

# BREAKERS

## STANDARD FAMILY CODE IR6030 IR6040 IR6050 SERIES F

Mounting Position	Vertical
Control voltage rating $U_c$ [Vdc]	24 - 36 - 48 - 72 110 - 220 <sup>1</sup>
Auxiliary Contact Blocks	5 a1 + 6 b0
Block Type	Reed or Sliding Contact
Arc chute Material	Ceramic
Main Contacts tips Material	AgSnO <sub>2</sub>
Arcing Contacts tips Material	AgW
Electric Diagram HC	42870233B
Electric Diagram PM	42870289B

Drawing IR6030FC09M/18M & IR6040FC09M/18M	42870405C
Drawing IR6050FC09M/18M	42870683C
Drawing IR6030FP09M/18M & IR6040FP09M/18M	42870678C
Drawing IR6050FP09M/18M	42870684C
Drawing IR6030FC36M & IR6040FC36M	42870360C F2
Drawing IR6030FP36M & IR6040FP36M	42870682C



**MICROELETTRICA**

Type				
Voltage	Holding System	Thermal Current		
		3150 A	4000 A	5000 A
900 V	Holding Coil	<b>IR 6030 FC 09M</b>	<b>IR 6040 FC 09M</b>	<b>IR 6050 FC 09M</b>
	Permanent Magnet	<b>IR 6030 FP 09M</b>	<b>IR 6040 FP 09M</b>	<b>IR 6050 FP 09M</b>
1800 V	Holding Coil	<b>IR 6030 FC 18M</b>	<b>IR 6040 FC 18M</b>	<b>IR 6050 FC 18M</b>
	Permanent Magnet	<b>IR 6030 FP 18M</b>	<b>IR 6040 FP 18M</b>	<b>IR 6050 FP 18M</b>
3600 V	Holding Coil	<b>IR 6030 FC 36M</b>	<b>IR 6040 FC 36M</b>	-
	Permanent Magnet	<b>IR 6030 FP 36M</b>	<b>IR 6040 FP 36M</b>	-

### Description

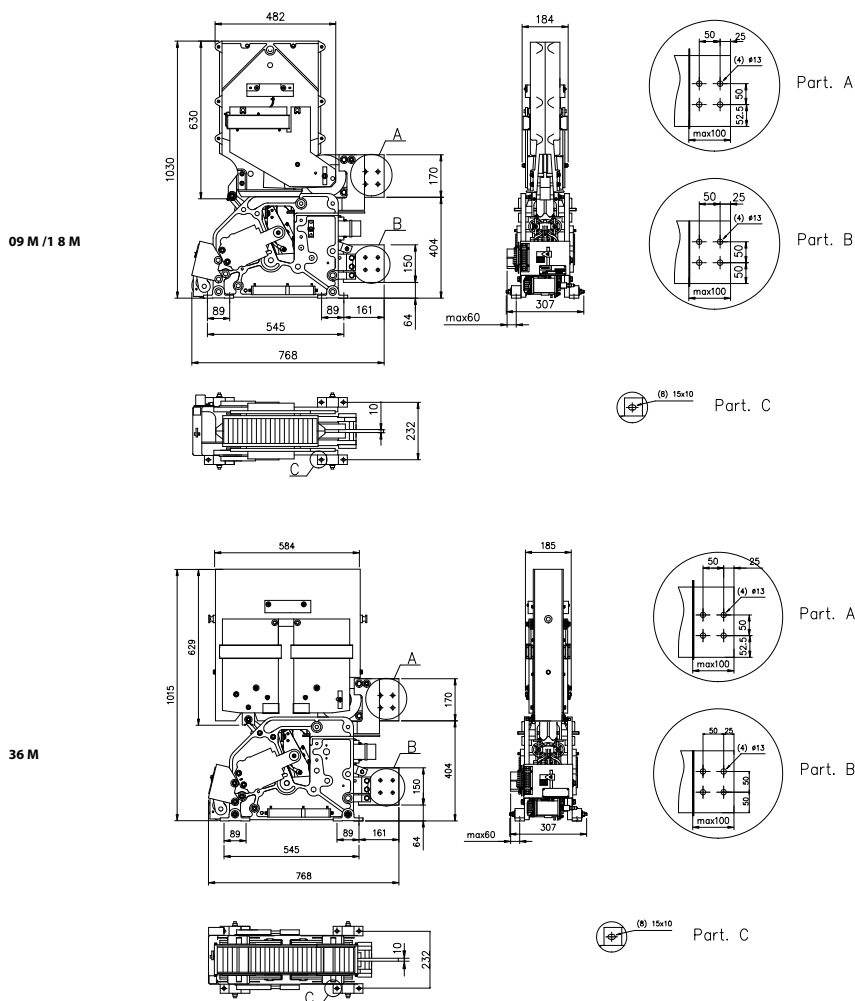
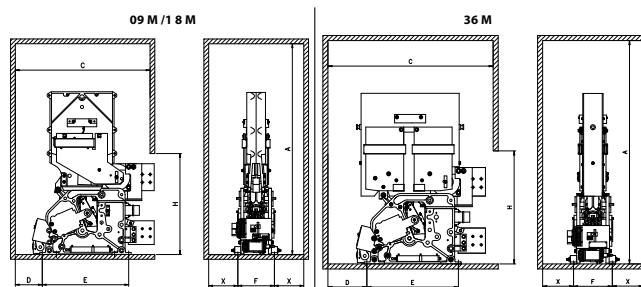
DC single pole, magnetic blowout, trip free, air circuit breaker. The closing mechanism is motor-operated independent type while the holding mechanism is magnetic type, provided with holding coil or permanent magnet. The breaker is equipped with a direct acting over-current trip device, which may be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

