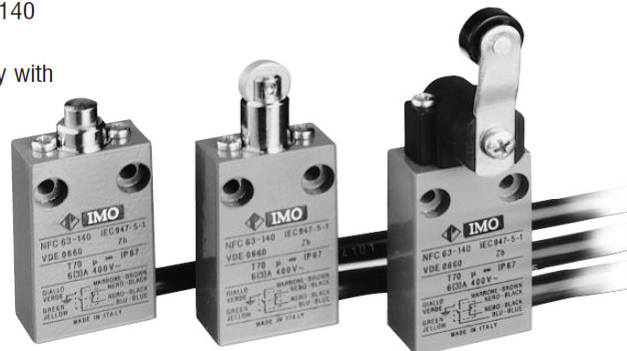


Miniature Pre-Cabled Limit Switches FA



Miniature, high accuracy, pre-cabled limit switches with robust plastic or metal cases conforming to standards NF C63-140 and NF C63-145 class Y2

- Positive break versions for safety circuits in conformity with BS60947-5-1, VDE 0660 part 206 and IEC 337-1
- Double-break Zb contacts with electrically separate NO and NC circuits
- Snap-action types
- Mounting holes are counterbored to keep screw heads within switch housing dimensions
- Standard types can be mounted using side holes or the screws in the top which also secure the actuator
- Threaded-head mounting models
- Actuator heads can be removed and rotated
- Plunger types are suitable for gang-mounting
- Lever type – Lever can be adjusted over 360° in 10° increments
- IP67
- UL and CUL approved



Options and ordering codes

	FA	4	1	01	-	2DN*
						Actuators: Switch mounted by the case
Plastic	FF			01		Stainless steel piston plunger
Metal	FA			02		One way operation roller
				08		Sealed piston plunger
		1NO + 1NC contacts	4	15		In-line roller piston plunger
				17		Transverse roller piston plunger
Snap action contacts				31		Roller lever with small offset
Slow-action contacts				40		Roller lever with large offset
Snap action contacts				50		Adjustable stainless steel rod lever
Slow-action contacts closer						Switch mounted by threaded head
				10		Stainless steel piston plunger
				11		In-line roller piston plunger
				12		Transverse roller piston plunger
				13		Sealed piston plunger

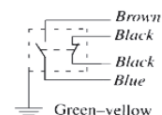
*Versions available with 5 metre cable. Contact IMO for other available options

Contact ratings

BS/EN 60947-5-1 AC15 – Control of AC electromagnetic loads > 72VA sealed – replaces AC11	120VAC	6A
	240VAC	4A
	400VAC	3A
DC13 – Control of DC electromagnetic loads where the time taken to reach 95% of the rated current is equal to 6 times the power of the load (where P > 50W) – replaces DC11	24VDC	2.5A
	125VDC	0.55A
	250VDC	0.27A

Wiring connections

Note: The positive break applies to the NC wires of the type 6 contacts only. Connections to safety circuits should be made to the black wires only. Connections to safety circuits should NOT be made using the type 1 contacts. Slow action contacts are break before make. To ensure positive breaking of the NC contacts on the type 6 models, exceed the pre-travel by 1.5mm or 25°, according to the model.



Miniature Pre-Cabled Limit Switches FA



continued

Specification

Rated thermal current Ith	10A
Rated working voltage	500VAC/600VDC
Maximum operating frequency	6000/hour
Mechanical life	20 million operations
Contact form	1NO + 1NC
Initial contact resistance	<20 mOhms
Contact material	silver
Repeat accuracy	0.01mm
Dielectric strength	4000V between current carrying parts and ground
Protection rating	IP67
Ambient operating temperature	-25 to +75 deg. C
Cable	5 core, 0.75mm ² x 2 metres long
Short-circuit protection required	10A HRC quick blow max.
Housing material	die cast metal alloy

Contacts type: R = snap action L = slow action LA = slow action closer				
Contact blocks	45 R FA 4501-2DN 1NO+1NC 46 L FA 4601-2DN 1NO+1NC 48 LA FA 4801-2DN 1NO+1NC 41 R FA 4101-2DN 1NO+1NC	45 R FA 4502-2DN 1NO+1NC 46 L FA 4602-2DN 1NO+1NC 48 LA FA 4802-2DN 1NO+1NC 41 R FA 4102-2DN 1NO+1NC	45 R FA 4508-2DN 1NO+1NC 46 L FA 4608-2DN 1NO+1NC 48 LA FA 4808-2DN 1NO+1NC 41 R FA 4108-2DN 1NO+1NC	45 R FA 4510-2DN 1NO+1NC 46 L FA 4610-2DN 1NO+1NC 48 LA FA 4810-2DN 1NO+1NC 41 R FA 4110-2DN 1NO+1NC
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 ⊕)	5 N (25 N ⊕)	10 N (25 N ⊕)	10 N (25 N ⊕)
Travel diagrams	Group 1	Group 2	Group 1	Group 1

