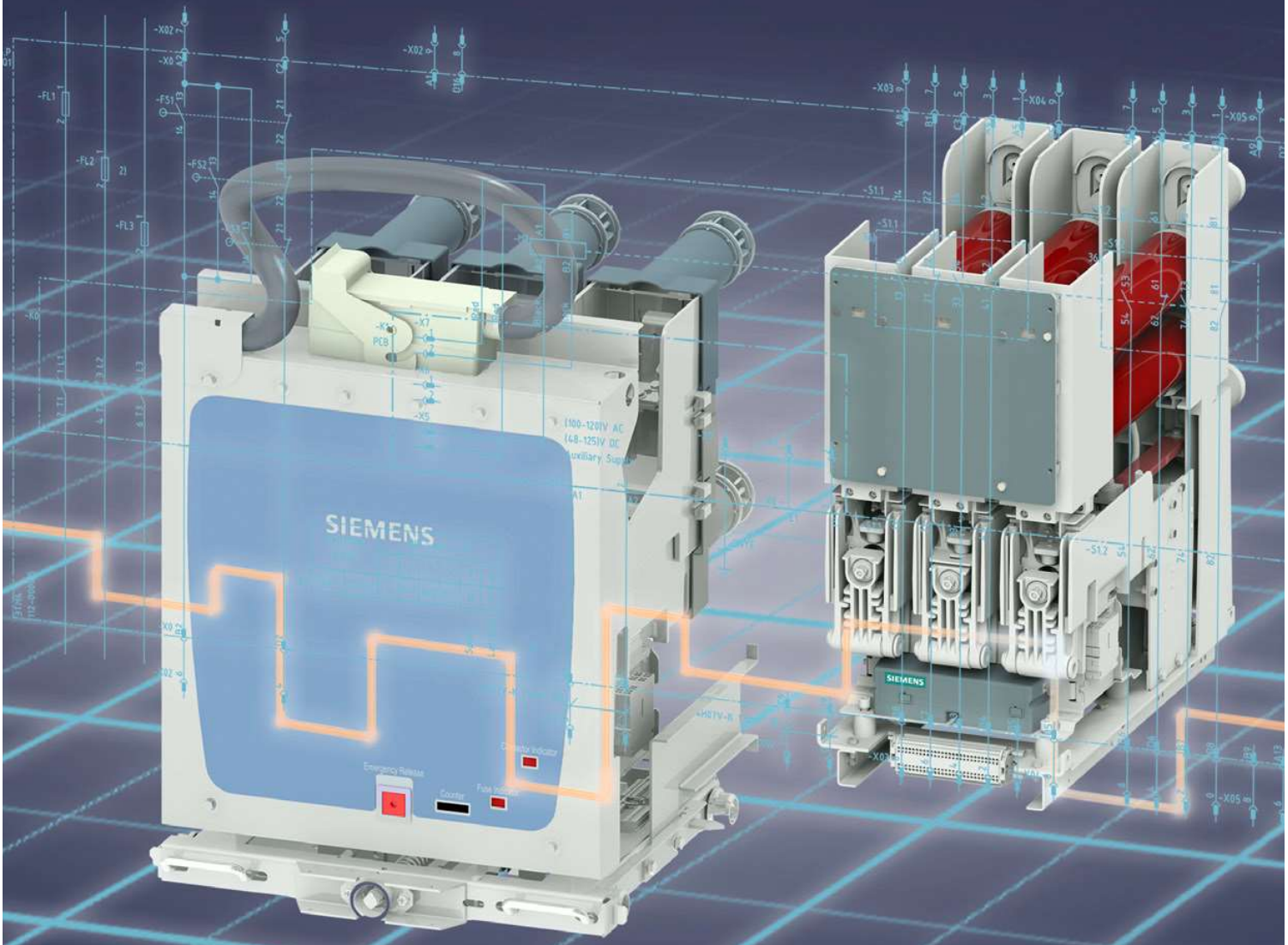
SIEMENS



Medium-Voltage Equipment

3TM4 Contactor-Fuse-Combination

Catalog
HG 11.22

Edition
2021

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3TM4 Contactor-Fuse Combination

Medium-Voltage Equipment
Catalog HG 11.22 · 2021

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Industrial application: Refinery

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3TM4 Compact

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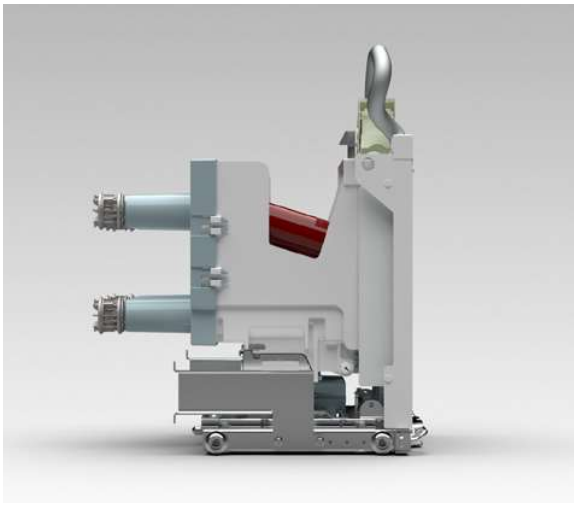


Ansicht 4.tif

3TM4 is the Contactor-Fuse-Combination (CFC) based on the well-known 3TM contactor platform. It is available in two versions: compact version and high-current version. 3TM is a the latest generation of vacuum contactor in Siemens, it is used for breaking rated load currents and certain overcurrent which is not higher than take-over current, and 3TM can meet the application for requirement of high switching frequencies, tested with electromechanical service life up to one million operating cycles. High-voltage AC current-limiting fuse could provide short-circuit protection according to HV fuse's time-current characteristics.

Applications

- 3TM vacuum contactors are suitable for operational switching of AC circuits of any kind, such as:
- AC-1 resistive loads
- Three-phase motors in accordance with AC-2 to AC-4 operation requirements
- High-voltage transformers
- Back-to-back capacitors bank
- Conveyor and elevator systems, pumping stations, ventilation and heating, air conditioning systems, as well as in systems for reactive power compensation, in railway operation, brake system and other various industrial application fields.

Switching medium

3TM vacuum contactors make use of vacuum switching technology, which has been proven and fully developed for more than 40 years. Siemens vacuum interrupters operate constantly and reliably throughout their entire service life – without any maintenance.

Design and function

3TM4 Compact is based on modular design and mainly consists of:

- High-voltage parts, including vacuum interrupters, fuses and main circuit connection
- Low-voltage parts, including electromagnetic operating mechanism module, to realize electrical control and latching release
- Auxiliary contacts at lateral surfaces of contactor and 58-pin connection plug
- Optionally, a closing latch as well as a manual latch release (emergency off), and a shunt release
- Withdrawable part

Electrical interlocking between vacuum contactor truck and fuses, mechanical interlocking between vacuum contactor truck and switchgear can be fulfilled to prevent the misoperation during the truck is racked in and out.

High-voltage components are composed of three independent insulated fuse boxes respectively protecting the fuse of each phase. Vacuum interrupter is opened or closed by solenoid-operated mechanism, auxiliary contacts are installed at lateral surfaces of contactor and are externally connected with the secondary circuit. Mechanical closing latching and unlatching, and corresponding modules can be operated independently, and be able to switch off contactor by electromagnetic shunt release from a remote tripping location. The manual mechanical latch release (emergency off) is available for various operation modes.

