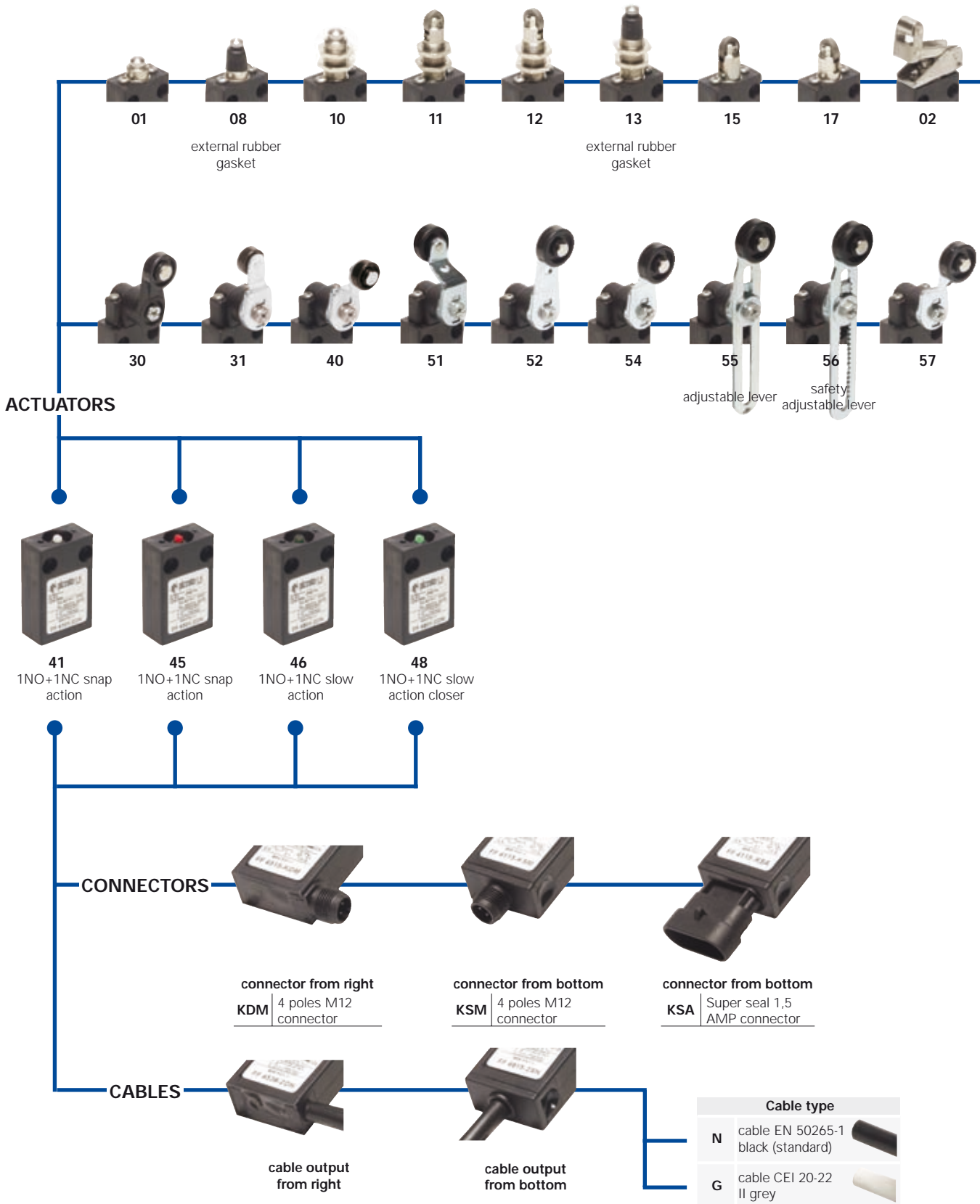
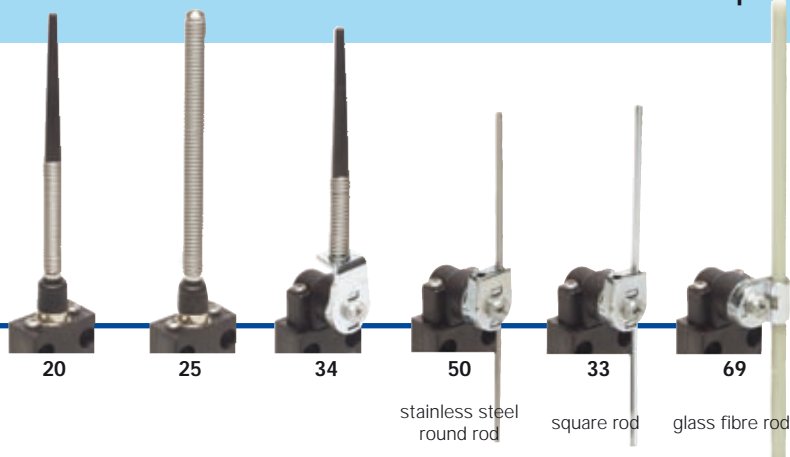