Contact blocks	45 R FA 4511-2DN 1NO+1NC 46 L FA 4611-2DN 1NO+1NC 48 LA FA 4811-2DN 1NO+1NC 41 R FA 4111-2DN 1NO+1NC	45 R FA 4512-2DN 1NO+1NC 46 L FA 4612-2DN 1NO+1NC 48 LA FA 4812-2DN 1NO+1NC 41 R FA 4112-2DN 1NO+1NC	45 R FA 4513-2DN 1NO+1NC 46 L FA 4613-2DN 1NO+1NC 48 LA FA 4813-2DN 1NO+1NC 41 R FA 4113-2DN 1NO+1NC	45 R FA 4515-2DN 1NO+1NC 46 L FA 4615-2DN 1NO+1NC 48 LA FA 4815-2DN 1NO+1NC 41 R FA 4115-2DN 1NO+1NC
Max speed	page 6/7 - type 2	page 6/7 - type 2	page 6/7 - type 2	
Min. force	10 N (25 N ⊕)	10 N (25 N ⊕)	10 N (25 N ⊕)	
Travel diagrams	Group 1	Group 1	Group 1	

Contact blocks	45 R FA 4517-2DN 1NO+1NC 46 L FA 4617-2DN 1NO+1NC 48 LA FA 4817-2DN 1NO+1NC 41 R FA 4117-2DN 1NO+1NC	45 R FA 4520-2DN 1NO+1NC 46 L FA 4620-2DN 1NO+1NC 48 LA FA 4820-2DN 1NO+1NC 41 R FA 4120-2DN 1NO+1NC	45 R FA 4525-2DN 1NO+1NC 46 L FA 4625-2DN 1NO+1NC 48 LA FA 4825-2DN 1NO+1NC 41 R FA 4125-2DN 1NO+1NC	45 R FA 4530-2DN 1NO+1NC 46 L FA 4630-2DN 1NO+1NC 48 LA FA 4830-2DN 1NO+1NC 41 R FA 4130-2DN 1NO+1NC
Max speed	page 6/7 - type 2	1 m/s	1 m/s	
Min. force	10 N (25 N ⊕)	0.07 Nm	0.07 Nm	
Travel diagrams	Group 1	Group 3	Group 3	
			page 6/7 - type 1 0.03 Nm (0.25 Nm ⊕) Group 4	

Miniature Pre-Cabled Limit Switches FA



continued

Contacts type: R = snap action L = slow action LA = slow action closer					
With stainless steel roller on request 		3x3 mm square rod 		With stainless steel roller on request 	
Contact blocks					
45	R	FA 4531-2DN	1NO+1NC	FA 4533-2DN	1NO+1NC
46	L	FA 4631-2DN	1NO+1NC	FA 4633-2DN	1NO+1NC
48	LA	FA 4831-2DN	1NO+1NC	FA 4833-2DN	1NO+1NC
41	R	FA 4131-2DN	1NO+1NC	FA 4133-2DN	1NO+1NC
Max speed	page 6/7 - type 1			1,5 m/s	
Min. force	0,03 Nm (0,25 Nm ⊕)			0,03 Nm	
Travel diagrams	Group 4			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							
45	R	FA 4550-2DN	1NO+1NC	FA 4551-2DN	1NO+1NC	FA 4552-2DN	1NO+1NC
46	L	FA 4650-2DN	1NO+1NC	FA 4651-2DN	1NO+1NC	FA 4652-2DN	1NO+1NC
48	LA	FA 4850-2DN	1NO+1NC	FA 4851-2DN	1NO+1NC	FA 4852-2DN	1NO+1NC
41	R	FA 4150-2DN	1NO+1NC	FA 4151-2DN	1NO+1NC	FA 4152-2DN	1NO+1NC
Max speed	1,5 m/s			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 ⊕)	
Travel diagrams	Group 4			Group 4		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							
45	R	FA 4555-2DN	1NO+1NC	FA 4556-2DN	1NO+1NC	FA 4557-2DN	1NO+1NC
46	L	FA 4655-2DN	1NO+1NC	FA 4656-2DN	1NO+1NC	FA 4657-2DN	1NO+1NC
48	LA	FA 4855-2DN	1NO+1NC	FA 4856-2DN	1NO+1NC	FA 4857-2DN	1NO+1NC
41	R	FA 4155-2DN	1NO+1NC	FA 4156-2DN	1NO+1NC	FA 4157-2DN	1NO+1NC
Max speed	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	
Travel diagrams	Group 4			Group 4		Group 4	

Miniature Pre-Cabled Limit Switches FA

continued



Contacts type: R = snap action L = slow action LA = slow action closer			With external rubber gasket 	Fixed only by threaded head
Contact blocks 45 R FA 4501-KDM 1NO+1NC 46 L FA 4601-KDM 1NO+1NC 48 LA FA 4801-KDM 1NO+1NC 41 R FA 4101-KDM 1NO+1NC	FA 4502-KDM 1NO+1NC FA 4602-KDM 1NO+1NC FA 4802-KDM 1NO+1NC FA 4102-KDM 1NO+1NC	FA 4508-KDM 1NO+1NC FA 4608-KDM 1NO+1NC FA 4808-KDM 1NO+1NC FA 4108-KDM 1NO+1NC	FA 4510-KDM 1NO+1NC FA 4610-KDM 1NO+1NC FA 4810-KDM 1NO+1NC FA 4110-KDM 1NO+1NC	
Max speed Min. force Travel diagrams	page 6/7 - type 4 10 N (25 N ⊕) Group 1	page 6/7 - type 3 5 N (25 N ⊕) Group 2	page 6/7 - type 4 10 N (25 N ⊕) Group 1	page 6/7 - type 4 10 N (25 N ⊕) Group 2