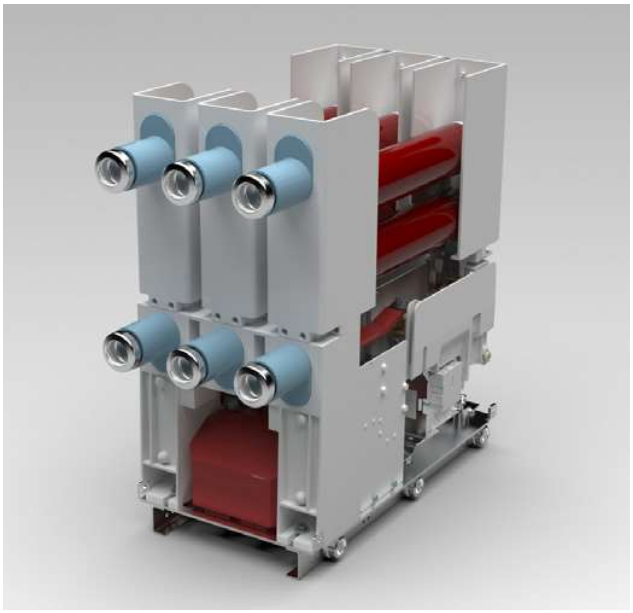
1

3TM4 High-Current

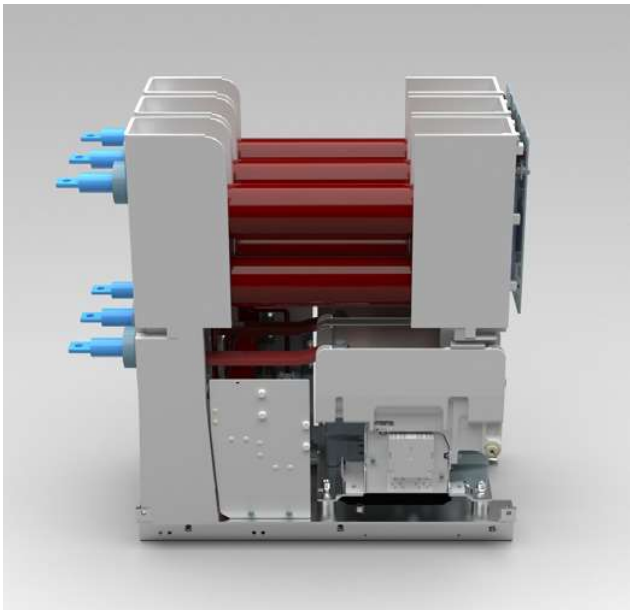
The contactor-fuse combinations 3TM4 are type-tested units of the successful 3TM4 contactors and HV HRC fuses. A fuse holder for two fuses per phase and a control transformer for power supply have been integrated. This enables frequent switching of high normal currents in a compact space.

Due to their high reliability, the contactor-fuse combinations 3TM4 are used where frequent and safe switching is required, no matter whether it is for three-phase motors, transformers, reactors, capacitors or resistive consumers. With up to one million operating cycles, the contactor-fuse combinations ensure optimum availability. Their advantage: High safety and reliability due to maintenance-free systems.

3TM4 High-Current
– The Complete



Circular Render 3.jpg



Flatbolt Render 2.jpg

The arrangement of the components on the base plate provides optimum ventilation and thus, a high normal current, supported by the especially developed fuse holder which ensures a uniform distribution of the current. Even high requirements regarding the dielectric strength – as requested in countries like China – are fulfilled with this design.

The contactor-fuse combinations 3TM4 are suitable for application on withdrawable parts and fixed-mounted assemblies. Bushings and various widths across flats are available for easy integration.

There are many different versions of contactor-fuse combinations available, e.g. for one or two fuses per phase, with or without control transformer.

1

Construction

The contactor-fuse combination consists of the following components: vacuum contactor (1), fuse holder with insulating cover (2), fuse-links (3), isolating contacts (4), and an optional control transformer (5). These components are accommodated on a base plate (6).

The vacuum contactor (1) breaks the relevant currents during normal operation. To do this, the vacuum switching technology, proven for almost 40 years, serves as arc-quenching principle by using vacuum interrupters. The vacuum interrupters (8) are operated by the magnet system (10) through an integral rocker (9). All components required for switching, such as the operating mechanism and closing latch (11) are accommodated in the operating mechanism box (12) and are fed with low voltage. This low voltage is either supplied separately or taken directly from the medium-voltage system through the optional control transformer (5).

The fuse holder with insulating cover (2) is mounted on one side of the contactor (1). On the other side it is raised to the necessary height by the cross-member (7). The fuse holders, which are especially conceived for the use of up to two plug-in HV HRC fuse-links, ensure a uniform distribution of the current to the two fuse-links of one phase.

Fuse-links (3) from different manufacturers can be used. Here, a maximum let-through current of 50 kA must be observed in order not to damage the contactor. To select the correct fuse-link, please observe the indications given in the chapter “Equipment Selection” (see page 17).

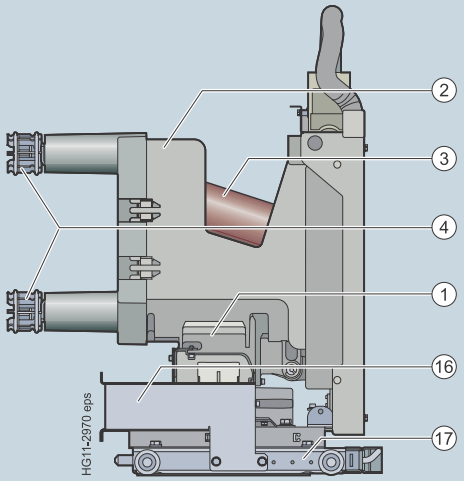
The isolating contacts (4) enable the connection to the medium-voltage system. For fixed mounting there are flat bolted connections available, and plug-in contacts for integration in withdrawable systems. With this type, the ring spring contact version offers an especially large contact surface and optimum power connection. The circumferential ring spring expands when the fixed contact is pushed in, providing a large contact surface. To insulate the contact arms, a plastic insulating sleeve is used, which can be adjusted to the different lengths of the contact system. A width across flats of 205, 275 or 310* mm is reached by different adjustments to the cross-members or the fuse holder with insulating covers.

The optional control transformer (5) is connected to the high-voltage terminals of the contactor-fuse combination on its primary part, so that no additional cables are required. To protect the transformer, an separate upstream fuse is series-connected on the primary side and accommodated in the cross-member. Due to its different versions, the control transformer can be optimally adjusted to the existing power system.

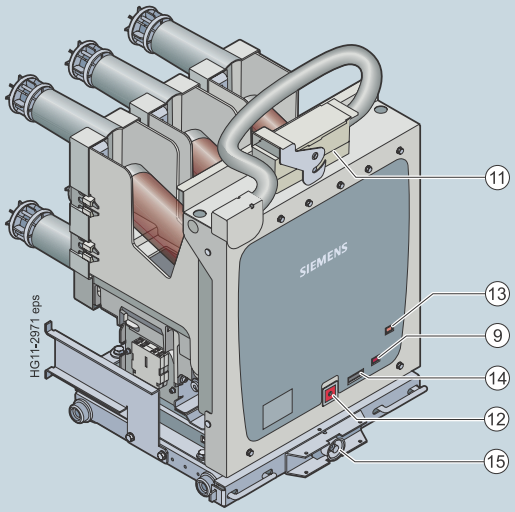
The front cover (13) with an indication opening closes the fuse holder with insulating cover, and offers a possibility for handling.