## Selection diagram

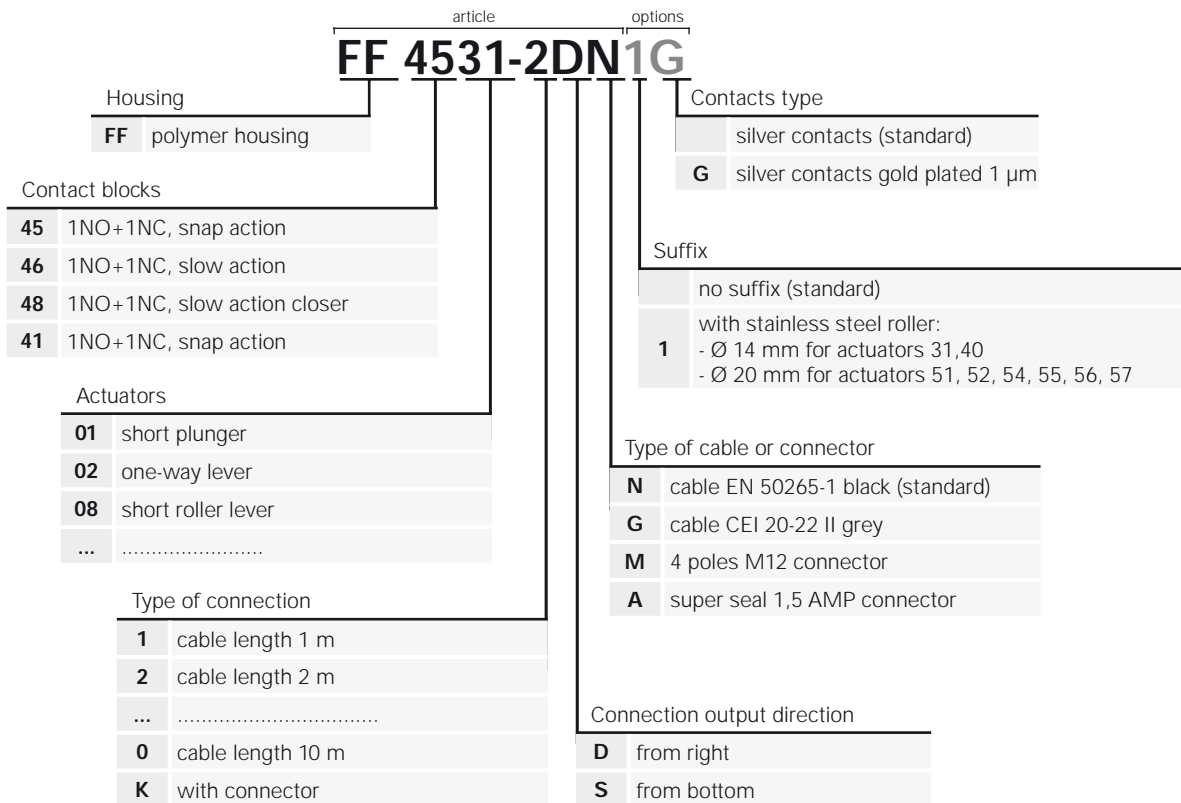


● product option  
➔ accessory sold separately



**Code structure**

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





### Main data

- Polymer housing, cable output from right or from bottom
- 2 integrated cable types available
- Versions with M12 connector from right or from bottom suitable for safety applications ⊕
- Connector AMP version
- Protection degree IP67
- 4 contact blocks available
- 24 actuators available

### Markings and quality marks:



Approval IMQ: CA02.02391  
 Approval UL: E131787  
 Approval UL: 2007010305230004

### Installation for safety applications:

Use only switches marked with the symbol ⊕. The safety circuit must always be connected with the **NC contacts** (normally closed contacts: see "internal connections" on page 2/118) as stated in the **standard CEI EN 60947-5-1, encl. K, par. 2**. The switch must be actuated with **at least up to the positive opening travel** shown in the travels diagrams on page 6/8. The switch must be actuated **at least with the positive opening force**, shown in brackets, underneath each article, near the value of the min. force.

