

# BREAKERS

## STANDARD FAMILY CODE IR 3000 F SERIES M

Mounting Position	Vertical
Control Voltage Rating Uc [Vdc]	24 - 36 - 48 - 72 - 110 <sup>1</sup>
Auxiliary Contact Blocks	5 a1 + 6 b0
Block Type	Reed
Arc chute Material	Ceramic
Main Contacts tips Material	AgSnO <sub>2</sub>
Arcing Contacts tips Material	AgW
Electric Diagram HC	42870370B
Electric Diagram PM	42870579B
Layout Drawing HC	42870555C
Layout Drawing PM	42870556C

Type			
Voltage	Holding System	Thermal Current	
		1500 A	3000 A
900 V	Holding Coil	<b>IR 3015 FC 09M</b>	<b>IR 3030 FC 09M</b>
	Permanent Magnet	<b>IR 3015 FP 09M</b>	<b>IR 3030 FP 09M</b>
1800 V	Holding Coil	<b>IR 3015 FC 18M</b>	<b>IR 3030 FC 18M</b>
	Permanent Magnet	<b>IR 3015 FP 18M</b>	<b>IR 3030 FP 18M</b>



**MICROELETTRICA**

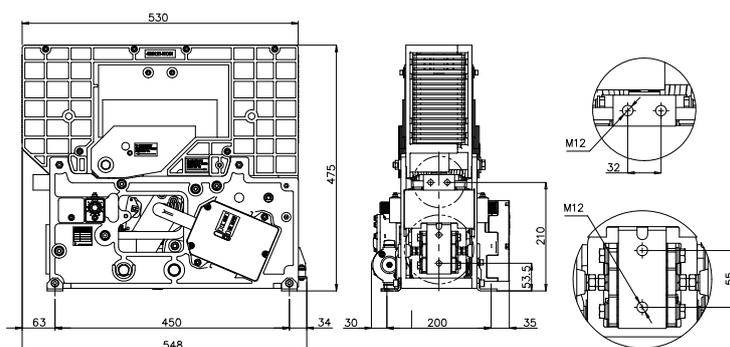
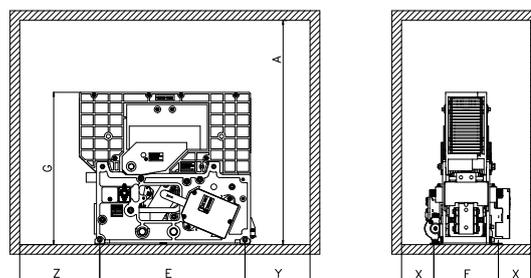
## Description

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
Rated Operational Voltage $U_{Ne}$ [V <sub>dc</sub> ] <sup>1</sup>	900	1800
Max Operational Voltage [V <sub>dc</sub> ]	1000	2000
Rated Insulation Voltage $U_{Nm}$ [V <sub>dc</sub> ] @ OV4/PD3	2300	2300
Electrical Characteristics	09M	18M
Conventional Free Air Thermal Current $I_{th}$ [A] at 40°C <sup>2</sup>	1500 / 3000 <sup>1</sup>	1500 / 3000 <sup>1</sup>
Occasional Overloads [A] for 30'	2000 / 3600	2000 / 3600
Occasional Overloads [A] for 60''	4000 / 7200	4000 / 7200
Breaking Capacity [kA/ms]		
Rated Short Circuit	50 / 31.5	30 / 31.5
Duty F: Maximum Fault	50 / 0 (peak 71KA)	30 / 0 (peak 42 kA)
Duty E: Maximum Energy	32.5 / 20.5	19.5 / 20.5
Duty D: Distant Fault	6 / 31.5	6 / 31.5
Rated Duty Cycle	0-15s-CO-15s-CO-60s-CO	0-15s-CO-15s-CO-60s-CO
Peak arc voltage [ $\hat{U}_{arc}$ ]	up to 4 x $U_{Nm}$	up to 4 x $U_{Nm}$
Standard Bidirectional direct acting trip device [kA] <sup>3</sup>		
Setting Range A1	1 ÷ 1.8	1 ÷ 1.8
Setting Range A2	1.5 ÷ 2.7	1.5 ÷ 2.7
Setting Range B3	2.2 ÷ 4	2.2 ÷ 4
Setting Range B4	3.3 ÷ 6	3.3 ÷ 6
Blow Out Circuit Type	Coil	Coil
Mechanical Characteristics		
Mechanical Endurance (cycles)	6 x 50000	
Electrical durability [ $I_{Ne}$ @ $U_{Ne}$ ]	4x200	
Shock and Vibrations (IEC61373)	Cat.1 - Class B	
Weight [kg]	54	
Control Circuit		
Control Voltage Range	0.7U <sub>c</sub> ÷ 1.25U <sub>c</sub>	
Operated by	D.C. Motor	
Holding closed by	Holding Coil or Permanent Magnet	
Peak closing power and time [W x s]	400 x 0.01	
Nominal closing power and time [W x s]	250 x 1.5	
Holding Coil version		
Nominal holding power @ 20°C [W]	15	
Nominal opening power @ 20°C [W]	0	
Controlled opening time [ms]	< 50	
Permanent Magnet version		
Nominal holding power @ 20°C [W]	0	
Nominal opening power and time @ 20°C [W x s]	400 x 0.02	
Controlled opening time [ms]	< 20	

Auxiliary Circuit	
Type	Reed Contacts (Vacuum Technology)
Voltage [V <sub>dc</sub> ]	24 / 36 / 48 / 72 / 110 <sup>1</sup>
Rated Current [A]	5
Maximum Breaking Power with Inductive Load $\tau=2\text{ms}$ [W]	120
Maximum Breaking Current with Inductive Load $\tau=2\text{ms}$ [A]	3
Maximum Breaking Voltage with Inductive Load $\tau=2\text{ms}$ [V]	250
Minimum let-through Current at 24V <sub>dc</sub> [mA]	5
Electrical Connections	Fast-on 2.5 x 0.8mm or customized LV Connection <sup>1</sup>
Environmental Conditions	
Stock Temperature Range	-50°C ÷ +85°C
Operational Temperature Range	-30°C ÷ +70°C
Clearance in air [mm]	14
Creepage distance [mm]	32.2
Comparative Tracking Index (CTI)	>600
Max Altitude without Performance Derating [m]	2000
Humidity <sup>5</sup>	10 ÷ 95% RH

Minimum clearances [mm] from <sup>6</sup> :								
Rated Operational Voltage [V <sub>dc</sub> ]	A <sup>7</sup>	E	F	G	X	Y	Z	
900	Metal Parts	700	450	200	476	100	202	248
	Plastic Parts	600				50	150	198
Minimum clearances [mm] from <sup>6</sup> :								
Rated Operational Voltage [V <sub>dc</sub> ]	A <sup>7</sup>	E	F	G	X	Y	Z	
1800	Metal Parts	700	450	200	476	100	202	248
	Plastic Parts	600				50	150	198



<sup>1</sup> To be specified in order phase

<sup>2</sup> Device cabled according IEC 60947

<sup>3</sup> Tripping point reached up with di/dt=200A/s. Other setting range are available on request

<sup>5</sup> According to IEC 62498-1

<sup>6</sup> Reduced distances should be approved by Microelettrica

<sup>7</sup> These quotes are referred to a 50% surface opening grid

The technical specifications reported are not binding and they should be agreed in the contract.

For further technical information on our products visit [www.microelettrica.com](http://www.microelettrica.com)

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