* not available for Compact CFC

3TM4 Compact

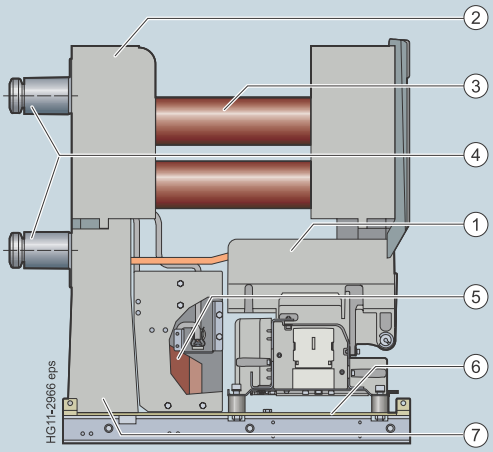


Construction of the contactor-fuse combination 3TM4

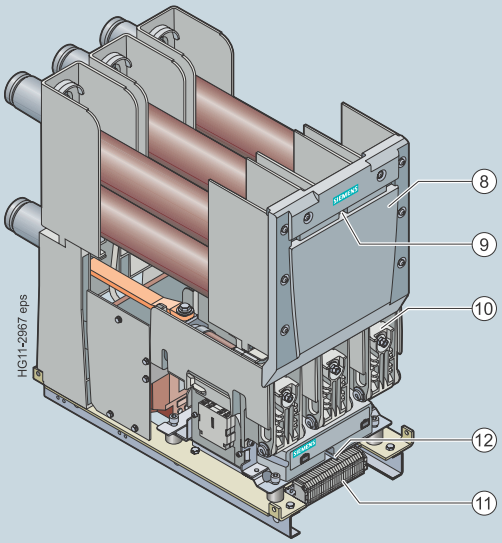


Construction of the
contactor-fuse combination 3TM4

3TM4 High-Current



Construction of the contactor-fuse combination 3TM4

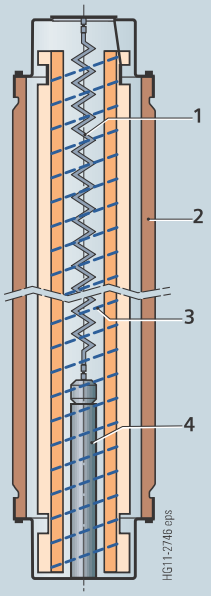


Construction of the
contactor-fuse combination 3TM4

Legend

1 Vacuum contactor
2 Fuse holder with insulating cover
3 Fuse-link
4 Isolating contact with insulating sleeve
5 Optional control transformer
6 Base plate
7 Cross-member
8 Front cover
9 Fuse trip indicator
10 Drive lever
11 Terminal strip
12 Emergency - Off button
13 Contactor position indicator
14 Operation Counter
15 Rack in/out interface
16 Shutter guides
17 Withdrawable part

1



Sectional view of an HV HRC fuse-link

Legend

1 Secondary fuse-element
2 Outer tube
3 Main fuse-element
4 Thermal striker

Mode of operation

In case of short circuit, the main fuse-elements (10) of the HV HRC fuse melt and evaporate at all bottlenecks already during the current rise. Arcs burn at these bottlenecks, which are cooled so effectively by the arc-quenching medium that their total arc voltage is higher than the operating voltage. This results in a rapid decrease of the current, which is interrupted while it is still rising. When the main fuse-elements (10) melt, the secondary fuse-element (8) evaporates as well and releases the thermal striker (11), which operates the vacuum contactor with the help of the auxiliary switch and activates the fuse trip indicator. In the optimum time sequence, the fuse has already interrupted the short-circuit current at this time.

Replacement of HV HRC fuses

The fault currents stress the fuses in the phases differently, but all fuses are stressed. To obtain identical switching and safety conditions for further application again, **all fuse-links should be replaced as recommended in the standards**.

Please refer to the fuse selection table on page 22.

Short-circuit protection with HV HRC fuses

At high short-circuit currents, HV HRC fuses have a current-limiting effect, i.e. the fuse limits the short-circuit current to the let-through current. To select the fuses, the type of consumer must be observed, e.g. motor, transformer, capacitors.

An example for the coordination of contactor and HV HRC fuses is given in the chapter "Equipment Selection".

Application examples

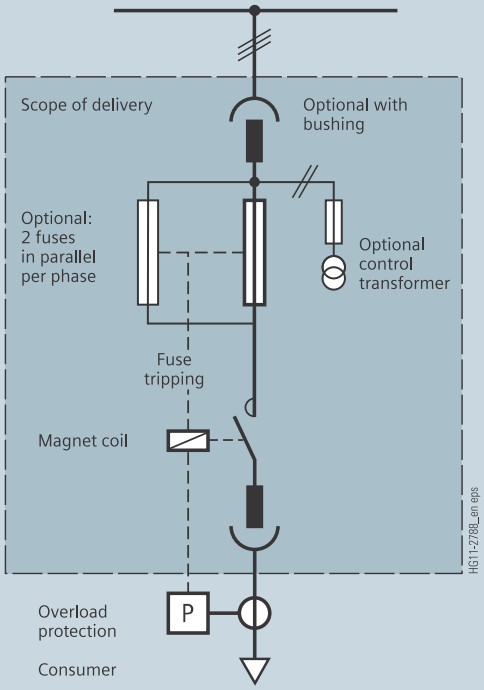
Contactor-fuse combinations are suitable for operational switching of alternating-current consumers in indoor installations, and can be used e.g. for the following switching duties:

- Starting of motors
- Plugging or reversing the direction of rotation of motors
- Switching of transformers
- Switching of reactors
- Switching of resistive consumers (e.g. electrical furnaces)
- Switching of capacitors
- Switching of compressors.

With these duties, contactor-fuse combinations are used in conveyor and elevator systems, pumping stations, air conditioning systems as well as in systems for reactive power compensation, and can therefore be found in almost every industrial sector.

Utilization categories

In IEC 62271-106, medium-voltage power contactors are divided into different utilization categories. According to these categories, contactor-fuse combinations 3TM4 are dimensioned for different electrical consumers and operating conditions. The opposite table shows typical applications in accordance with the respective utilization categories.

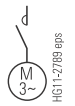
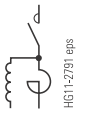
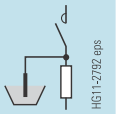


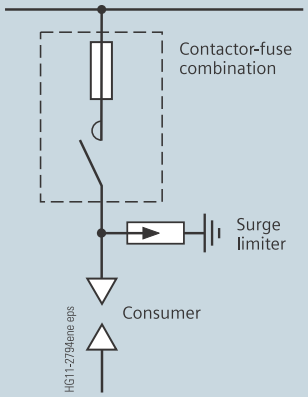
Example: Single-line diagram for direct control of consumers

Utilization category	Typical applications
AC-1	Non inductive or slightly inductive loads, resistance furnaces
AC-2	Slip-ring motors: Starting, switching off
AC-3	Squirrel-cage motors: Starting, switching off during running
AC-4	Squirrel-cage motors: Starting, plugging [1], reversing [1], inching [2]

1) Plugging is understood as stopping or reversing the motor rapidly by reversing motor primary connections while the motor is running
2) Inching is understood as energizing a motor once or repeatedly for short periods to obtain small movements of the driven mechanism

1

Medium-voltage three-phase motors		Conveyor and elevator systems, compressors, ventilation and heating
Transformers		Ring-main units, industrial system distributions
Reactors		Industrial system distributions, DC-link reactors, reactive power compensation systems
Resistive consumers		Heating resistors, electric furnaces
Capacitors		Reactive power compensation systems, capacitor banks
Compressors		



Surge protection of the contactor-fuse combination

Switching of motors

Contactor-fuse combinations 3TM4 are especially suitable for frequent operation of motors in utilization category AC-3 and AC-4.

As the chopping currents of the contactors are ≤ 5 A, no unpermissibly high overvoltages are produced when started motors are switched during normal operation. However, when high-voltage motors with starting currents of ≤ 600 A are stopped during start-up, switching overvoltages may arise. The magnitude of these overvoltages can be reduced to harmless values by means of special surge limiters.

Switching of transformers

When inductive currents are interrupted, current chopping can produce overvoltages at the contact gap. Such overvoltages can be controlled with a protective circuit composed of 3EJ surge limiters.

Switching of capacitors

Contactor-fuse combinations can interrupt capacitive currents up to 250 A up to the rated voltage of 12 kV without restrikes, and thus without overvoltages.

Surge protection via limiters

Overvoltages can arise as a consequence of multiple restrikes or by virtual current chopping, e.g. when motors are switched in braked condition or during start-up. Motors with a starting current ≤ 600 A are endangered. Safe protection against overvoltages is ensured by surge limiters; a typical scheme is shown on the left.

3EJ surge limiters can be arranged in parallel to the cable sealing ends, preferably in the cable compartment. The surge limiters consist of non-linear resistors (metal-oxide varistors SIOV) and a series-connected spark gap. During installation it must be observed that the surge limiter is flexibly mounted on one side for mechanical reasons.

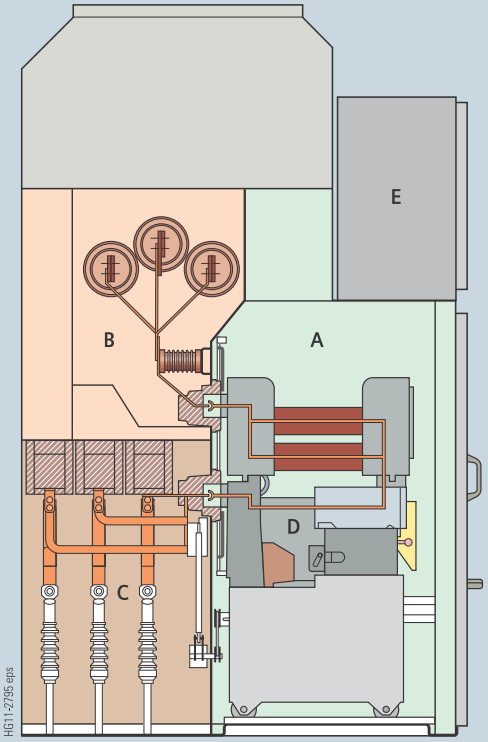
Integration in a switchgear panel

Due to its construction and the different medium-voltage connections possible, the contactor-fuse combination 3TM4 can be easily integrated in a switchgear panel.

