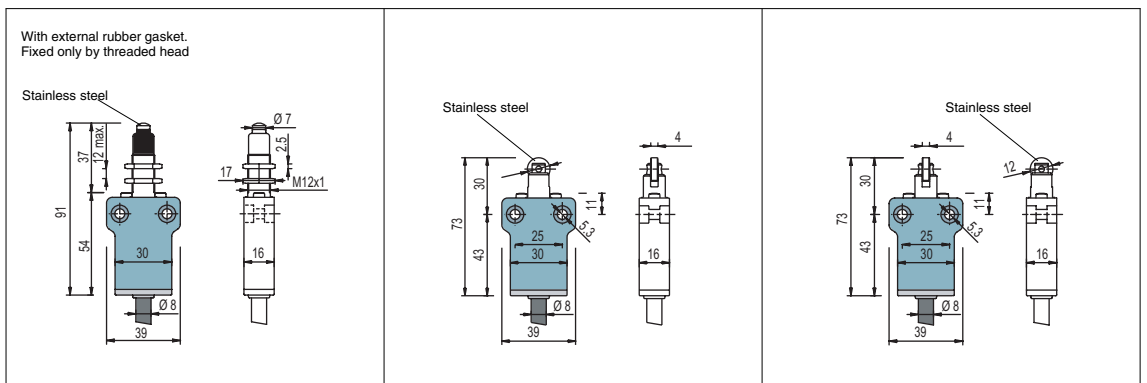


Contact blocks

41	Zb	snap action	FB 4110-2SN	1NO+1NC	FB 4111-2SN	1NO+1NC	FB 4112-2SN	1NO+1NC
45	Zb	snap action	FB 4510-2SN	1NO+1NC	FB 4511-2SN	1NO+1NC	FB 4512-2SN	1NO+1NC
46	Zb	slow action	FB 4610-2SN	1NO+1NC	FB 4611-2SN	1NO+1NC	FB 4612-2SN	1NO+1NC
48	Zb	slow action	FB 4810-2SN	1NO+1NC	FB 4811-2SN	1NO+1NC	FB 4812-2SN	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	

Items with code on the grey background are available in stock.

FB series metal housing

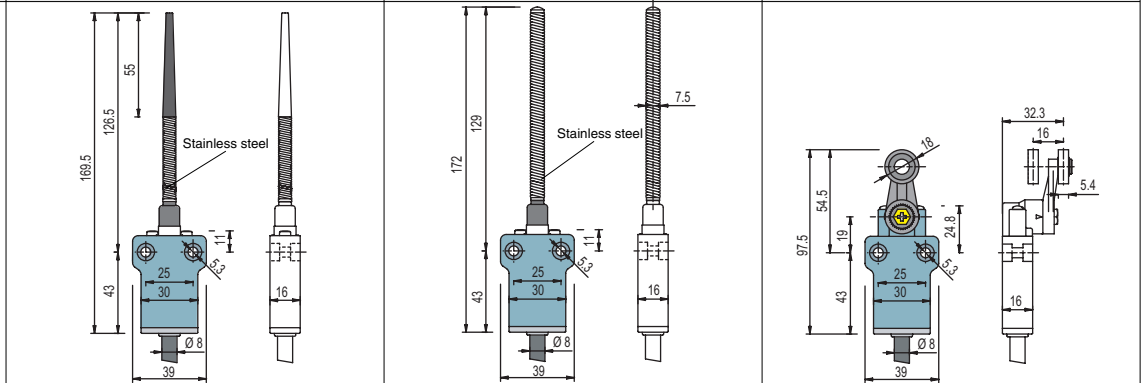


Contact blocks

41	Zb	snap action	FB 4113-2SN	1NO+1NC	FB 4115-2SN	1NO+1NC	FB 4117-2SN	1NO+1NC
45	Zb	snap action	FB 4513-2SN	1NO+1NC	FB 4515-2SN	1NO+1NC	FB 4517-2SN	1NO+1NC
46	Zb	slow action	FB 4613-2SN	1NO+1NC	FB 4615-2SN	1NO+1NC	FB 4617-2SN	1NO+1NC
48	Zb	slow action	FB 4813-2SN	1NO+1NC	FB 4815-2SN	1NO+1NC	FB 4817-2SN	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	