Fixed only by threaded head 	Fixed only by threaded head 	With external rubber gasket 	Ø 12 mm stainless steel roller 	
Contact blocks 45 R FA 4511-KDM 1NO+1NC 46 L FA 4611-KDM 1NO+1NC 48 LA FA 4811-KDM 1NO+1NC 41 R FA 4111-KDM 1NO+1NC	FA 4512-KDM 1NO+1NC FA 4612-KDM 1NO+1NC FA 4812-KDM 1NO+1NC FA 4112-KDM 1NO+1NC	FA 4513-KDM 1NO+1NC FA 4613-KDM 1NO+1NC FA 4813-KDM 1NO+1NC FA 4113-KDM 1NO+1NC	FA 4515-KDM 1NO+1NC FA 4615-KDM 1NO+1NC FA 4815-KDM 1NO+1NC FA 4115-KDM 1NO+1NC	
Max speed Min. force Travel diagrams	page 6/7 - type 2 10 N (25 N ⊕) Group 1	page 6/7 - type 2 10 N (25 N ⊕) Group 1	page 6/7 - type 4 10 N (25 N ⊕) Group 1	page 6/7 - type 2 10 N (25 N ⊕) Group 1

Ø 12 mm stainless steel roller 				
Contact blocks 45 R FA 4517-KDM 1NO+1NC 46 L FA 4617-KDM 1NO+1NC 48 LA FA 4817-KDM 1NO+1NC 41 R FA 4117-KDM 1NO+1NC	FA 4520-KDM 1NO+1NC FA 4820-KDM 1NO+1NC FA 4120-KDM 1NO+1NC	FA 4525-KDM 1NO+1NC FA 4825-KDM 1NO+1NC FA 4125-KDM 1NO+1NC	FA 4530-KDM 1NO+1NC FA 4630-KDM 1NO+1NC FA 4830-KDM 1NO+1NC FA 4130-KDM 1NO+1NC	
Max speed Min. force Travel diagrams	page 6/7 - type 2 10 N (25 N ⊕) Group 1	1 m/s 0,07 Nm Group 3	1 m/s 0,07 Nm Group 3	page 6/7 - type 1 0,03 Nm (0,25 Nm ⊕) Group 4

Miniature Pre-Cabled Limit Switches FA



continued

Contacts type: R = snap action L = slow action LA = slow action closer				
With stainless steel roller on request				
3x3 mm square rod				
With stainless steel roller on request				
45	R	FA 4531-KDM	1NO+1NC	FA 4533-KDM
46	L	FA 4631-KDM	1NO+1NC	FA 4633-KDM
48	LA	FA 4831-KDM	1NO+1NC	FA 4833-KDM
41	R	FA 4131-KDM	1NO+1NC	FA 4133-KDM
Max speed		page 6/7 - type 1		1,5 m/s
Min. force		0,03 Nm (0,25 Nm \rightarrow)		0,03 Nm
Travel diagrams		Group 4		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				
45	R	FA 4550-KDM	1NO+1NC	FA 4551-KDM
46	L	FA 4650-KDM	1NO+1NC	FA 4651-KDM
48	LA	FA 4850-KDM	1NO+1NC	FA 4851-KDM
41	R	FA 4150-KDM	1NO+1NC	FA 4151-KDM
Max speed		1,5 m/s	page 6/7 - type 1	page 6/7 - type 1
Min. force		0,03 Nm	0,03 Nm (0,25 Nm \rightarrow)	0,03 Nm (0,25 Nm \rightarrow)
Travel diagrams		Group 4	Group 4	Group 4

With stainless steel roller on request				
With stainless steel roller on request				
With stainless steel roller on request				
Glass fibre rod				
45	R	FA 4555-KDM	1NO+1NC	FA 4556-KDM
46	L	FA 4655-KDM	1NO+1NC	FA 4656-KDM
48	LA	FA 4855-KDM	1NO+1NC	FA 4856-KDM
41	R	FA 4155-KDM	1NO+1NC	FA 4156-KDM
Max speed		page 6/7 - type 1	page 6/7 - type 1	page 6/7 - type 1
Min. force		0,03 Nm (0,25 Nm \rightarrow)	0,03 Nm (0,25 Nm \rightarrow)	0,03 Nm (0,25 Nm \rightarrow)
Travel diagrams		Group 4	Group 4	Group 4

Travel diagrams

41				
1NO+1NC				
45				
1NO+1NC				
46				
1NO+1NC				
48				
1NO+1NC				

Legend

Closed contact |
 Open contact |
 Positive opening travel acc. to EN 60947-5-1 |
 Pushing the switch /
 Releasing the switch