Standards

Contactor-fuse combinations 3TM4 conform to the standards for high-voltage alternating current contactors above 1 kV and up to 12 kV.

Overview of standards	
IEC 62271-1	DIN EN 62271-1
IEC 62271-106	DIN EN 62271-106
IEC 60529	DIN EN 60529
IEC 60721	DIN EN 60721
IEC 60282-1	DIN EN 60282-1
Test voltages according to D/L 404, GB 14808, DL/T 593	



Example:
Integration of a contactor-fuse combination in a switchgear panel

A Switching device compartment
B Busbar compartment
C Connection compartment
D Contactor-fuse combination
E Low-voltage compartment

1

Function and mode of operation

Electrical latching operation mode of closing:

Closing mode: when the closing electromagnet is energized and actuated, the electromagnetic force generated hereby compresses opening springs and contact pressure springs through drive lever and overcomes electro-dynamic force generated by closing to close contacts of vacuum interrupters, and then close the vacuum contactor. After the vacuum contactor is closed, closing electromagnet decreases the closing current through control circuit and the electromagnetic force generated hereby only acts on compressing opening springs and contact pressure springs to keep closing position and decreases power losses.

Opening mode: when the power of closing electromagnet shuts down, the opening springs and contact pressure springs in compression condition start to act, then drive levers are actuated to separate the contacts of vacuum interrupters. Meanwhile the opening springs provide enough force to balance the self-closing force of vacuum interrupters to keep the vacuum contactor at opening position.

Mechanical latching operation mode of closing:

Closing mode: when the closing electromagnet is energized and actuated, the electromagnetic force generated hereby these compresses opening springs and contact pressure springs through drive lever and overcomes electro-dynamic force generated by closing to close contacts of vacuum interrupters, and then close the vacuum contactor. After that, mechanical latching is simultaneously activated and reaching the latching position, there is an automatic changeover to no-load holding operation, then the control voltage of closing electromagnet is cut off from its supply power.

Opening mode: opening electromagnet is energized or manual mechanical latching release (emergency off), after unlatching, opening springs and contact pressure springs in compression condition start to act, then drive levels are actuated to separate the contacts of vacuum interrupters. Meanwhile, opening springs provide enough force to balance the selfclosing force of vacuum interrupters to keep the vacuum contactor at opening position.

Fuse protection: When certain fuse is broken, the striker-pin is knocked out and this action will be transmitted from striker-pin to fuse trigger mechanism, then close the position micro-switches for the fuses. After that, closing control circuit will be cut off and opening control circuit will be connected simultaneously, then vacuum contactor in combination unit will be opened immediately.

Striker-pin of fuse is at knocking-out position and the vacuum contactor in combination unit will not be closed.

Closing and opening delay on switching function

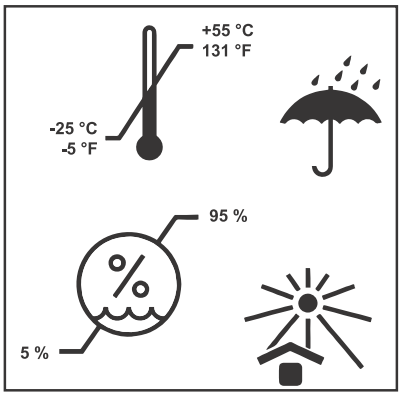
3TM vacuum contactors feature a short closing and opening time adjustment. (See page 14).

They can also be configured with an additional closing and opening delay for selective operation with other contactors or circuit breakers. Both delays are independent each other and work effectively.

High-strength operation conditions:

It can also be offered with a special configuration for high-strength mechanical stress such as earthquakes, extraordinary shock and swinging loads.

Ambient conditions



3TM vacuum contactors are suitable for operational use in the following climatic classes according to IEC 60721:

Ambient conditions	Class	Standards
Climatic ambient conditions	3K23 [1]	IEC 60721-3-3
Biological ambient conditions	3B1	IEC 60721-3-3
Mechanical ambient conditions	3M11	IEC 60721-3-3
Chemically active substances	C3 [2]	ISO 9223
Mechanically active substances	3S6 [3]	IEC 60721-3-3

1) Maximum of 24-hour mean: +40 °C
2) Without appearance of saline fog and simultaneous condensation
3) Restriction: Clean insulation parts

Operating environment conditions

Environment temperature:

- Maximum of 24-hour mean: +40 °C
- Minimum temperature -5 °C

Environment humidity:

- Maximum daily average relative humidity 95 %
- Maximum monthly average relative humidity 90 %

Earthquake intensity:

- Not greater than magnitude 8.

Other conditions: products shall not be used in the sites like dripping water, fire hazards, explosion hazards and chemical corrosion. If the service environments are beyond specified conditions mentioned above, it must be determined through the negotiations with the manufacturer.

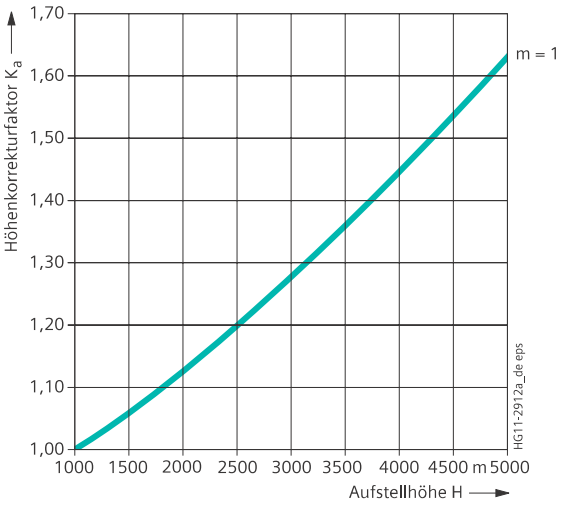
Dielectric strength

The dielectric strength of air insulation decreases with increasing altitude due to low air density. If a site altitude is greater than 1000 m sea level, the insulation level must be corrected and shall be determined through consultations with the manufacture.

To select the devices, the following application (condition) applies:

- U ≥ U0 x Ka
- U Rated lightning impulse withstand voltage under reference atmosphere
- U0 Rated lightning impulse withstand voltage requested for the place of installation
- Ka Altitude correction factor according to the opposite diagram

Example:



For a requested rated lightning impulse withstand voltage of 75 kV at an altitude of 2500 m, an insulation level of 90 kV under standard reference atmosphere (environment) is required as a minimum:

$$90\ \text{kV} \geq 75\ \text{kV} \times e1 \times {}^{(2500-1000)/8150}$$
$$\approx 75\ \text{kV} \times 1.2$$