6.3

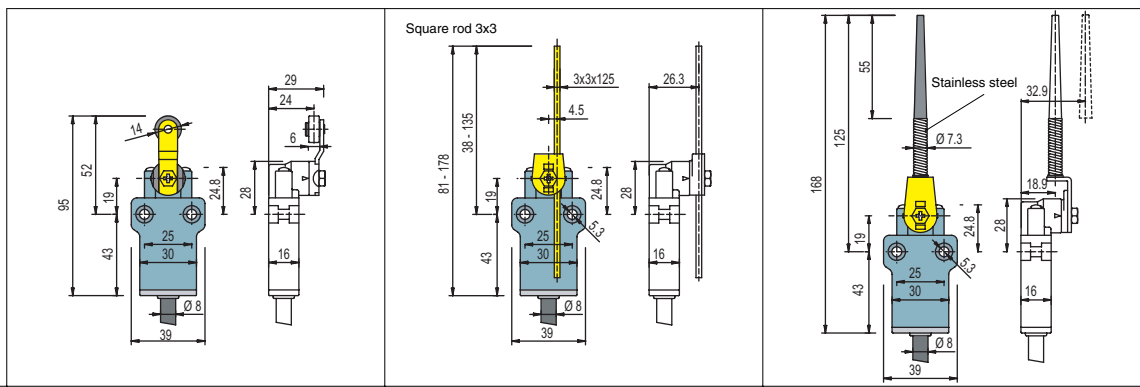
FB series metal housing



Contact blocks

41	Zb	snap action	FB 4120-2SN	1NO+1NC	FB 4125-2SN	1NO+1NC	FB 4130-2SN	1NO+1NC
45	Zb	snap action	FB 4520-2SN	1NO+1NC	FB 4525-2SN	1NO+1NC	FB 4530-2SN	1NO+1NC
46	Zb	slow action					FB 4630-2SN	1NO+1NC
48	Zb	slow action	FB 4820-2SN	1NO+1NC	FB 4825-2SN	1NO+1NC	FB 4830-2SN	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	

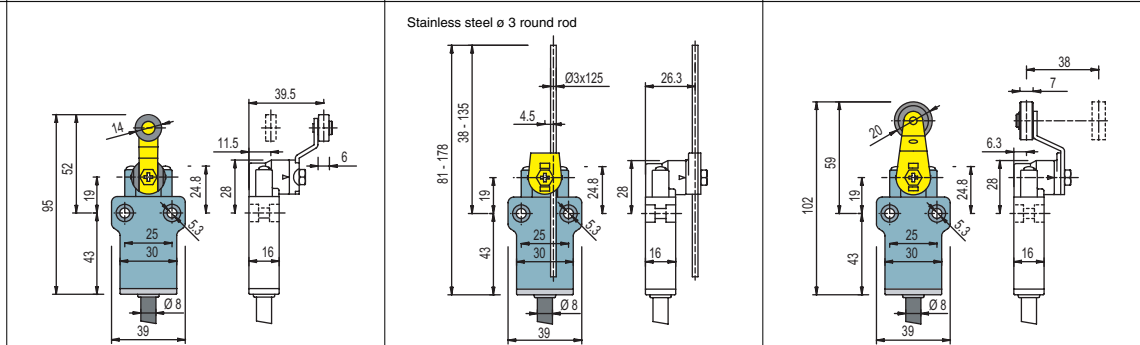
FB series metal housing



Contact blocks

41	Zb	snap action	FB 4131-2SN	1NO+1NC	FB 4133-2SN	1NO+1NC	FB 4134-2SN	1NO+1NC
45	Zb	snap action	FB 4531-2SN	1NO+1NC	FB 4533-2SN	1NO+1NC	FB 4534-2SN	1NO+1NC
46	Zb	slow action	FB 4631-2SN	1NO+1NC	FB 4633-2SN	1NO+1NC	FB 4634-2SN	1NO+1NC
48	Zb	slow action	FB 4831-2SN	1NO+1NC	FB 4833-2SN	1NO+1NC	FB 4834-2SN	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	

