BREAKERS

STANDARD FAMILY CODE
IR 4000 SERIES F

Mounting Position	Vertical
Control Voltage Rating Uc [Vdc]	24 - 36 - 48 - 72 - 110[1]
Auxiliary Contact Blocks	5 a1 + 6 b0
Block Type	Reed
Arc chute Material	Ceramic
Main Contacts tips Material	$AgSnO_2$
Arcing Contacts tips Material	AgW
Electric Diagram HC	42870649C
Electric Diagram PM	42870648C
Layout Drawing HC 900V - 1800V	42870622C
Layout Drawing PM 900V - 1800V	42870668C
Layout Drawing HC 3600V	42870687C
Layout Drawing PM 3600V	42870668C

Type			
Voltage	Holding System	Thermal Current	
		3000 A	4500 A
900 V	Holding Coil	**IR 4030 FC 09M**	**IR 4045 FC 09M**
	Permanent Magnet	**IR 4030 FP 09M**	**IR 4045 FP 09M**
1800 V	Holding Coil	**IR 4030 FC 18M**	**IR 4045 FC 18M**
	Permanent Magnet	**IR 4030 FP 18M**	**IR 4045 FP 18M**
3600 V	Holding Coil	**IR 4030 FC 36M**	**IR 4045 FC 36M**
	Permanent Magnet	**IR 4030 FP 36M**	**IR 4045 FP 36M**

MICROELETTRICA

Description

DC single pole, magnetic blowout, trip free, air circuit breaker. The closing mechanism is motor-operated independent type while the holding mechanism is magnetic type, provided with holding coil or permanent magnet. The breaker is equipped with a direct acting over-current trip device, which may be either unidirectional or bi-directional. Reference standard IEC 61992 and IEC 60947.

Insulation Characteristics	**09M**	**18M**	**36M**
Rated Operational Voltage U_{Ne} [V_{dc}][1]	900	1800	3600
Max Operational Voltage [V_{dc}]	1000	2000	4000
Rated Insulation Voltage [Vdc] @ OV4/PD3A	2300	3000	3600
Rated Insulation Voltage [Vdc] @ OV3/PD3	2300	3000	4800
Electrical Characteristics	**09M**	**18M**	**36M**
Conventional Free Air Thermal Current [A] at 40°C[2]	3000 / 4500	3000 / 4500	3000 / 4500
Occasional Overloads [A] for 120'	3800 / 4800	3800 / 4800	3800 / 4800
Occasional Overloads [A] for 30'	4600 / 5800	4600 / 5800	4600 / 5800
Occasional Overloads [A] for 7'	6300 / 8000	6300 / 8000	6300 / 8000
Occasional Overloads [A] for 40"	12000 / 15000	12000 / 15000	12000 / 15000
Breaking Capacity [kA/ms]			
Rated Short Circuit	125/100	100/63	50/63
Duty F: Maximum Fault	125 / 0 (peak 180KA)	100 / 0 (peak 148KA)	50 / 0 (peak 71KA)
Duty E: Maximum Energy	62.5 / 50	50 / 31.5	35 / 31.5
Duty D: Distant Fault	8 / 100	8 / 63	8 / 63
Rated Duty Cycle	0 - 15s - CO - 15s - CO - 60s - C0	0 - 15s - CO - 15s - CO - 60s - C0	0 - 15s - CO - 15s - CO - 60s -C0
Peak arc voltage [Ûarc]	up to 4 x U_{Ne}	up to 4 x U_{Ne}	up to 4 x U_{Ne}
Standard Bidirectional direct acting trip device [kA][3]			
Setting Range A1	1 ÷ 1.6	1 ÷ 1.6	1 ÷ 1.6
Setting Range A2	1.6 ÷ 2.6	1.6 ÷ 2.6	1.6 ÷ 2.6
Setting Range A3	2.5 ÷ 4	2.5 ÷ 4	2.5 ÷ 4
Setting Range A4 & B1	4 ÷ 6.4	4 ÷ 6.4	4 ÷ 6.4
Setting Range A5	5.8 ÷ 9.3	5.8 ÷ 9.3	-
Setting Range A6	8 ÷ 13	8 ÷ 13	-
Setting Range B7	9.4 ÷ 15	-	-
Setting Range C8	12.5 ÷ 20	-	-
Blow Out Circuit Type	Coil	Coil	Coil
Mechanical Characteristics			
Mechanical Endurance (cycles)		4x50000	
Electrical durability [I_{Ne} @ U_{Ne}]		4x200	
Shock and Vibrations (IEC61373)		Cat.1 - Class B	
Weight [kg]		180	

Control Circuit	
Control Voltage Range	0.7Uc ÷ 1.25Uc
Operated by	D.C. Motor
Holding closed by	Holding Coil or Permanent Magnet
Peak closing power and time [W x s]	500 x 0.01
Nominal closing power and time [W x s]	360 x 1.5
Holding Coil version	
Nominal holding power @ 20°C [W]	50
Nominal opening power @ 20°C [W]	0
Controlled opening time [ms]	< 50
Controlled opening time with FOD (optional) [ms][4]	4 ÷ 6
Permanent Magnet version	
Controlled opening time with FOD (optional) [ms]4	4÷6
Nominal holding power @ 20°C [W]	0
Nominal opening power and time @ 20°C [W x s]	500 x 0.02
Controlled opening time [ms]	< 20
Controlled opening time with FOD (optional) [ms][4]	4 ÷ 6

Auxiliary Circuit	
Type	Reed Contacts (Vacuum Technology)
Voltage [V_{dc}]	24 / 36 / 48 / 72 / 110[1]
Rated Current [A]	5
Maximum Breaking Power with Inductive Load τ=2ms [W]	120
Maximum Breaking Current with Inductive Load τ=2ms [A]	3
Maximum Breaking Voltage with Inductive Load τ=2ms [V]	250
Minimum let-through Current at 24Vdc [mA]	5
Electrical Connections	Fast-on 2.5 x 0.8mm or customized LV Connection[1]
Environmental Conditions	
Stock Temperature Range	-50°C ÷ +85°C
Operational Temperature Range	-30°C ÷ +70°C
Pollution Degree	PD3A
Clearance in air [mm]	40
Creepage distance [mm]	80
Comparative Tracking Index (CTI)	>600
Max Altitude without Performance Derating [m]	2000
Humidity [5]	10 ÷ 95% RH

[1] To be specified in order phase
[2] Device cabled according IEC 60947
[3] Tripping point reached up with di/dt=200A/s. Other setting range are available on request
[4] For optional fast opening device (FOD) information please contact Microelettrica Sales Department
[5] According to EN 50125-1
[6] Reduced distances should be approved by Microelettrica
[7] These quotes are referred to a 50% surface opening grid