1

3TM4 Compact

Product range overview

	3TM42	3TM43	3TM44	3TM45
Standards	IEC 62271-106	IEC 62271-106, GB/T 4808-2016	IEC 62271-106	IEC 62271-106, GB/T 4808-2016
Rated voltage U_r	7.2 kV	7.2 kV	12 kV	12 kV
Rated frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Rated lightning impulse withstand voltage (peak value)	60 kV	60 kV	75 kV	75 kV
1min rated power frequency withstand voltage	20 kV	32 kV	28 kV	42 kV
Rated current (contactor)	450 A	450 A	450 A	450 A
Rated current (with fuse)*	fuse dependent	fuse dependent	fuse dependent	fuse dependent
Rated short-time withstand current (contactor)	8 kA/1 s	8 kA/1 s	8 kA/1 s	8 kA/1 s
Rated peak withstand current (contactor)	20 kA	20 kA	20 kA	20 kA
Rated making capacity (contactor)	5 kA	5 kA	5 kA	5 kA
Rated switching capacity at rated breaking current	3.6 kA	3.6 kA	3.6 kA	3.6 kA
Take-over current				
Rated short-circuit making current (with fuse) (prospective peak current)	<5 kA	<5 kA	<5 kA	<5 kA
Rated short-circuit breaking current (with fuse) (prospective short-circuit current)	50 kA	50 kA	50 kA	50 kA
Main circuit resistance	<300 µΩ	<300 µΩ	<300 µΩ	<300 µΩ
Rated mechanical operation frequency, electrical latching (without close latch)	1200 Op./h	1200 Op./h	1200 Op./h	1200 Op./h
Rated mechanical life, electrical latching (without close latch)	1000000 Cycl.	1000000 Cycl.	1000000 Cycl.	1000000 Cycl.
Rated mechanical operation frequency, mechanical latching (with close latch)	60 Op./h	60 Op./h	60 Op./h	60 Op./h
Mechanical life of close latch	200000 Cycl.	200000 Cycl.	200000 Cycl.	200000 Cycl.
Max. number of fuses per phase				
3TM4 Compact - fuse length 292 mm	1× 315 A	1× 315 A	1× 200 A	1× 200 A
3TM4 Hi Current - fuse length 442 mm	2× 250 A	2× 250 A	2× 160 A	2× 160 A
Pole Center Distance - PCD				
3TM4 Compact	150 mm	150 mm	150 mm	150 mm
3TM4 Hi Current	120 mm	120 mm	120 mm	120 mm
Vertical Distance Between the Terminals - VDT				
3TM4 Compact	205 / 275 mm	205 / 275 mm	205 / 275 mm	205 / 275 mm
3TM4 Hi Current	205 / 275 / 310 mm	205 / 275 / 310 mm	205 / 275 / 310 mm	205 / 275 / 310 mm
Installation				
3TM4 Compact	Withdrawable	Withdrawable	Withdrawable	Withdrawable
3TM4 Hi Current	Fixed|Withdrawable	Fixed|Withdrawable	Fixed|Withdrawable	Fixed|Withdrawable

*Please check fuse selection table which shows the maximum normal current.

2

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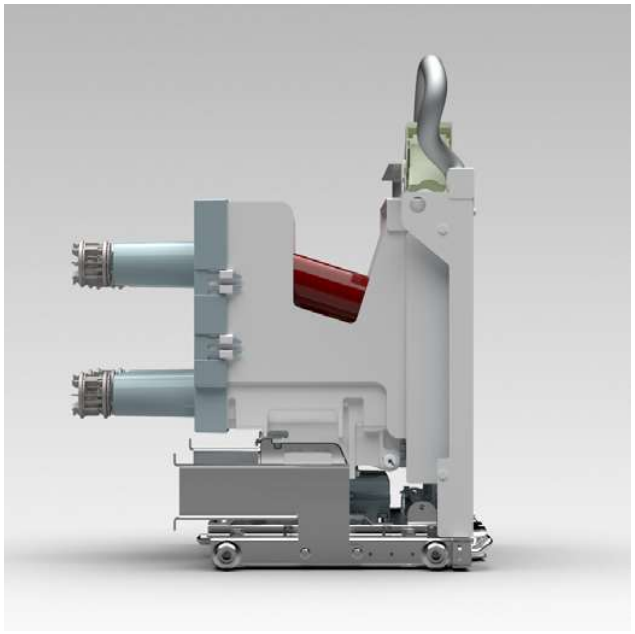
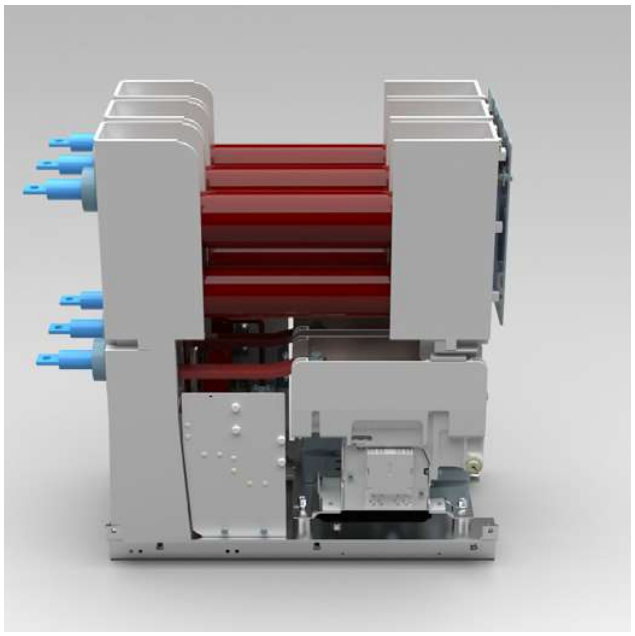

Ansicht 4.tif

3TM4 Compact


Flatbolt Render 2.jpg

3TM4 High-Current

Contents Page

2

Selection aids

The contactor-fuse combination is selected in two steps:

1) The base device is selected in accordance with the requirements of the medium-voltage system and the switching duty.

2) Selection of a suitable fuse.

Generally, fuses of any manufacturer can be used, if they fulfil the standard IEC 60282-1, IEC 60644 and IEC 60787. The selected fuse must contain a thermal striker of the "medium" type.

Transformer protection

HV HRC fuses as short-circuit protection for transformers

DIN VDE 0670 Part 402 achieved a standardization of the HV HRC fuse characteristics – referring to their rated current. This results in a protection recommendation for distribution transformers which is widely independent of the fuse manufacturer.

A minimum or maximum fuse current rating is assigned to each transformer. This larger range provides improved discrimination coordination both towards the low-voltage side and the superior medium-voltage side.

Moreover, there are further requirements for special applications, which are described in the relevant standards.

Inrush current

For the specified ratings of distribution transformers, the effects of inrush currents (I^2t-values) on the upstream HV HRC fuses have been checked. The most important factors of influence are the rated power, vector groups and impedance voltages of the transformers.

According to IEC 60787, Clause 4, the pre-arcing time characteristic of the fuse at a time of 0.1 s must feature a current value greater than 10 to 12 times the rated transformer current.

Short-circuit protection on the low-voltage side of the transformer

When there is a short-circuit on the low-voltage side at the transformer terminals, a damped short-circuit current flows on the high-voltage side:

$$I_k = I_{rT} \cdot \frac{100}{U_k}$$

I_k Sustained symmetrical short-circuit current
I_{rT} Rated current of the transformer
U_k Relative impedance voltage (%)

The HV HRC fuse used breaks this damped short-circuit current safely. Its minimum breaking current must therefore be lower than the fault current to be expected.

Discrimination requirements between HV HRC fuses

In individual cases, e.g. in line systems with widely separated substations, the discrimination of series-connected HV HRC fuses may be important for operational reasons. The superior HV HRC fuse must have a higher pre-arcing I^2t-value as the operating I^2t-value of the subordinate fuse.

Discrimination requirements between HV HRC and LV HRC fuses

When the associated LV HRC fuse is selected, discrimination to the HV HRC fuse must be ensured. This equally applies if the low-voltage feeder contains several parallel fuses.

In the case of LV HRC fuses with different current ratings, the fuse with the maximum current rating is decisive for discrimination considerations.

Discrimination requirements between HV HRC fuses and low-voltage circuit-breakers

Discrimination must be ensured by means of the time-current characteristics of the HV HRC fuse-link converted to the low-voltage level and the total breaking time of the provided circuit-breaker.

Motor protection

HV HRC fuses as short-circuit protection of motors

HV HRC fuses are used for short-circuit protection in combination with vacuum contactors.

Due to the arising motor starting current, the instant when the motor starts represents the maximum stress for the HV HRC fuse. This stress must neither operate nor pre-damage the fuse. Other factors of influence on the stress of the HV HRC fuses are the starting time and the starting frequency.

The indications of the fuse manufacturer regarding motor protection must be generally observed.

As a guide value for 2 to 6 starts per hour (max. 2 shortly after each other), the pre-arcing current of a fuse to be selected must be at least twice the motor starting current for the given starting time. For a higher number of starts, a fuse of the next higher level must be selected.