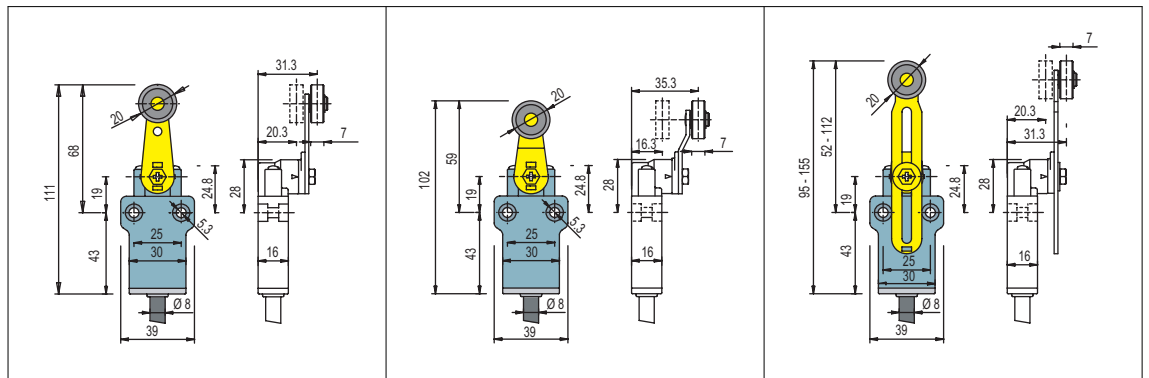
FB series metal housing



Contact blocks

41	Zb	snap action	FB 4140-2SN	1NO+1NC	FB 4150-2SN	1NO+1NC	FB 4151-2SN	1NO+1NC
45	Zb	snap action	FB 4540-2SN	1NO+1NC	FB 4550-2SN	1NO+1NC	FB 4551-2SN	1NO+1NC
46	Zb	slow action	FB 4640-2SN	1NO+1NC	FB 4650-2SN	1NO+1NC	FB 4651-2SN	1NO+1NC
48	Zb	slow action	FB 4840-2SN	1NO+1NC	FB 4850-2SN	1NO+1NC	FB 4851-2SN	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	

FB series metal housing

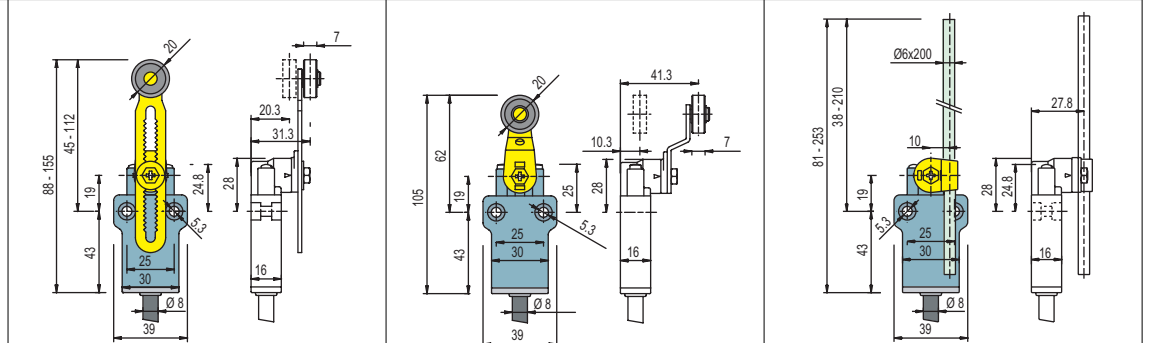


Contact blocks

41	Zb	snap action	FB 4152-2SN	1NO+1NC	FB 4154-2SN	1NO+1NC	FB 4155-2SN	1NO+1NC
45	Zb	snap action	FB 4552-2SN	1NO+1NC	FB 4554-2SN	1NO+1NC	FB 4555-2SN	1NO+1NC*
46	Zb	slow action	FB 4652-2SN	1NO+1NC	FB 4654-2SN	1NO+1NC	FB 4655-2SN	1NO+1NC*
48	Zb	slow action	FB 4852-2SN	1NO+1NC	FB 4854-2SN	1NO+1NC	FB 4855-2SN	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	

6.3

FB series metal housing



Contact blocks

41	Zb	snap action	FB 4156-2SN	1NO+1NC	FB 4157-2SN	1NO+1NC	FB 4169-2SN	1NO+1NC
45	Zb	snap action	FB 4556-2SN	1NO+1NC	FB 4557-2SN	1NO+1NC	FB 4569-2SN	1NO+1NC
46	Zb	slow action	FB 4656-2SN	1NO+1NC	FB 4657-2SN	1NO+1NC	FB 4669-2SN	1NO+1NC
48	Zb	slow action	FB 4856-2SN	1NO+1NC	FB 4857-2SN	1NO+1NC	FB 4869-2SN	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