⚠ If not expressly indicated in this chapter, for the right installation and the correct utilization of all articles see requirements indicated from page 6/1 to page 6/8.

### Housing

Made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation □

Version with cable integrated with 4x 0.75 mm<sup>2</sup> wires length 2 m, other lengths on request.

Versions with 4 poles M12 integrated connector suitable for safety applications ⊕  
 Protection degree: IP67

### General data

Ambient temperature: See table on page 2/118  
 Max operating frequency: 3600 operations cycles<sup>1</sup>/hour  
 Mechanical endurance: 20 million operations cycles<sup>1</sup>  
 Assembling position: any  
 Vibrations holding: 20 gn (10...500 Hz) according to IEC 60068-2-6  
 Shock holding: 50 gn (11 ms) according to IEC 60068-2-27  
 (1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

### In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, EN 60529, NFC 63-140, VDE 0660-200, VDE 0113, CENELEC EN 50013.

### Approvals:

IEC 60947-5-1, UL 508, GB14048.5-2001

### In conformity with requirements requested by:

Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.

### Positive contact opening in conformity with standards:

IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

### Electrical data

### Utilization categories

with cable	Thermal current (I <sub>th</sub> ):	10 A	Alternate current: AC15 (50...60 Hz)			
	Rated insulation voltage (U <sub>i</sub> ):	500 VAC 600 VDC	U <sub>e</sub> (V)	120	250	400
	Protection against short circuits:	fuse 10 A 500 V type aM	I <sub>e</sub> (A)	6	4	3
	Pollution degree:	3	Direct current: DC13			
			U <sub>e</sub> (V)	24	125	250
			I <sub>e</sub> (A)	2,5	0,55	0,27

with 4 poles M12 connector	Thermal current (I <sub>th</sub> ):	4 A	Alternate current: AC15 (50...60 Hz)			
	Rated insulation voltage (U <sub>i</sub> ):	250 VAC 300 VDC	U <sub>e</sub> (V)	120	250	
	Protection against short circuits:	fuse 4 A 500 V type gG	I <sub>e</sub> (A)	4	4	
	Pollution degree:	3	Direct current: DC13			
			U <sub>e</sub> (V)	24	125	250
			I <sub>e</sub> (A)	2,5	0,55	0,27

with AMP connector	Thermal current (I <sub>th</sub> ):	10 A	Alternate current: AC15 (50...60 Hz)			
	Rated insulation voltage (U <sub>i</sub> ):	250 VAC 300 VDC	U <sub>e</sub> (V)	120	250	
	Protection against short circuits:	fuse 10 A 500 V type gG	I <sub>e</sub> (A)	6	4	
	Pollution degree:	3	Direct current: DC13			
			U <sub>e</sub> (V)	24	125	250
			I <sub>e</sub> (A)	2,5	0,55	0,27

**Data type approved by IMQ and CCC**

Rated insulation voltage (Ui): 500 VAC / 250 VAC (with connector)  
 Thermal current (Ith): 10 A / 4 A (with connector)  
 Protection against short circuits: fuse 10 A 500 V type aM  
 Protection degree: IP67  
 MA terminals (seamed clamps)  
 Pollution degree 3  
 Utilization category: AC15 / DC13 (with connector)  
 Operation voltage (Ue): 400 VAC (50 Hz) / 24 VDC (with connector)  
 Operation current (Ie): 3 A / 2,5 A (with connector)  
 Forms of the contact element: Zb  
 Positive opening of contacts on contact block 45, 46, 48  
 In conformity with standards: EN60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 73/23 EEC and subsequent modifications and completions.

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

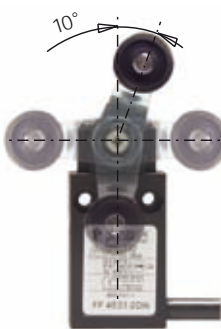
**Data type approved by UL**

Utilization categories Q300 (69 VA, 125-250 VDC)  
 A600 (720 VA, 120-600 VAC)  
 Data of the housing type 4X, 6 (indoor use only)  
 In conformity with standard: UL 508

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

**Adjustable levers**

In switches with revolving lever it is possible to adjust the lever with 10° steps for the whole 360° range. The positive transmission is always guaranteed thanks to the particular geometrical coupling between the lever and the revolving shaft as prescribed for safety applications by the German standard BG-GS-ET-15.