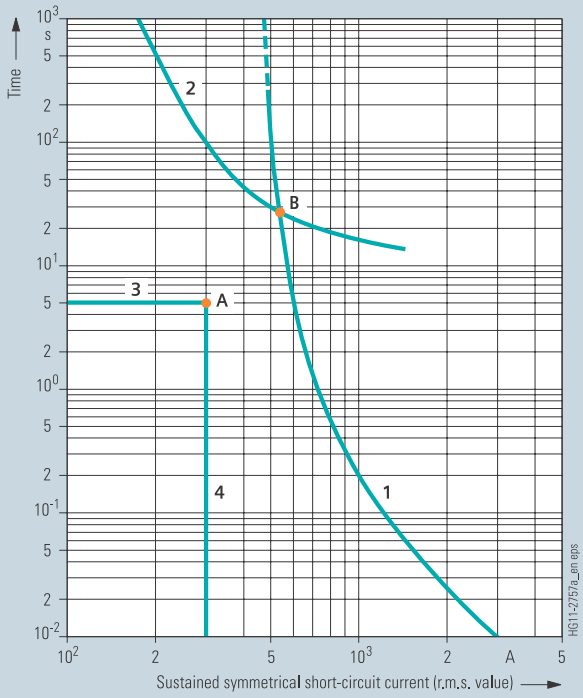
Coordination of the HV HRC fuse with other components of the motor circuit

The high-voltage motor is selected for the corresponding duty. Thus, the following motor data are known:

- Rated current
- Rated voltage
- Starting current
- Starting time
- Starting frequency

Coordination of the components of the motor circuit:

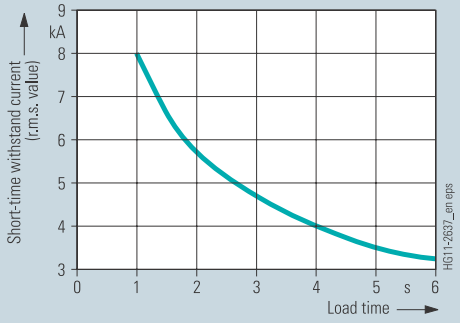
- The time-current characteristic must be located on the right of the motor starting current (point A).
- The rated current of the HV HRC fuse-link must exceed the normal current of the motor.
- The current corresponding to the intersection B of the HV HRC fuse-link characteristic and the characteristic of the overcurrent-time protection must be higher than the minimum breaking current of the HV HRC fuse-link. If this is not feasible, it must be ensured that overload currents that are smaller than the minimum breaking current of the HV HRC fuse-link are interrupted by the vacuum contactor via the striker. This prevents thermal overloading of the HV HRC fuse-link, which would otherwise be destroyed.
- The rated breaking current of the vacuum contactor must be higher than the minimum breaking current of the HV HRC fuse-link, and higher than the current resulting from the intersection B of the HV HRC fuse-link and the overcurrent-time protection characteristics.
- The maximum let-through current I_D of the contactor-fuse-combination shall be limited trough the HV HRC fuse-links (one or two in parallel).
- The integral of the square of the current over a given time interval (I^2t-value) is a measure for the thermal short-time stress of the elements of a circuit. The operating I^2t-value of the fuse to be selected must not exceed the maximum permissible I^2t-value of the contactor-fuse combination.
- The thermal power loss of the HV HRC fuse-link shall not exceed the permissible value of the contactor-fuse-combination. For installation in switchgear cubicles, the corresponding reduction factors resulting from the ventilation have to be taken into account.



Example

1 Characteristic of an HV HRC fuse
2 Characteristic of the overcurrent-time protection
3 Motor starting time
4 Motor starting current

Short Circuit Protection



Note:
Circuit diagrams are available on request.

Equipment Selection

Selection aids

Fuse selection table for 3TM4 High-Current

Rated current	Max. normal current	Weight	Rated breaking current	Minimum breaking current	Pre-arcing integral	Operating integral	Power loss	Cold resistance	Diameter	Order number
			I^1	I^3	I^2t	I^2t				
A	A	Kg/1	kA	A	kA^2s	kA^2s	W	mΩ	mm	SIBA
7.2 kV, fuse length 442 mm										
50	50	2.2	50	140	3.4	16	23	13	53	30 108 53.50
63	63	2.2	50	165	5.4	25	49	10	53	30 108 53.63
80	80	2.2	50	200	6.2	29	72	8.5	53	30 108 53.80
100	100	2.2	50	285	14	65	74	5.6	53	30 108 53.100
125	125	2.9	50	375	25	115	81	4.3	67	30 109 53.125
160	160	2.9	50	490	64	295	91	2.7	67	30 109 53.160
200	200	5.4	50	690	121	559	89	1.9	85	30 110 54.200
250	250	5.4	50	1,050	307	1,480	98	1.2	85	30 110 54.250
315	315	5.4	50	1,260	627	3,000	120	0.84	85	30 110 54.315
2× 160 [1]	266	–	–	–	–	–	–/125	–	–	30 109 53.160
2× 200 [1]	336	–	–	–	–	–	–/125	–	–	30 110 54.200
2× 250 [1]	400	–	–	–	–	–	–/125	–	–	30 110 54.250
12 kV, fuse length 442 mm										
50	50	1.6	40	140	3.4	16	60	18	53	30 101 53.50
63	63	1.6	40	165	5.4	25	69	15	53	30 101 53.63
80	80	2.0	40	200	6.2	29	73	13	67	30 102 53.80
100	100	2.0	40	285	14	65	95	8.5	67	30 102 53.100
125	120	2.0	40	375	25	115	133	6.3	67	30 102 53.125
160	145	3.8	40	490	64	295	145	4	85	30 103 53.160
200	190	3.8	40	690	121	559	155	3	87	30 103 54.200
2× 125 [1]	173	–	–	–	–	–	–/125	–	–	30 102 53.125
2× 160 [1]	208	–	–	–	–	–	–/125	–	–	30 103 53.160

1) When 2 fuses are used per phase, 2 x 3 nos. must be ordered.

Fuse selection table for 3TM4 Compact

Rated current	Max. normal current	Weight	Rated breaking current	Minimum breaking current	Pre-arcing integral	Operating integral	Power loss	Cold resistance	Diameter	Order number
			I^1	I^3	I^2t	I^2t				
A	A	Kg/1	kA	A	kA^2s	kA^2s	W	mΩ	mm	SIBA
7.2 kV, fuse length 292 mm										
50	50	1.6	50	170	5.7	20	30	9.3	53	30 098 13.50
63	63	2	50	210	10.7	40	34	6.8	67	30 099 13.63
80	80	2	50	280	21	78	47	4.8	67	30 099 13.80
100	100	2	50	320	33	130	58	3.8	67	30 099 13.100
125	105	2	50	390	47	180	98	3.3	67	30 099 13.125
160	130	3.8	50	600	90	330	103	2.5	85	30 100 13.160
200	150	3.8	50	800	230	480	74	2.1	85	30 100 14.200
250	160	3.8	50	1000	371	750	77	1.7	85	30 100 14.250
315	200	3.8	50	1,260	545	1,060	81	1.4	85	30 100 14.315
12 kV, fuse length 292 mm										
50	50	1.6	40	140	3.4	16	56	18	53	30 004 13.50
63	63	1.6	40	165	5.4	25	63	15	67	30 012 13.63
80	80	2.0	40	200	6.2	29	76	13	67	30 012 13.80
100	100	2.0	40	285	14	65	91	8.5	67	30 012 13.100
125	105	2.0	40	375	25	115	99	6.3	67	30 012 13.125
160	130	3.8	40	490	64	295	96	4	85	30 020 13.160
200	150	3.8	40	690	121	559	91	3	85	30 020 14.200

2

Order number structure

The contactor-fuse combinations consist of a medium-voltage and a low-voltage part. The relevant data make up the 16-digit order number. The medium-voltage part covers the main electrical data of the contactor. The low-voltage part covers the auxiliary devices which are necessary for operating and controlling the contactor-fuse combination. Fuse-links must be selected separately.

