

# 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	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>



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## 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.

Insulation Characteristics		18M	36M
Rated Operational Voltage $U_{Ne}$ [V <sub>dc</sub> ]		1800	3600
Max Operational Voltage [V <sub>dc</sub> ]		2000	4000
Rated Insulation Voltage $U_{Nm}$ [V <sub>dc</sub> ] @ OV3/PD3		3700	3700
Rated Insulation Voltage $U_{Nm}$ [V <sub>dc</sub> ] @ OV4/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 [ $\hat{U}_{arc}$ ]		up to 3 x $U_{Nm}$	up to 3 x $U_{Nm}$
Standard Bidirectional direct acting trip device [kA] <sup>1</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	
Weight [kg] for 3000 [A] / for 4500 [A]		205 / 210	
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		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	-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>4</sup>	10 ÷ 95% RH

Minimum clearances [mm] from <sup>5</sup> :									
Rated Operational Voltage [V <sub>dc</sub> ]	A <sup>6</sup>	B	D	E	H	X	Y	W <sup>4</sup>	
1800	Metal Parts	410	650	540	1140	210	140	90	40
	Plastic Parts	360				160	90		
3600	Metal Parts	410				210	140		
	Plastic Parts	360				160	90		

<sup>1</sup> To be specified in order phase 5. Reduced distances should be approved by Microelettrica

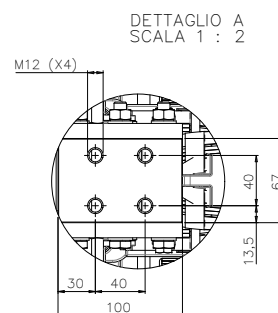
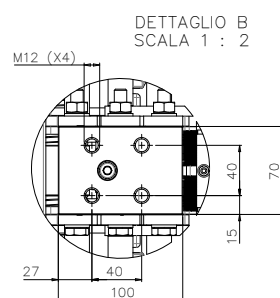
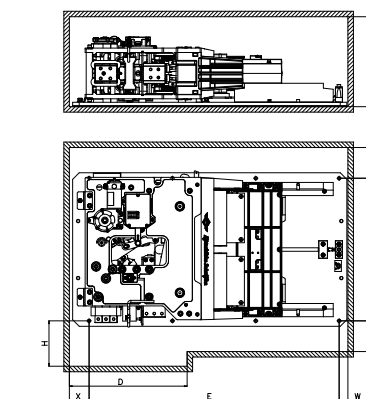
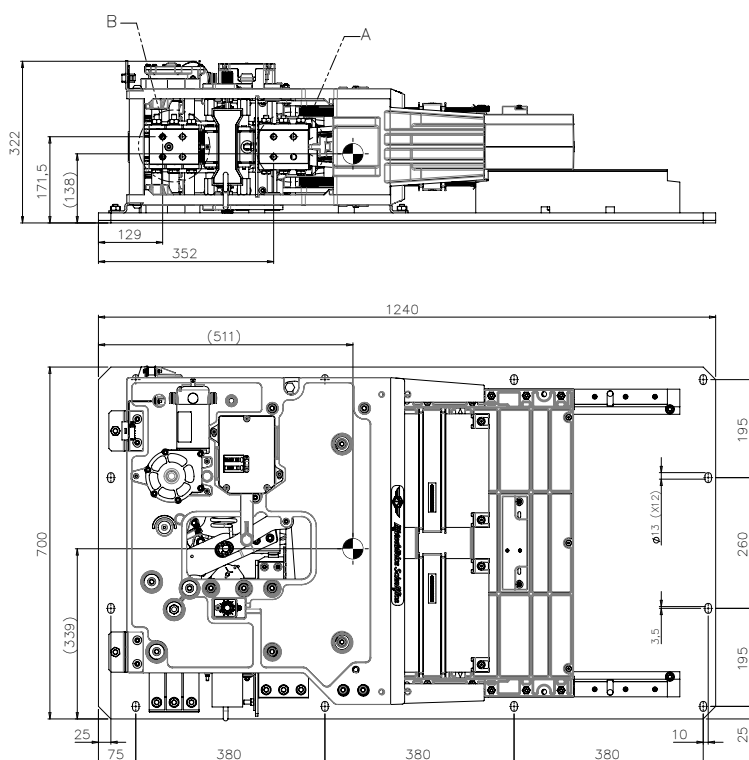
<sup>2</sup> Device cabled according IEC 60947 6. These quotes are referred to a 50% surface opening grid

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

<sup>4</sup> According to IEC 62498-1

<sup>5</sup> Reduced distances should be approved by Microelettrica

<sup>6</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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