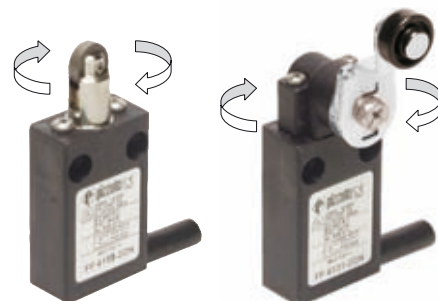
**Overturning levers**

It's possible to fasten the lever on switches on straight or reverse side, maintaining the positive coupling. In this way it is possible to obtain two different work plans of the lever.

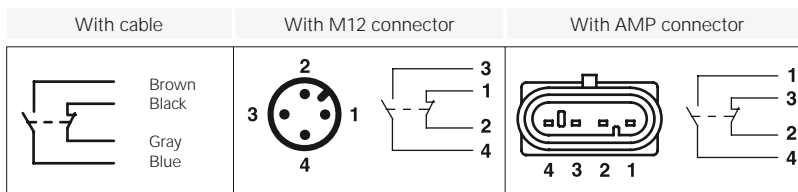


**Rotating heads**

According to different versions, it is possible to rotate the head in 90° or 180° steps.



**Internal connections**



**4 poles M12 safety connectors** ⊕

Pizzato Elettrica manufactures 4 poles connector integrated with a safety switch, complying with requirements of standard IEC 947-5-1. Its high insulation voltage Ui 250 VAC allows to mark it as suitable for safety applications ⊕.

**Utilization temperatures and approvals**

Cable code	Cable features	Switches FF series standard versions								Available on request				Approvals of switches with integrated cable
		Fixed laying cable		Dynamic laying cable		Fixed laying cable		Dynamic laying cable		Switches FF series extended temperature versions				
		Tmin	Tmax	Tmin	Tmax	Tmin	Tmax	Tmin	Tmax	Tmin	Tmax			
<b>N</b>	PVC H05VV-F, fixed laying cable Not spreading the flame EN 50265-2-1	-25 °C	+70 °C	-	-	-	-	-	-	-	-	-	-	CE, IMQ, UL, CCC
<b>G</b>	PVC S05VV-F, fixed laying cable Not flame-spreading CEI 20-22 II	-25 °C	+70 °C	-	-	-	-	-	-	-	-	-	-	CE

Connector code	Connector features	Switches FF series standard versions		Available on request		Approvals of switches with integrated connector
		Tmin	Tmax	Tmin	Tmax	
<b>KDM-KSM</b>	4 poles M12 connector	-25 °C	+80 °C	-35 °C	+80 °C	CE, IMQ, UL, CCC
<b>KSA</b>	Super seal 1,5 AMP connector	-25 °C	+80 °C	-35 °C	+80 °C	CE

# Prewired position switches FF series versions with 2 meter "N" type cable from right

Contacts type:

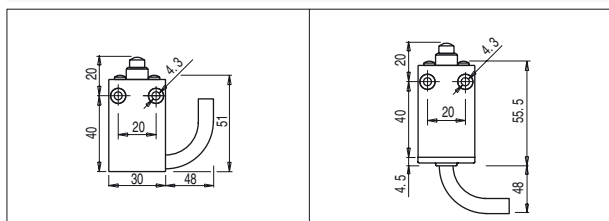
- R = snap action
- L = slow action
- LA = slow action closer

Contact blocks				
45	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4501-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4502-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4508-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4510-2DN
46	<span style="border: 1px solid black; padding: 1px;">L</span> FF 4601-2DN	<span style="border: 1px solid black; padding: 1px;">L</span> FF 4602-2DN	<span style="border: 1px solid black; padding: 1px;">L</span> FF 4608-2DN	<span style="border: 1px solid black; padding: 1px;">L</span> FF 4610-2DN
48	<span style="border: 1px solid black; padding: 1px;">LA</span> FF 4801-2DN	<span style="border: 1px solid black; padding: 1px;">LA</span> FF 4802-2DN	<span style="border: 1px solid black; padding: 1px;">LA</span> FF 4808-2DN	<span style="border: 1px solid black; padding: 1px;">LA</span> FF 4810-2DN
41	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4101-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4102-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4108-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4110-2DN
Max speed	page 6/7 - type 4	page 6/7 - type 3	page 6/7 - type 4	page 6/7 - type 4
Min. force	10 N (25 N <span style="color: red;">⊕</span> )	5 N (25 N <span style="color: red;">⊕</span> )	10 N (25 N <span style="color: red;">⊕</span> )	10 N (25 N <span style="color: red;">⊕</span> )
Travel diagrams	page 6/8 - group 1	page 6/8 - group 2	page 6/8 - group 1	page 6/8 - group 1

