Medium Voltage Distribution

LF circuit breaker

SF6 breaking up to 17.5 kV

LF circuit breaker is used to protect and control MV public or industrial distribution network.

LF is an indoor switchgear

- Rated voltage from 7.2 to 17.5 kV
 Rated short-circuit breaking current up to 50 kA
- Rated normal current from 630 to 3150 A.
- LF is available in 2 versions:
- Withdrawable with MC cassette
- Fixed: can be completed by kits
- and delivered in separate components.





Conformity with standards

- IEC 62 271-1: common specifications for high voltage switchgear and controlgear standards
- IEC 62 271-100: high voltage alternating current circuit breaker
- IEC 62 271-200 (previously IEC 60298): AC metal-enclosed switchgear
- and controlgear for rated voltages above 1 kV and up to and including 52 kV.

Certification

- By independent laboratories in accordance with ISO/IEC 17025 and EN 45011 standards
- Our factories implement a quality system certified to ISO 9001 : 2000 and ISO 14000 standards by IQNET.

Installation

- Eixed
- Designed for retrofit
- MC cassette can be delivered separately.

Operation

- The operating mechanism is identical to that of the Schneider Electric SF6 MV circuit breaker SF ranges
- Metal protection shutter on cassette
- Racking in/out operation possible in the cubicle with the door closed.
- A position indication device by mechanical indicator (black and white)
- A double contact pressure switch is activated when the gas pressure reduces below:
- □ 1st stage: 0.18 Mpa (relative pressure: 1.8 bar)
- □ 2nd stage: 0.1 Mpa (relative pressure: 1 bar)



A full range of accessories and auxiliaries factory-mounted or delivered separately

- Electric motor (M)Undervoltage release (YM)
- Shunt opening releases (YO1, YO2)
 Low energy release (MITOP)
- Shunt closing release (YF)
 Auxiliary contacts
- Operations counter
- Locking by padlocks and/or keylocks/sealing.





Electrical characteris	tics acc	ording to IEC 622	271-100					
LF fixed				LF1				
Rated voltage	Ur	kV 50/60 Hz		7.2		12		
Insulation level								
- power frequency withstand	Ud	kV 50 Hz 1min (*)	20		28			
 lightning impulse withstand 	Up	kV peak	60		75			
Rated current	lr	А	630					
			1250					
			2000	-	-	-	-	
			2500	-	-	-	-	
			3150	-	-	-	-	
Short circuit current	lsc	kA		25	31.5	25	31.5	
Short time withstand current	lk/tk	kA/3 s		25	31.5	25	31.5	
Short-circuit making current	lp	Peak kA	50 Hz	63	79	63	79	
			60 Hz	65	82	65	82	
Rated switching sequence		O-3 min-CO-3 min-CO	1					
		0-0.3 s-CO-3 min-CO						
		0-0.3 s-CO-15 s-CO						
LF withdrawable (circ	ker/cassette)	LF1/	LF1/MC1					
Rated voltage	Ur	kV 50/60 Hz		7.2		12		
Insulation level								
- power frequency withstand	Ud	kV 50 Hz 1min (*)		20		28		
 lightning impulse withstand 	Up	kV peak		60		75		
Rated current	lr	А	630					
			1250					
			1600	-	-	-	-	
			2500	-	-	-	-	
Short circuit current	lsc	kA	3150	-	-	-	-	
Short time withstand current	lk/tk	kA/3 s, kA/1 s		25	31.5	25	31.5	
Short-circuit making current	lp	Peak kA		25	31.5	25	31.5	
			50 Hz	63	79	63	79	
Rated switching sequence		O-3 min-CO-3 min-CO	60 Hz	65	82	65	82	
		O-0.3 s-CO-3 min-CO						
		O-0.3 s-CO-15 s-CO						
		0-0.3 s-CO-15 s-CO						

Common characteristics		
Operating times	Opening ms	< 54
	Breaking ms	< 70
	Closing ms	<72
Service temperature T	°C	– 25 to + 40
Mechanical endurance	Class	M2
	Number of switching operations	10,000
Electrical endurance	Class	E2
Capacitive current breaking capacity	Class	C2

(*) Ud 42 kV 50 Hz, 1 min possible (**) Rated short-circuit breaking duration (tk): 1 s

Available

– Not available.

LF2							LF3												
7.2				12 17.			17.5		7.2			12				17.5			
20				28			38		20				28				38		
60				75			95		60			75				95			
									-	-	-	-	-	-	-	-	-	-	-
									-	-	-	-	-	-	-		-	-	
									-	-	-	-	-	-	-	-	-	-	-
-	-			-			-	-	•										
-	-			-			-	-	-				-						
40	50			40			25	31.5	25	31.5	40	50	25	31.5	40	50	25	31.5	40
40	50			40			25	31.5	25	31.5	40	50	25	31.5	40	50	25	31.5	40
100	125			100			63	79	63	79	100	125	63	79	100	125	63	79	100
104	130			104			65	82	65	82	104	130	65	82	104	130	65	82	104
																			-
																			-
LF2/	MC2								LF3	MC3									
7.2			12 17.5			7.2 12					17.5								
20				28			38		20				28				38		
60				75			95		60				75				95		
-	-		■ (**)	-	-		-		-	-	-	-	-	-	-	-	-	-	-
-	-		■ (**)	-	-			-	-	-	-	-	-	-	-	■ (**)	-	-	
•			■ (**)	-	-	•	•		-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-							•			
-	-	-	-	-	-	-	-	-	-				-			•			
25	31.5	40	50	25	31.5	40	25	31.5	25	31.5	40	50	25	31.5	40	50	25	31.5	40
25	31.5	40	50 (**)	25	31.5	40	25	31.5	25	31.5	40	50	25	31.5	40	50	25	31.5	40
63	79	100	125	63	79	100	63	79	63	79	100	125	63	79	100	125	63	79	100
65	82	104	130	65	82	104	65	82	65	82	104	130	65	82	104	130	65	82	104
																			-
																			-

Specific applications

Protection of generators and power station auxiliaries

All circuit breakers in the LF range break short circuit currents with an asymmetry of at least 30%.

In cases where the network constant X/R is greater than 45 ms, the asymmetry to be broken is higher; this is often the case of circuit breakers protecting nuclear or thermal power station auxiliaries or circuit breakers that are close to generator sets or large transformers.

Specific tests have been carried out:

Circuit breakers	kV	kA	Asymmetry
LF2	7.2	43.5	50%
LF3	7.2	43.5	50%
	12	40	50%
	17.5	25	100%

Switching and protection of capacitor banks

LF range circuit breakers are particularly well suited to switching and protection of capacitor banks; they are classed C2 according to standard IEC 62271-100. Tests carried out according to the standard for breaking at 400 A with making and breaking cycles in case of a capacitor bank with a making current of 20 kA. Additional tests have been carried out: please consult us.

Dimensions and weights





w

Basic withdrawable

C.B./Cassette		LF1/MC1	LF2/MC2	LF3/MC3		
Phase to phase (mm)	145	185	240			
Dimensions (mm)	W	556	686	886		
	Н	980	980	980		
	D	1223	1223	1223		
Weight (kg)		245	285	325 (1250 A) 365 (2500 A) 435 (3150 A)		



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