

# BREAKERS

## STANDARD FAMILY CODE IR 4000 SERIES VH

Mounting Position	Horizontal
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	42870635C
Layout Drawing HC for 18M	42870750C
Layout Drawing HC for 36M	42870705C

Commercial Code			
Voltage	Holding System	Thermal Current	
		3000 A	4500 A
1800 V	Holding Coil	<b>IR 4030 VH 18M</b>	<b>IR 4045 VH 18M</b>
3600 V		<b>IR 4030 VH 36M</b>	<b>IR 4045 VH 36M</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. The breaker is equipped with a direct acting over-current trip device, which may be either unidirectional or bi-directional. Reference standard IEC 60077-3.

Insulation Characteristics		18M	36M
Rated Operational Voltage $U_{Ne}$ [V <sub>dc</sub> ] <sup>1</sup>		1800	3600
Max Operational Voltage [V <sub>dc</sub> ]		2000	4000
Rated Insulation Voltage $U_{Nm}$ [V <sub>dc</sub> ] @ OV4/PD3		3700	3700
Rated Insulation Voltage $U_{Nm}$ [V <sub>dc</sub> ] @ OV3/PD3		4800	4800
Electrical Characteristics		18M	36M
Conventional Free Air Thermal Current [A] at 40°C <sup>2</sup>		3000 / 4500 <sup>1</sup>	3000 / 4500 <sup>1</sup>
Rated Short Circuit Making and Breaking Capacity / Time constant [kA/ms]			
$\tau$ 1		100 / 0 (peak 140 kA)	55 / 0 (peak 77 kA)
$\tau$ 2		60 / 15	50 / 15
$\tau$ 3		50 / 40	50 / 30
$\tau$ 4		35 / 100	50 / 50
Rated Duty Cycle		O-20s-CO-60s-CO	O-20s-CO-60s-CO
Peak arc voltage [ $\dot{U}_{arc}$ ]		up to 3 x $U_{Nm}$	up to 3 x $U_{Nm}$
Standard bidirectional direct acting trip device [kA] <sup>3</sup>			
Setting Range A1		0.9 ÷ 1.5	0.9 ÷ 1.5
Setting Range A2		1.4 ÷ 2.7	1.4 ÷ 2.7
Setting Range A3		2 ÷ 3.4	2 ÷ 3.4
Setting Range A4		2.8 ÷ 4.7	2.8 ÷ 4.7
Blow Out Circuit Type		Coil	Coil
Mechanical Characteristics			
Mechanical Endurance (cycles)		6x50000	
Electrical durability [In @ Un]		4x200	
Shock and Vibrations (IEC61373)		Cat.1 - Class B	
Maximum Weight [kg] for 18M / 36M		190 / 215	
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	
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	
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 $\tau=2ms$ [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 24V <sub>dc</sub> [mA]		5	
Electrical Connections		LV Connector 24 pins <sup>4</sup>	

## Environmental Conditions

Stock Temperature Range	-50°C ÷ +85°C
Operational Temperature Range	-40°C ÷ +70°C
Clearance in air [mm]	40
Creepage distance [mm]	80
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>	B	D	E	H	X	Y	W
1800	Metal Parts	410				-	140	
	Plastic Parts	360				-	90	
3600	Metal Parts	410	650	540	1140	210	90	40
	Plastic Parts	360				160	90	

<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.

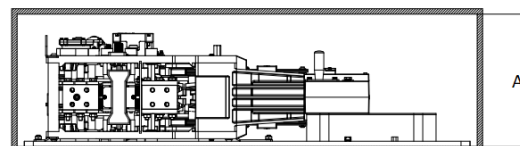
Other setting range are available on request

<sup>4</sup> Type of connectors are defined on request.