Contact blocks				
45	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4511-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4512-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4513-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4515-2DN
46	<span style="border: 1px solid black; padding: 1px;">L</span> FF 4611-2DN	<span style="border: 1px solid black; padding: 1px;">L</span> FF 4612-2DN	<span style="border: 1px solid black; padding: 1px;">L</span> FF 4613-2DN	<span style="border: 1px solid black; padding: 1px;">L</span> FF 4615-2DN
48	<span style="border: 1px solid black; padding: 1px;">LA</span> FF 4811-2DN	<span style="border: 1px solid black; padding: 1px;">LA</span> FF 4812-2DN	<span style="border: 1px solid black; padding: 1px;">LA</span> FF 4813-2DN	<span style="border: 1px solid black; padding: 1px;">LA</span> FF 4815-2DN
41	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4111-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4112-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4113-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4115-2DN
Max speed	page 6/7 - type 2	page 6/7 - type 2	page 6/7 - type 4	page 6/7 - type 2
Min. force	10 N (25 N <span style="color: red;">⊕</span> )	10 N (25 N <span style="color: red;">⊕</span> )	10 N (25 N <span style="color: red;">⊕</span> )	10 N (25 N <span style="color: red;">⊕</span> )
Travel diagrams	page 6/8 - group 1	page 6/8 - group 1	page 6/8 - group 1	page 6/8 - group 1

Contact blocks				
45	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4517-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4520-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4525-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4530-2DN
46	<span style="border: 1px solid black; padding: 1px;">L</span> FF 4617-2DN	<span style="border: 1px solid black; padding: 1px;">L</span> FF 4620-2DN	<span style="border: 1px solid black; padding: 1px;">L</span> FF 4625-2DN	<span style="border: 1px solid black; padding: 1px;">L</span> FF 4630-2DN
48	<span style="border: 1px solid black; padding: 1px;">LA</span> FF 4817-2DN	<span style="border: 1px solid black; padding: 1px;">LA</span> FF 4820-2DN	<span style="border: 1px solid black; padding: 1px;">LA</span> FF 4825-2DN	<span style="border: 1px solid black; padding: 1px;">LA</span> FF 4830-2DN
41	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4117-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4120-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4125-2DN	<span style="border: 1px solid black; padding: 1px;">R</span> FF 4130-2DN
Max speed	page 6/7 - type 2	1 m/s	1 m/s	page 6/7 - type 1
Min. force	10 N (25 N <span style="color: red;">⊕</span> )	0,07 Nm	0,07 Nm	0,03 Nm (0,25 Nm <span style="color: red;">⊕</span> )
Travel diagrams	page 6/8 - group 1	page 6/8 - group 3	page 6/8 - group 3	page 6/8 - group 4

Outline dimensions with cable output from right or from bottom



Items with code on the green background are available in stock

All measures in the drawings are in mm

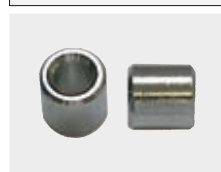
Contacts type:	With stainless steel roller on request		3x3 mm square rod		With stainless steel roller on request	
<b>R</b> = snap action <b>L</b> = slow action <b>LA</b> = slow action closer						
Contact blocks	FF 4531-2DN 1NO+1NC		FF 4533-2DN 1NO+1NC		FF 4534-2DN 1NO+1NC	
45 <b>R</b>	FF 4631-2DN 1NO+1NC		FF 4633-2DN 1NO+1NC		FF 4634-2DN 1NO+1NC	
46 <b>L</b>	FF 4831-2DN 1NO+1NC		FF 4833-2DN 1NO+1NC		FF 4834-2DN 1NO+1NC	
48 <b>LA</b>	FF 4131-2DN 1NO+1NC		FF 4133-2DN 1NO+1NC		FF 4134-2DN 1NO+1NC	
41 <b>R</b>	Max speed page 6/7 - type 1		1,5 m/s		1,5 m/s	
	Min. force 0,03 Nm (0,25 Nm ⊕)		0,03 Nm		0,03 Nm	
Travel diagrams	page 6/8 - group 4		page 6/8 - group 4		page 6/8 - group 4	