Insulation Characteristics	09M	18M	36M
Rated Operational Voltage $U_{Ne}$ [V <sub>dc</sub> ] <sup>1</sup>	900	1800	3600
Max Operational Voltage [V <sub>dc</sub> ]	1000	2000	4000
Rated Insulation Voltage [V <sub>dc</sub> ] @ OV3/PD3	2300	2300	3600
Electrical Characteristics	09M	18M	36M
Conventional Free Air Thermal Current [A] at 40°C <sup>2</sup>	3150 / 4000 / 5000 <sup>1</sup>	3150 / 4000 / 5000 <sup>1</sup>	3150 / 4000 <sup>1</sup>
Occasional Overloads [A] for 120'	3800 / 4800 / 6000	3800 / 4800 / 6000	3800 / 4800
Occasional Overloads [A] for 30'	4600 / 5800 / 7250	4600 / 5800 / 7250	4600 / 5800
Occasional Overloads [A] for 7'	6300 / 8000 / 9000	6300 / 8000 / 9000	6300 / 8000
Occasional Overloads [A] for 40"	12000 / 15000 / 16000	12000 / 15000 / 16000	12000 / 15000
Making and Breaking Capacity [kA/ms]			
Rated Short Circuit	125 / 100	100 / 63	70 / 63
Duty F: Maximum Fault	125 / 0 (peak 180KA)	100 / 0 (peak 150KA)	50 / 0 (peak 100KA)
Duty E: Maximum Energy	62.5 / 50	50 / 31.5	35 / 31.5
Duty D: Distant Fault	10 / 100	10 / 63	10 / 63
Rated Duty Cycle	0 - 15s - CO - 15s - CO - 60s - CO	0 - 15s - CO - 15s - CO - 60s - CO	0 - 15s - CO - 15s - CO - 60s - CO
Peak arc voltage [ $\bar{U}_{arc}$ ]	up to 4 x $U_n$	up to 4 x $U_n$	up to 4 x $U_n$
Standard Bidirectional direct acting trip device [kA] <sup>3</sup>			
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	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	9.4 ÷ 15	-
Setting Range C8	12.5 ÷ 20	-	-
Blow Out Circuit Type	Coil	Coil	Coil

Mechanical Characteristics	
Mechanical Endurance (cycles)	8x25000
Electrical durability [ $I_{Ne}$ @ $U_{Ne}$ ]	4x200
Weight [kg] 09M and 18M / 36M	162 / 210
Control Circuit	
Control Voltage Range	$0.8U_c \div 1.1U_c$
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
<b>Holding Coil version</b>	
Nominal holding power @ 20°C [W]	50
Nominal opening power @ 20°C [W]	0
Controlled opening time: de-energize holding coil [ms]	< 50
Controlled opening time: opening coil (optional) [ms]	< 20
Controlled opening time: FOD (optional) [ms] <sup>4</sup>	4 ÷ 6
<b>Permanent Magnet version</b>	
Nominal holding power @ 20°C [W]	0
Nominal opening power and time @ 20°C [W x s]	500 x 0.02
Controlled opening time: opening coil [ms]	< 20
Auxiliary Circuit	
Type	Reed Contacts (Vacuum Technology)
Voltage [ $V_{dc}$ ]	24 / 36 / 48 / 72 / 110 <sup>1</sup>
Rated Current [A]	5
Maximum Breaking Power with Inductive Load $\tau=2ms$ [W]	120
Maximum Breaking Current with Inductive Load $\tau=2ms$ [A]	3
Maximum Breaking Voltage with Inductive Load $\tau=2ms$ [V]	250
Minimum let-through Current at 24Vdc [mA]	5
Electrical Connections	Fast-on 2.5 x 0.8mm or customized LV Connection <sup>1</sup>
Auxiliary Circuit	
Type	Sliding Contact
Voltage [ $V_{dc}$ ]	24 / 36 / 48 / 72 / 110/220 <sup>1</sup>
Rated Current [A]	10
Maximum Breaking Power with Inductive Load $\tau=2ms$ [W]	120
Maximum Breaking Current with Inductive Load $\tau=2ms$ [A]	3
Maximum Breaking Voltage with Inductive Load $\tau=2ms$ [V]	250
Minimum let-through Current at 24Vdc [mA]	20
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
Pollution Degree - Overvoltage Category (EN 50124-1)	PD3 - OV3
Clearance in air [mm]	32
Creepage distance [mm]	50.4
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>	C	D	E	F	H	X
900	Metal Parts	1330	850	170	545	232	673	184
	Plastic Parts	1230	800	120				134
1800	Metal Parts	1330	850	170				184
	Plastic Parts	1230	800	120				134
3600	Metal Parts	1330	984	232				184
	Plastic Parts	1230	934	182				134



<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>4</sup> For optional fast opening device (FOD) information please contact Microelettrica Sales Department, FOD option is available with U<sub>c</sub> equal to 24/110/220 V<sub>dc</sub>

<sup>5</sup> According to EN 50125-1

<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)

**Microelettrica Scientifica S.p.A.**

20090 Buccinasco (MI) , Via Lucania 2, Italy

Tel.: +39 02 575731

E-mail: [info@microelettrica.com](mailto:info@microelettrica.com)

[www.microelettrica.com](http://www.microelettrica.com)



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