

# Mining

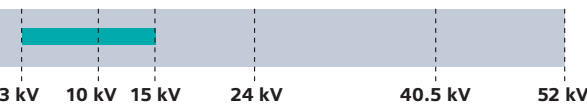
Motor switching via star-delta connection



### Requirements

- Extreme environmental conditions (i.e., dust, earthquakes)
- Different temperatures
- Can be installed at high altitudes
- Explosion protection guidelines

### Voltage ratings

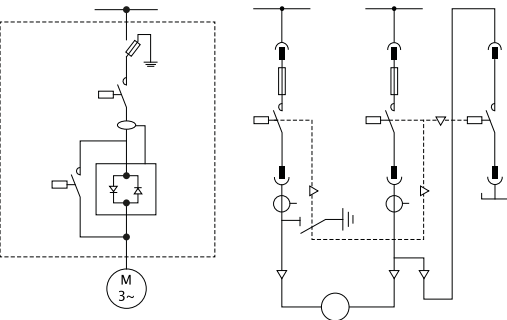


### Your benefits with 3TM vacuum contactors

- Suitable for ambient temperatures from –40 °C to +70 °C
- Suitable for use at altitudes up to 5000 m
- Easy replacement and retrofit of components
- Vibration- and shock-proof
- Up to 1000000 operating cycles possible

### Up to 40 operating cycles per day

- For switching of high-power motors (200 A, 6 kV, 2 MW), e.g., for conveyor belts, pumping stations, ventilators, powertrains
- Switching of motors via star-delta connection for smooth acceleration to the rated speed reduces stress on windings and increases the durability.



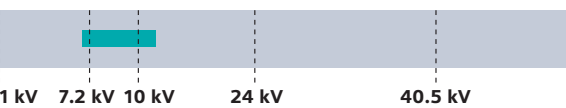
# Wind power generation



### Requirements

- Small dimensions
- Extreme environmental conditions (e.g., humidity, high temperatures)
- Frequent switching (up to 10 switching cycles per day)
- Increasing generator power

### Voltage ratings



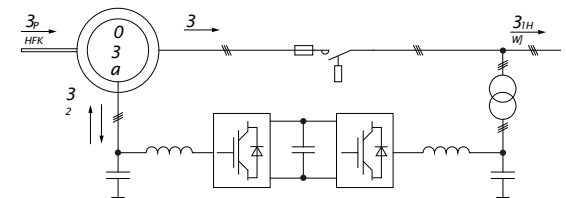
### Your benefits with 3TM vacuum contactors

- Can be used onshore and offshore
- Can be used at altitudes up to 5000 m
- Suitable for ambient temperatures from –40 °C to +70 °C
- Easy replacement and retrofit as well as easy to add components

### 20 up to 30 operating cycles per day

- For maintenance and due to unpredictable wind changes
- The power of wind turbines increases continuously. At constant voltages this leads to higher currents and causes high losses. In order to reduce these losses higher voltage levels are used.

Thus, the overall energy efficiency is optimized.



# 3TM vacuum contactors

Further areas of application

### Switching of three-phase motors in AC-3 or AC-4 operation

For example in conveying and elevator systems, compressors, pumping stations, ventilation and heating

### Switching of transformers

For example in transformer or transfer substations (secondary distribution level)

### Switching of capacitors

For example in power factor correction systems, capacitor banks

### Switching of filter systems

For example reduction of harmonics within the network

### Switching of reactors

For example in industrial distribution systems, DC-link reactors, power factor correction systems

### Switching of resistive consumers

For example heating resistors, electrical furnaces

### Switching of special applications

For example data centers, photovoltaic installations, wind power plants

# Development and manufacturing

From the vacuum interrupter to the vacuum circuit breaker

### Since 1919: manufacturing of switching devices in Berlin

### Development and production of switching devices and vacuum interrupters go hand in hand at Siemens

- High-tech, state-of-the-art assembly lines
- Complete production of the circuit breakers: from pre-production to testing
- “Lean Production” provided by the innovative Siemens Production System (SPS)
- Quality assurance acc. to ISO 9001 and KTA 1401

### Large product portfolio

- Tested individual components also in many other switching devices

### High quality with low failure rate

- Quality assurance acc. to ISO 9001

### High flexibility

- Easy replacement of components
- High spare part availability even for older models

### Standard delivery time: from 2 weeks

- If necessary, delivery is possible within one week

### Siemens quality:

“Designed and made in Germany”

Published by  
Siemens AG

Smart Infrastructure  
Electrical Products  
Siemensstraße 10  
93055 Regensburg  
Deutschland

For the U.S. published by  
Siemens Industry Inc.