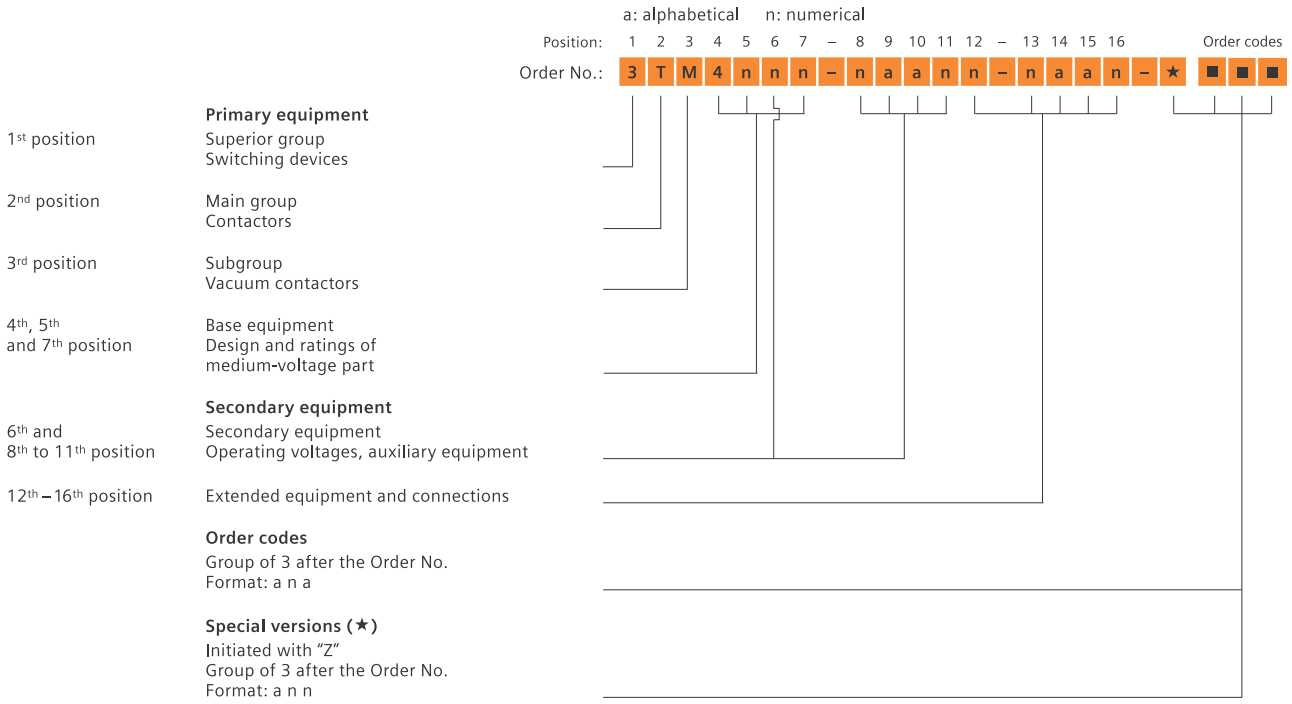
Order codes

Individual equipment versions are explained more in detail by an order code. Several order codes can be added to the order number in succession and in any sequence.

Mounting parts and special versions (★)

In case of special versions, "**- Z**" is added to the order number and a descriptive order code follows. If several special versions are required, the suffix "**- Z**" is listed only once. If a requested special version is not in the catalog and can therefore not be ordered via order code, it has to be identified with **Y 9 9** after consultation.

The agreement hereto is made between your responsible sales partner and the order processing department at the Switchgear Factory in Berlin.



Configuration example

In order to simplify the selection of the correct order number for the requested contactor-fuse combination, you will find a configuration example on each page of the chapter "Equipment Selection". For the selection of auxiliary voltages, additional components, width across flats, etc. the last example of the primary part is taken over and continued, so that at the end of the equipment selection (page 29) a completely configured contactor-fuse combination results as an example.

The structure shown below is intended as an overview of each position and its meaning. For a complete and valid configuration of your air circuit breaker, please use our online configurator at www.siemens.com/3tm-configurator

On the foldout page we offer a configuring aid. Here you can fill in the order number you have determined for your contactor-fuse combination.

Example for Order No.:	3	T	M	4	2	2	3	–	0	A	L	2	1	–	1	F	A	0				
Order codes:																						

7.2 kV
50/60 Hz

Rated voltage U_r kV	Rated lightning impulse withstand voltage to earth U_p kV	Rated lightning impulse withstand voltage open contact gap U_p kV	Rated short-duration power-frequency withstand voltage U_d kV	Rated normal current free-standing I_e A	Position: 1 2 3 4 5 6 7 – 8 9 10 11 12 – 13 14 15 16	Order codes
					Order No.:	
7.2	60	40	**20**	450	3 T M 4 2 3	
			32	450	3 T M 4 3 3	

12 kV
50/60 Hz

U_r kV	U_p kV	U_p kV	U_d kV	I_e A		
12	75	60	**28**	450	3 T M 4 4 3	
			42	450	3 T M 4 5 3	

Configuration example

Contactor-fuse combination 3TM4 — 3 T M 4

Rated voltage U_r = **7.2 kV**

Rated lightning impulse withstand voltage to earth U_p = **60 kV**

Rated lightning impulse withstand voltage, open contact gap U_p = **40 kV**

Rated short-duration power-frequency withstand voltage U_d = **20 kV** — 2

Rated normal current I_e = **450 A**

Contactor fuse combination type **Compact CFC**

Vertical distance betweeen the terminals VDT = **275 mm** — 8 7

Example for Order No.: 3 T M 4 2 3 8 ■ 7 ■ ■ ■ ■ – ■ ■ ■ ■ – Z ■ ■ ■

Order codes:

Equipment Selection

Selection of secondary equipment

2

Position:	1	2	3	4	5	6	7	–	8	9	10	11	12	–	13	14	15	16		Order codes		
Order No.:	3	T	M	4	■	■	■	–	■	■	■	■	■	–	■	■	■	■	–	Z	■	■	■

6th position
Rated normal current

Options	
450 A	3

7th position
Contactor fuse combination type

Options	
High-Current CFC 1 Fuse per Phase	6
High-Current CFC 2 Fuse per Phase	7
Compact CFC – Standard Controller	8

8th position
Vertical distance between terminals

Options	
205 mm	6
275 mm	7
310 mm [1]	8

[1] Not available for Compact CFC

Configuration example

Contactor fuse combination 3TM4
(U_r = **7.2 kV**, U_p = **60 kV**, U_p= **40 kV**, U_d = **20 kV**, I_e = **450 A**)
Contactor fuse combination type **Compact CFC**
Vertical distance betweeen the terminals VDT = **275 mm**

Example for Order No.:	3	T	M	4	2	3	8	–	7	■	■	■	■	–	■	■	■	■	–	Z	■	■	■
Order codes:																							

2

Position:	1	2	3	4	5	6	7	–	8	9	10	11	12	–	13	14	15	16		Order codes		
9th position Order No.:	3	T	M	4	■	■	■	–	■	■	■	■	■	–	■	■	■	■	–	Z	■	■	■
Operating voltage for magnet coil																						
DC voltage / AC voltage 50/60 Hz																						
24 ... 32 V DC										T												
48 ... 60 V DC										U												
110 ... 125 V DC / 100 ... 120 V AC										V												
220 ... 250 V DC / 230 ... 240 V AC										W												
Internal supply through control transformer (50/60 Hz) only available for High-Current CFC																						
AC voltage 50/60 Hz																						
110 V AC										V										J	3	■
230 V AC										W										J	3	■
Primary voltage of control transformer																						
Primary Voltage 3.3 kV										V, W										J	3	A
Primary Voltage 3.5 kV										V, W										J	3	B
Primary Voltage 4.0 kV										V, W										J	3	C
Primary Voltage 4.2 kV										V, W										J	3	D
Primary Voltage 4.8 kV										V, W										J	3	E
Primary Voltage 5.0 kV										V, W										J	3	F
Primary Voltage 5.5 kV										V, W										J	3	G
Primary Voltage 6.0 kV										V, W										J	3	H
Primary Voltage 6.3 kV										V, W										J	3	J
Primary Voltage 6.6 kV										V, W										J	3	K
Primary Voltage 6.9 kV										V, W										J	3	L
Primary Voltage 7.2 kV										V, W										J	3	M

Contactor fuse combination 3TM4, Compact Type
(U_r = **7.2 kV**, U_p = **60 kV**, U_p = **40 kV**, U_d = **20 kV**, I_e = **450 A**, VDT = **275 mm**)
AC operation 230 V AC 50/60 Hz