	Ø 3 mm stainless steel round rod		With stainless steel roller on request		With stainless steel roller on request		With stainless steel roller on request	
Contact blocks	FF 4550-2DN 1NO+1NC		FF 4551-2DN 1NO+1NC		FF 4552-2DN 1NO+1NC		FF 4554-2DN 1NO+1NC	
45 <b>R</b>	FF 4650-2DN 1NO+1NC		FF 4651-2DN 1NO+1NC		FF 4652-2DN 1NO+1NC		FF 4654-2DN 1NO+1NC	
46 <b>L</b>	FF 4850-2DN 1NO+1NC		FF 4851-2DN 1NO+1NC		FF 4852-2DN 1NO+1NC		FF 4854-2DN 1NO+1NC	
48 <b>LA</b>	FF 4150-2DN 1NO+1NC		FF 4151-2DN 1NO+1NC		FF 4152-2DN 1NO+1NC		FF 4154-2DN 1NO+1NC	
41 <b>R</b>	Max speed 1,5 m/s		page 6/7 - type 1		page 6/7 - type 1		page 6/7 - type 1	
	Min. force 0,03 Nm		0,03 Nm (0,25 Nm ⊕)		0,03 Nm (0,25 Nm ⊕)		0,03 Nm (0,25 Nm ⊕)	
Travel diagrams	page 6/8 - group 4		page 6/8 - group 4		page 6/8 - group 4		page 6/8 - group 4	

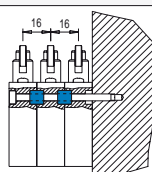
	With stainless steel roller on request		With stainless steel roller on request		With stainless steel roller on request		Glass fibre rod	
Contact blocks	FF 4555-2DN 1NO+1NC		FF 4556-2DN 1NO+1NC		FF 4557-2DN 1NO+1NC		FF 4569-2DN 1NO+1NC	
45 <b>R</b>	FF 4655-2DN 1NO+1NC		FF 4656-2DN 1NO+1NC		FF 4657-2DN 1NO+1NC		FF 4669-2DN 1NO+1NC	
46 <b>L</b>	FF 4855-2DN 1NO+1NC		FF 4856-2DN 1NO+1NC		FF 4857-2DN 1NO+1NC		FF 4869-2DN 1NO+1NC	
48 <b>LA</b>	FF 4155-2DN 1NO+1NC		FF 4156-2DN 1NO+1NC		FF 4157-2DN 1NO+1NC		FF 4169-2DN 1NO+1NC	
41 <b>R</b>	Max speed page 6/7 - type 1		page 6/7 - type 1		page 6/7 - type 1		1,5 m/s	
	Min. force 0,03 Nm (0,25 Nm ⊕)		0,03 Nm (0,25 Nm ⊕)		0,03 Nm (0,25 Nm ⊕)		0,03 Nm	
Travel diagrams	page 6/8 - group 4		page 6/8 - group 4		page 6/8 - group 4		page 6/8 - group 4	

## Accessories

Article	Description
VF D16	Spacers for FA-FF series



By interposing spacers between the switches, it is possible to join two or more prewired switches, preventing them from moving one against the other. **10 pcs** packs



(1) Positive opening only with lever adjusted on the max. See page 2/51

Contacts type:

- R = snap action
- L = slow action
- LA = slow action closer

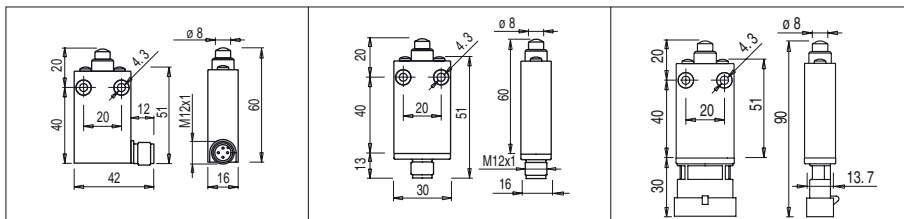
Contact blocks				
45	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4501-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4502-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4508-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4510-KDM
46	<span style="border: 1px solid black; padding: 2px;">L</span> FF 4601-KDM	<span style="border: 1px solid black; padding: 2px;">L</span> FF 4602-KDM	<span style="border: 1px solid black; padding: 2px;">L</span> FF 4608-KDM	<span style="border: 1px solid black; padding: 2px;">L</span> FF 4610-KDM
48	<span style="border: 1px solid black; padding: 2px;">LA</span> FF 4801-KDM	<span style="border: 1px solid black; padding: 2px;">LA</span> FF 4802-KDM	<span style="border: 1px solid black; padding: 2px;">LA</span> FF 4808-KDM	<span style="border: 1px solid black; padding: 2px;">LA</span> FF 4810-KDM
41	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4101-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4102-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4108-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4110-KDM
Max speed	page 6/7 - type 4	page 6/7 - type 3	page 6/7 - type 4	page 6/7 - type 4
Min. force	10 N (25 N $\rightarrow$ )	5 N (25 N $\rightarrow$ )	10 N (25 N $\rightarrow$ )	10 N (25 N $\rightarrow$ )
Travel diagrams	page 6/8 - group 1	page 6/8 - group 2	page 6/8 - group 1	page 6/8 - group 1

Contact blocks				
45	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4511-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4512-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4513-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4515-KDM
46	<span style="border: 1px solid black; padding: 2px;">L</span> FF 4611-KDM	<span style="border: 1px solid black; padding: 2px;">L</span> FF 4612-KDM	<span style="border: 1px solid black; padding: 2px;">L</span> FF 4613-KDM	<span style="border: 1px solid black; padding: 2px;">L</span> FF 4615-KDM
48	<span style="border: 1px solid black; padding: 2px;">LA</span> FF 4811-KDM	<span style="border: 1px solid black; padding: 2px;">LA</span> FF 4812-KDM	<span style="border: 1px solid black; padding: 2px;">LA</span> FF 4813-KDM	<span style="border: 1px solid black; padding: 2px;">LA</span> FF 4815-KDM
41	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4111-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4112-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4113-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4115-KDM
Max speed	page 6/7 - type 2	page 6/7 - type 2	page 6/7 - type 4	page 6/7 - type 2
Min. force	10 N (25 N $\rightarrow$ )	10 N (25 N $\rightarrow$ )	10 N (25 N $\rightarrow$ )	10 N (25 N $\rightarrow$ )
Travel diagrams	page 6/8 - group 1	page 6/8 - group 1	page 6/8 - group 1	page 6/8 - group 1

Contact blocks				
45	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4517-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4520-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4525-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4530-KDM
46	<span style="border: 1px solid black; padding: 2px;">L</span> FF 4617-KDM	<span style="border: 1px solid black; padding: 2px;">L</span> FF 4620-KDM	<span style="border: 1px solid black; padding: 2px;">L</span> FF 4625-KDM	<span style="border: 1px solid black; padding: 2px;">L</span> FF 4630-KDM
48	<span style="border: 1px solid black; padding: 2px;">LA</span> FF 4817-KDM	<span style="border: 1px solid black; padding: 2px;">LA</span> FF 4820-KDM	<span style="border: 1px solid black; padding: 2px;">LA</span> FF 4825-KDM	<span style="border: 1px solid black; padding: 2px;">LA</span> FF 4830-KDM
41	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4117-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4120-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4125-KDM	<span style="border: 1px solid black; padding: 2px;">R</span> FF 4130-KDM
Max speed	page 6/7 - type 2	1 m/s	1 m/s	page 6/7 - type 1
Min. force	10 N (25 N $\rightarrow$ )	0,07 Nm	0,07 Nm	0,03 Nm (0,25 Nm $\rightarrow$ )
Travel diagrams	page 6/8 - group 1	page 6/8 - group 3	page 6/8 - group 3	page 6/8 - group 4