Siemens Industry Inc.  
100 Technology Drive  
Alpharetta, GA 30005  
United States  
Germany

Article No. SIEA-T10009-00-7600  
3TM vacuum contactors – Quick Selection Guide  
Dispo 25600 • 08/22 • 0.5  
Printed in Germany

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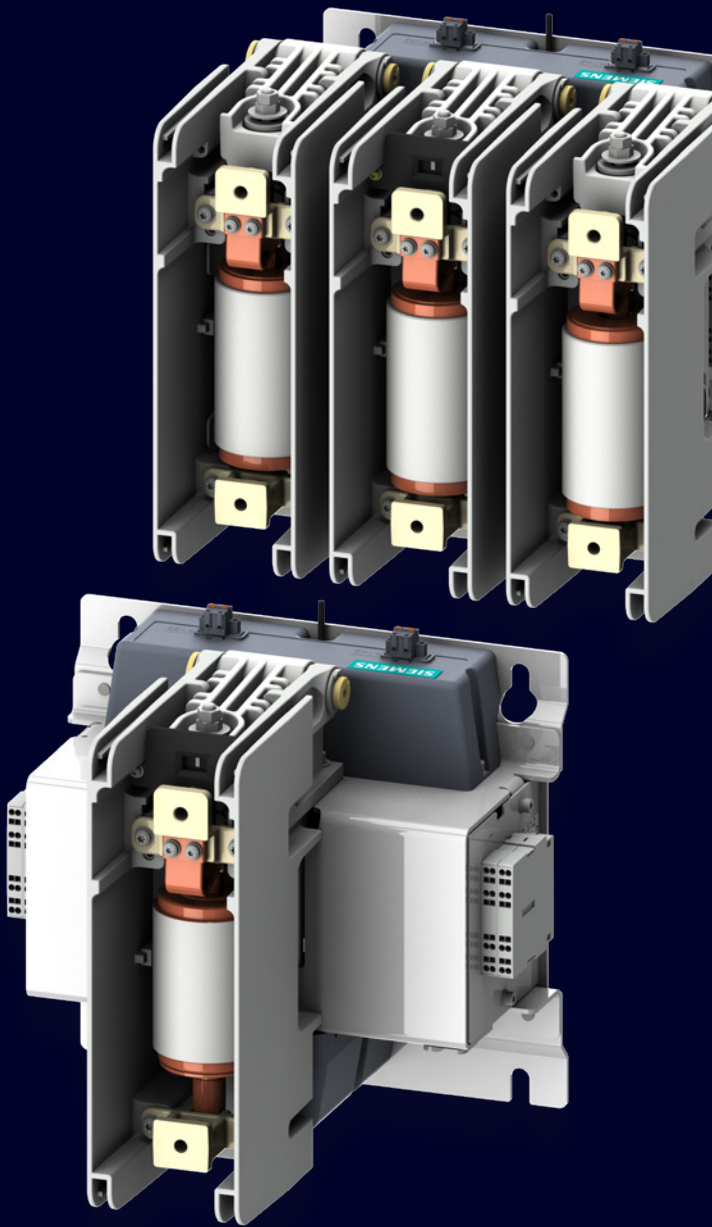
SIEMENS

### QUICK SELECTION GUIDE

# 3TM vacuum contactors

Portfolio overview

[siemens.com/3tm](https://www.siemens.com/3tm)



# 3TM vacuum contactors for medium-voltage power distribution

## Safe switching of operational currents in medium-voltage power distribution

3TM vacuum contactors are the optimal choice for medium-voltage power distribution. The compact, flexibly usable, energy-efficient products are suitable for all relevant ranges, including rated voltages from 7.2 to 15 kV and rated operational currents up to 450 A. They guarantee the safe switching of operational currents and overload currents in the categories AC-1 to AC-4 – including voltage dips – and thus ensure that plants operate with all-round protection.

**You have questions about the 3TM vacuum contactors?**

Then feel free to use our comprehensive support. We support you at any time from planning through commissioning to operation.

[Homepage](#)

## Support



## Configurator



WBT

		3TM vacuum contactors			
					
Type		3TM1	3TM3	3TM4 – Compact	3TM4 – HighCurrent
Number of poles	kV	1-pole	3-pole	3-pole	3-pole
Rated voltage	kV	(L-L) 7.2 ... 12 / (L-N) 4.15 ... 6.9	7.2 ... 15	7.2 ... 12	Up to 12
Rated frequency	Hz	50/60	50/60	50/60	50/60
Rated operational current	A	450	Up to 450	450	450
Thermal current	A	450	Up to 450	Up to 200	Up to 400
Rated short-circuit breaking current (limit switching capacity)	kA	5	Up to 5	Up to 50	Up to 50
Rated short-time withstand current (r.m.s. value) 1 s	kA	8	8	8	8
Mechanical endurance of contactor without closing latch	operating cycles	100000	Up to 1 Mio.	1 Mio.	1 Mio.
Number of fuses		–	–	1 per phase	Up to 2 per phase
Order information		<a href="https://www.siemens.com/product?3TM1">siemens.com/product?3TM1</a>	<a href="https://www.siemens.com/product?3TM3">siemens.com/product?3TM3</a>	<a href="https://www.siemens.com/product?3TM4">siemens.com/product?3TM4</a>	<a href="https://www.siemens.com/product?3TM4">siemens.com/product?3TM4</a>

## Highlights



### Flexible application

- Individually adjustable switching times
- Various mounting positions
- Flexible control of linking system



### Robust construction\*

- Highly shock-resistant
- Suitable for ambient temperatures from  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$
- Suitable for applications in altitudes of up to 5000 m



### Variable design\*

- Freely definable pole-center distances
- 1-pole, 2-pole and 3-pole versions
- Easy replacement and retrofit of components



### Global conformity to standards\*

- Certification IEC 62271-106
- Certification UL 347
- Certification GOST P 52565-2006
- Certification CSA C22.2 253-09
- Certification GB/T14808
- Certification DNVGL-CG-0339

\* Deviations possible depending on version