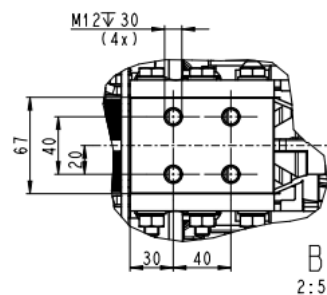
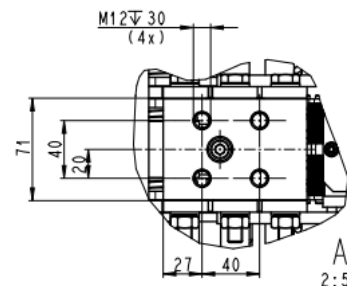
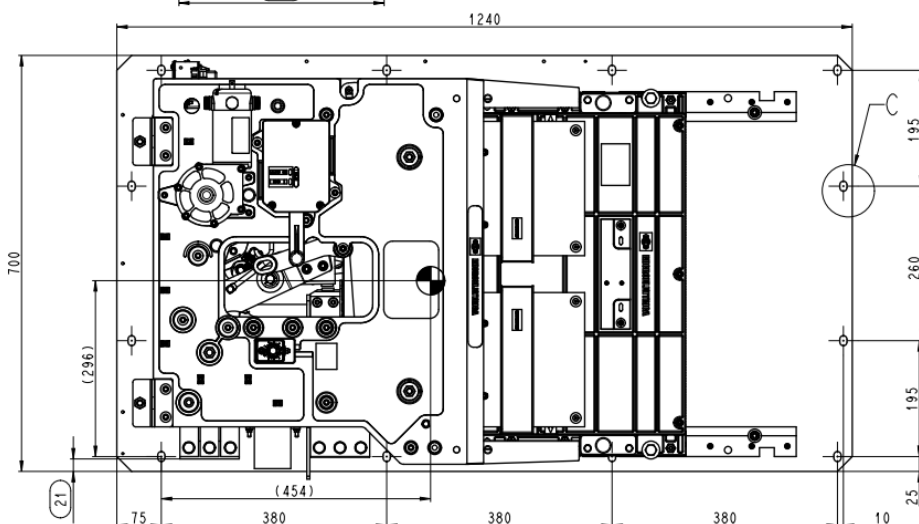
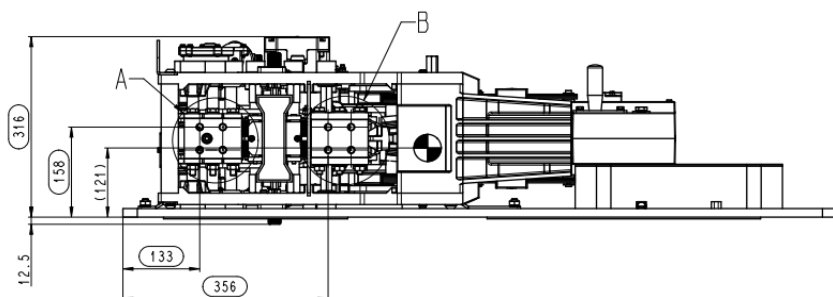
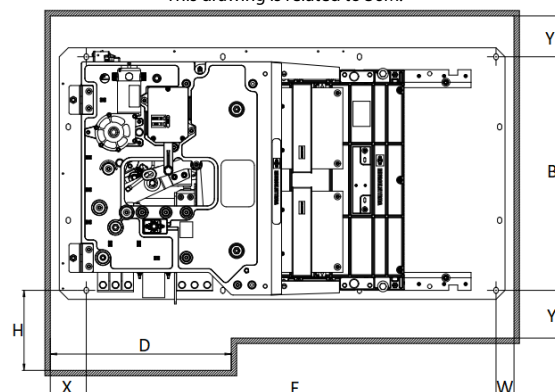
<sup>5</sup> According to IEC 62498-1.

<sup>6</sup> Reduced distance should be approved by Microelettrica.

<sup>7</sup> Ventilation system should be agreed with Microelettrica.



This drawing is related to 36M.



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)