Outline dimensions with M12 connector output from right or from bottom

Outline dim. with AMP connector



Items with code on the green background are available in stock

Attention! All measures in the drawings are in mm

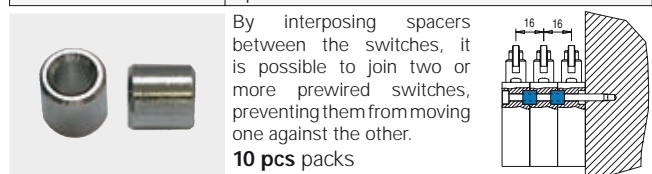
Contacts type:	With stainless steel roller on request		3x3 mm square rod	With stainless steel roller on request		
<b>R</b> = snap action <b>L</b> = slow action <b>LA</b> = slow action closer						
Contact blocks	With stainless steel roller on request		3x3 mm square rod	With stainless steel roller on request		
45 <b>R</b>	FF 4531-KDM	1NO+1NC	FF 4533-KDM	1NO+1NC	FF 4534-KDM	1NO+1NC
46 <b>L</b>	FF 4631-KDM	1NO+1NC	FF 4633-KDM	1NO+1NC	FF 4634-KDM	1NO+1NC
48 <b>LA</b>	FF 4831-KDM	1NO+1NC	FF 4833-KDM	1NO+1NC	FF 4834-KDM	1NO+1NC
41 <b>R</b>	FF 4131-KDM	1NO+1NC	FF 4133-KDM	1NO+1NC	FF 4134-KDM	1NO+1NC
Max speed	page 6/7 - type 1		1,5 m/s	1,5 m/s		
Min. force	0,03 Nm (0,25 Nm ⊕)		0,03 Nm	0,03 Nm		
Travel diagrams	page 6/8 - group 4		page 6/8 - group 4	page 6/8 - group 4		

	Ø 3 mm stainless steel round rod		With stainless steel roller on request	With stainless steel roller on request	With stainless steel roller on request	
Contact blocks	Ø 3 mm stainless steel round rod		With stainless steel roller on request	With stainless steel roller on request	With stainless steel roller on request	
45 <b>R</b>	FF 4550-KDM	1NO+1NC	FF 4551-KDM	1NO+1NC	FF 4552-KDM	1NO+1NC
46 <b>L</b>	FF 4650-KDM	1NO+1NC	FF 4651-KDM	1NO+1NC	FF 4652-KDM	1NO+1NC
48 <b>LA</b>	FF 4850-KDM	1NO+1NC	FF 4851-KDM	1NO+1NC	FF 4852-KDM	1NO+1NC
41 <b>R</b>	FF 4150-KDM	1NO+1NC	FF 4151-KDM	1NO+1NC	FF 4152-KDM	1NO+1NC
Max speed	1,5 m/s		page 6/7 - type 1	page 6/7 - type 1	page 6/7 - type 1	
Min. force	0,03 Nm		0,03 Nm (0,25 Nm ⊕)	0,03 Nm (0,25 Nm ⊕)	0,03 Nm (0,25 Nm ⊕)	
Travel diagrams	page 6/8 - group 4		page 6/8 - group 4	page 6/8 - group 4	page 6/8 - group 4	

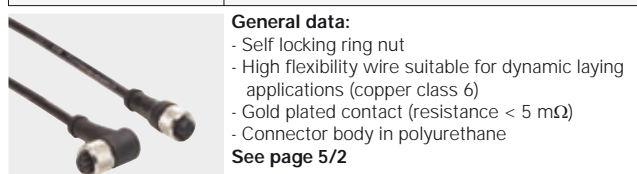
	With stainless steel roller on request	With stainless steel roller on request	With stainless steel roller on request	Glass fibre rod
Contact blocks	With stainless steel roller on request	With stainless steel roller on request	With stainless steel roller on request	Glass fibre rod
45 <b>R</b>	FF 4555-KDM	1NO+1NC	FF 4557-KDM	FF 4569-KDM
46 <b>L</b>	FF 4655-KDM	1NO+1NC	FF 4657-KDM	FF 4669-KDM
48 <b>LA</b>	FF 4855-KDM	1NO+1NC	FF 4857-KDM	FF 4869-KDM
41 <b>R</b>	FF 4155-KDM	1NO+1NC	FF 4157-KDM	FF 4169-KDM
Max speed	page 6/7 - type 1	page 6/7 - type 1	page 6/7 - type 1	1,5 m/s
Min. force	0,03 Nm (0,25 Nm ⊕)	0,03 Nm (0,25 Nm ⊕)	0,03 Nm (0,25 Nm ⊕)	0,03 Nm
Travel diagrams	page 6/8 - group 4	page 6/8 - group 4	page 6/8 - group 4	page 6/8 - group 4

## Accessories

Article	Description
VF D16	Spacers for FA-FF series



Article	Description
VF CA...M	Female wired connectors



(1) Positive opening only with lever adjusted on the max. See page 2/51