

3AH37 and 3AH38 **vacuum** generator circuit-breakers for power stations and industry

Keeping a clear head when switching large currents

Power Transmission and Distribution

SIEMENS

3AH37 and 3AH38 – reliable switching capacity for up to 72 kA and 6300 A operating current

In numerous power stations around the world, the 3AH38 high-current and generator circuit-breaker has become the standard for switching rated operating currents up to 4000 A. The 3AH38 is the first 63 kA and 72 kA vacuum circuit-breaker in the world that has been type-tested in accordance with the criteria of the generator circuit-breaker guideline IEEE Std C37.013. The 3AH37 high-current and generator circuit-breaker

is available to extend the product portfolio to master operating currents up to 6300 A and short-circuit currents up to 72 kA.

Both circuit-breakers are based on the proven vacuum switching technology from Siemens. They provide almost maintenance-free operation and significantly reduce the life-cycle costs.





Figures 1-2: 3AH37



Figures 3-5: 3AH38

Grow with your requirements

No doubt that also during the next few years the worldwide demand for energy will increase dramatically. Consequently, energy suppliers and industrial companies must face up to increased demands for higher power and current.

In order that companies in this sector are always the one decisive step ahead, Siemens has been constantly developing and optimizing high-current and generator circuit-breakers. A high degree of reliability and maintenance-free operation are of the highest priority.

In top form thanks to 30 years of experience

High-current circuit-breakers are subject to very high thermal and mechanical loads. Therefore, a long circuit-breaker service life and appropriately low maintenance costs require a wide range of technical knowledge.

Optimum contact material for minimum electrode erosion, the optimal design for efficient cooling, the most suitable construction for mechanical stability – these demands have been constantly placed on Siemens and met by them in over 30 years of vacuum circuit-breaker technology.

Not only the comprehensive simulations and preliminary investigations, but also the consistent use of the latest development technologies and modern manufacturing processes ensure that Siemens maintains its leading position in the production of medium-voltage vacuum circuit-breakers in the long term.

The result is modular high-current and generator circuit-breakers with significant advantages in daily operation:

- High mechanical stability through the column construction
- Compact dimensions through vertical arrangement of the vacuum interrupters
- Low fire load as solid insulation is not required
- No forced cooling required because of free convection
- Secondary equipment can be easily retrofitted
- Maintenance-free throughout its entire service life
- Suitable for horizontal and vertical installation
- Type-tested according to IEEE Std C37.013 - 1997

Delivery overview

Rated operating current	For rated short-circuit breaking current / rated short-circuit making current		
	50/137 kA	63/173 kA	72/198 kA
3150 A	3AH3817-7	3AH3818-7	3AH3819-7
4000 A	3AH3817-8	3AH3818-8	3AH3819-8
5000 A	3AH3712-4	3AH3713-4	3AH3714-4
6300 A	3AH3712-5	3AH3713-5	3AH3714-5

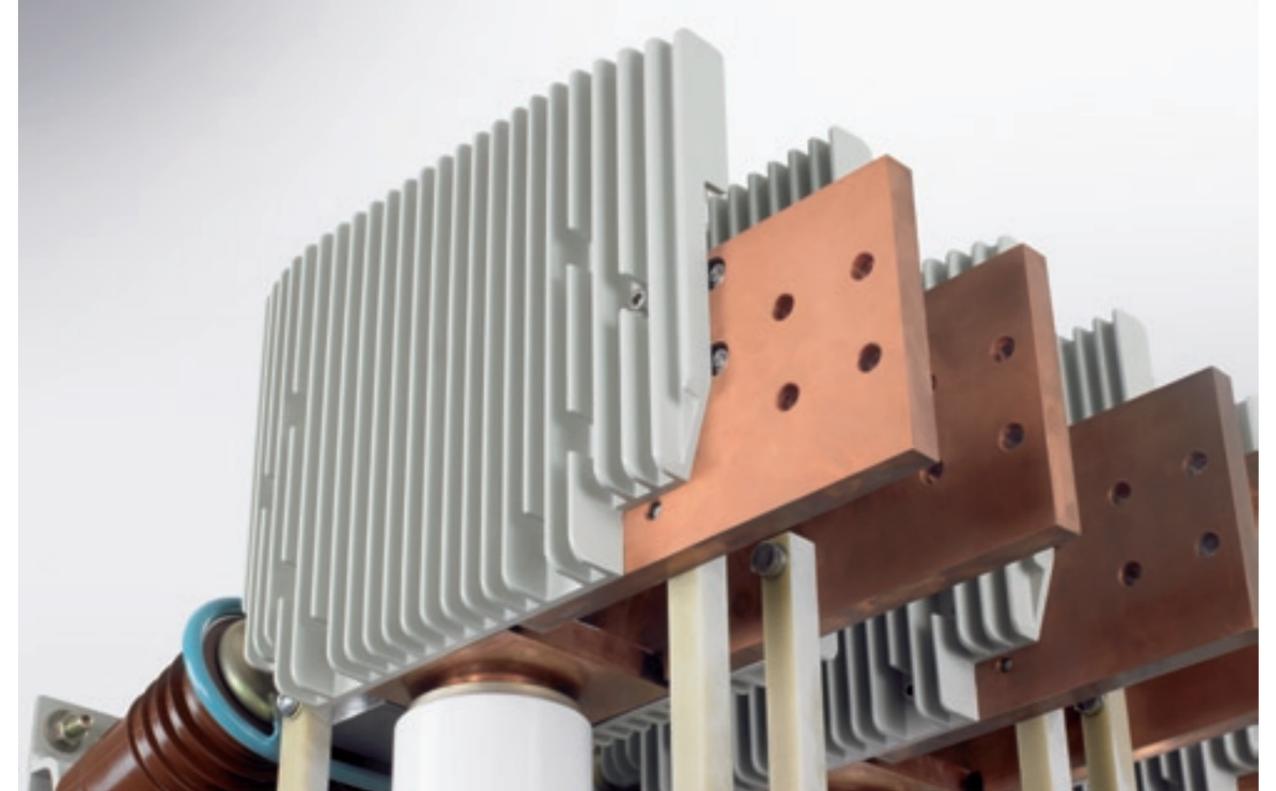
Modular construction for maximum flexibility

The circuit-breaker has been modularly constructed in order to be able to use the best materials for the current circuit, magnetic flux and cooling. In this way, features such as low resistance of the main circuit, high mechanical stability and ideal cooling behaviour have been combined in the 3AH37.

And that's not all! Because of the modular construction, the circuit-breaker can also be installed horizontally when required. The heat-exchanger elements are mounted simply rotated through 90° and also guarantee optimal convection and cooling in this position. The 3AH37 can be operated continuously in every position without any additional fans and does not overheat.



Vacuum interrupter



Connection with heat sink

Selection and ordering data for 3AH37/3AH38

Rated values:												
Rated voltage U_r	17.5 kV											
Rated frequency	50/60 Hz											
Lightning impulse withstand voltage U_p	110 kV											
Short-time power frequency withstand voltage U_d	50 kV											
Rated short-circuit breaking current I_{sc}	50 kA (3 s)				63 kA (3 s)				72 kA (3 s)			
Type:	3AH3817-7	3AH3817-8	3AH3712-4	3AH3712-5	3AH3818-7	3AH3818-8	3AH3713-4	3AH3713-5	3AH3819-7	3AH3819-8	3AH3714-4	3AH3714-5
Rated normal current I_r	3150 A	4000 A	5000 A	6300 A	3150 A	4000 A	5000 A	6300 A	3150 A	4000 A	5000 A	6300 A
DC component in % DC of short-circuit breaking current	75 %	75 %	75 %	75 %	65 %	65 %	65 %	65 %	65 %	65 %	65 %	65 %
Asymmetrical breaking current	73 kA				86 kA				98 kA			
Short-circuit making current	137 kA				173 kA				198 kA			
Voltage drop ΔU between connections at 100 A	1.4 mV				1.4 mV				1.4 mV			
Rated operating sequence:												
CO – 30 min – CO	■	■	■	■	■	■	■	■	■	■	■	■
O – 3 min – CO – 3 min – CO (Load current & mechanical operation)	□	□	□	□	□	□	□	□	□	□	□	□
Minimum creepage distance:												
Vacuum interrupter	160 mm				160 mm				160 mm			
Phase to earth	170 mm		230 mm		170 mm		230 mm		170 mm		230 mm	
Minimum clearance:												
Phase to phase	145 mm	135 mm	230 mm		145 mm	135 mm	230 mm		145 mm	135 mm	230 mm	
Phase to earth	130 mm		230 mm		130 mm		230 mm		130 mm		230 mm	
Measures & Weight:												
Pole centre distance	275 mm		300 mm		275 mm		300 mm		275 mm		300 mm	
Height x width x depth – without phase barriers	683 x 756 x 590 mm	733 x 776 x 694 mm	915 x 824 x 977 mm		683 x 756 x 590 mm	733 x 776 x 694 mm	915 x 824 x 977 mm		683 x 756 x 590 mm	733 x 776 x 694 mm	915 x 824 x 977 mm	
Height x width x depth – with phase barriers	900 x 776 x 644 mm	1000 x 776 x 811 mm	1180 x 824 x 1051 mm		900 x 776 x 644 mm	1000 x 776 x 811 mm	1180 x 824 x 1051 mm		900 x 776 x 644 mm	1000 x 776 x 811 mm	1180 x 824 x 1051 mm	
Weight	230 kg	320 kg	470 kg	500 kg	230 kg	320 kg	470 kg	500 kg	250 kg	320 kg	470 kg	500 kg
Dimension drawing no.	3M 32500592	3M 32500593	3M 32500587	3M 32500587	3M 32500019	3M 32500030	3M 32500588	3M 32500588	3M 32500019	3M 32500030	3M 32500589	3M 32500589
Standard	According to IEEE Std C37.013 for generator switching application											

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The information in this document contains general descriptions of the technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.

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