	3	T	M	4			8																
					2	3		–	7														
										W													

Example for Order No.:	3	T	M	4	2	3	8	–	7	W	■	■	■	–	■	■	■	■	–	Z	■	■	■
Order codes:																							

Equipment Selection

Selection of secondary equipment

2

Position:	1	2	3	4	5	6	7	–	8	9	10	11	12	–	13	14	15	16		Order codes		
10th position **Additional components** Order No.:	3	T	M	4	■	■	■	–	■	■	■	■	■	–	■	■	■	■	–	Z	■	■	■
Options																							
Without closing latch / latch release											A												
Closing latch, magnetic delatching + mechanical latch release [1]											E												
Closing latch, mechanical latch release [2]											F										J	6	7
11th position **Pole center distance**																							
Options																							
120 mm für High-Current version												2											
150 mm für Compact version												6											
12th position **Additional closing delay**																							
Options																							
Without													0										
50 ms													1										
13th position **Additional opening delay**																							
DC 24 – 60 V / AC/DC 100 – 250 V																							
Without / Without															0								
60 ms ±10 ms / –											A				1								
– / 30 ms ±10 ms											A				2								
– / 60 ms ±10 ms											A				3								
– / 90 ms ±10 ms											A				5								

Configuration example

Contactor fuse combination 3TM4
(U_r = **7.2 kV**, U_p = **60 kV**, U_p = **40 kV**, U_d = **20 kV**, I_e = **450 A**)
Contactor fuse combination type Compact CFC, VDT = **275 mm**
AC operation 230 V AC 50/60 Hz
Additional components **Closing latch, magnetic delatching + mechanical latch release**
Pole center distance PCD = **150 mm**
Additional closing delay = **0 ms**
Additional opening delay = **0 ms**

Example for Order No.:	3	T	M	4	2	3	8	–	7	W	E	6	0	–	0	■	■	■	–	Z	■	■	■
Order codes:																							

Position:	1	2	3	4	5	6	7	–	8	9	10	11	12	–	13	14	15	16			Order codes		
Order No.:	3	T	M	4	■	■	■	–	■	■	■	■	■	–	■	■	■	■	–	Z	■	■	■

14th position
Latch release voltage

DC voltage	AC voltage 50/60 Hz	14	15	16
Without		A		
24 ... 32 V DC		T		
48 ... 60 V DC		U		
110 ... 125 V DC	100 ... 120 V AC	V		
220 ... 250 V DC	230 ... 240 V AC	W		

15th position
Auxiliary switch

Options	14	15	16
4 NO + 4 NC		C	
6 NO + 6 NC		D	

16th position
Language selection rating plate / routine test report / ops. manual available only in EN or DE

Options	14	15	16	Order codes		
German			0			
English			2			
French			4			
Spanish			6			
Portuguese			9	R	1	C
Italian			9	R	1	F
Russian			9	R	1	G
Polish			9	R	1	K
Turkish			9	R	1	L

Configuration example

Contactor fuse combination 3TM4
(U_r = **7.2 kV**, U_p = **60 kV**, U_p = **40 kV**, U_d = **20 kV**, I_e = **450 A**)
Contactor fuse combination type **Compact CFC**, VDT = **275 mm**
AC operation **230 V AC 50/60 Hz**
Additional components **Closing latch, magnetic delatching + mechanical latch release**
Pole center distance PCD = **150 mm**
Additional closing delay = **0 ms** Additional opening delay = **0 ms**
Latch release voltage **230 V AC 50/60 Hz**, Auxiliary switch **4NO + 4NC**, Rating plate language **German**

	1	2	3	4	5	6	7	–	8	9	10	11	12	–	13	14	15	16					
Example for Order No.:	3	T	M	4	2	3	8	–	7	W	E	6	0	–	0	W	C	0	–	Z	■	■	■
Order codes:																							

Equipment Selection

Additional equipment

Additional equipment

Position:	1	2	3	4	5	6	7	–	8	9	10	11	12	–	13	14	15	16			Order codes		
Order No.:	3	T	M	4	■	■	■	–	■	■	■	■	■	–	■	■	■	■	–	Z	■	■	■
Options																							
Halogen free wiring																			–	Z	A	1	0
Additional rating plate																			–	Z	B	0	0
Small cover [2]																			–	Z	B	2	0
Routine test report																			–	Z	F	2	0
Routine test report (separately delivered to orderer)																			–	Z	F	2	3
Factory acceptance test [1]																			–	Z	F	5	0
Closing latch, mechanical latch release [2]																			–	Z	J	6	7
Long insulating sleeve for contact arm [2]																			–	Z	R	6	1
Short insulating sleeve for contact arm [2]																			–	Z	R	6	2
Flat Bolted Connection [2]																			–	Z	R	7	1
Circular Contacts [2]																			–	Z	R	7	2
Circular Contacts + Bushings [2]																			–	Z	R	7	3
Base Plate without wheels [2]																			–	Z	R	8	1
Base Plate with wheels [2]																			–	Z	R	8	2
Simoprime truck without Ronis [2]																			–	Z	R	8	3
Simoprime truck with Ronis [2]																			–	Z	R	8	4
Simoprime truck with Electromagnetic interlock [2]																			–	Z	R	8	5
Clear text specifications																			–	Z	Y	9	9
24 months warranty																			–	Z	W	7	0
36 months warranty																			–	Z	W	7	1
60 months warranty																			–	Z	W	7	2
84 months warranty																			–	Z	W	7	3

[1] Only available for Compact CFC type

[2] Only available for High-Current CFC type

Configuration example

Contactor fuse combination 3TM4	3	T	M	4																			
(U_r = **7.2 kV**, U_p = **60 kV**, U_p = **40 kV**, U_d = **20 kV**, I_e = **450 A**)					2	3																	
Contactor fuse combination type **Compact CFC**, VDT = **275 mm**							8	–	7														
AC operation **230 V AC 50 / 60 Hz**										W													
Additional components **Closing latch, magnetic delatching + mechanical latch release**											E												
Pole center distance PCD = **150 mm**												6											
Additional closing delay = **0 ms**													0	–	0								
Latch release voltage **230 V AC 50 / 60 Hz**, Auxiliary switch **4 NO + 4 NC**, Rating plate and ops manual **German**																W	C	0	–				

Example for Order No.:	3	T	M	4	2	3	8	–	7	W	E	6	0	–	0	W	C	0	–	Z	F	2	0
Order codes:																							

Accessories and spare parts

The order numbers are applicable to contactor-fuse combinations 3TM4 of current manufacture. When mounting parts or spare parts are being ordered for existing contactor-fuse combinations, always quote the type designation, serial number and the year of manufacture of the contactor-fuse combination to be sure to get the correct delivery.

Spare parts must only be replaced by instructed personnel.

Spare parts	Remarks	Operating Voltage	Order No.
Vacuum interrupter *	3TM42 and 3TM43		**3TY5 900-0AA0**
	3TM44		**3TY5 900-0CA0**
	3TM45		**3TY5 900-0CA1**
Auxiliary switch	2 NO + 2 NC without wiring (left)		**3TY5 901-0AA0**
	2 NO + 2 NC without wiring (right)		**3TY5 901-0AB0**
	3 NO + 3 NC without wiring (left)		**3TY5 901-0BA0**
	3 NO + 3 NC without wiring (right)		**3TY5 901-0BB0**
Controller		48 ... 60 V	**3TY5 902-0AA0**
		110 ... 250 V	**3TY5 902-0AA1**
Shunt release Latching system		24 V DC	**3TY5 903-0AB0**
		30 V DC	**3TY5 903-0AC0**
		48 V DC	**3TY5 903-0AD0**
		60 V DC	**3TY5 903-0AE0**
		110 V DC	**3TY5 903-0AF0**
		125 V DC	**3TY5 903-0AG0**
		220 V DC	**3TY5 903-0AH0**
		250 V DC	**3TY5 903-0AJ0**
		100 V AC	**3TY5 903-0AL0**
		110 V AC	**3TY5 903-0AM0**
		115 V AC	**3TY5 903-0AN0**
		120 V AC	**3TY5 903-0AP0**
		230 V AC	**3TY5 903-0AQ0**
		240 V AC	**3TY5 903-0AR0**
Mechanical latch release for latching system			
	With push rod		**3TX5 904-0AA1**

*) Replacement of individual vacuum interrupters is not recommended.

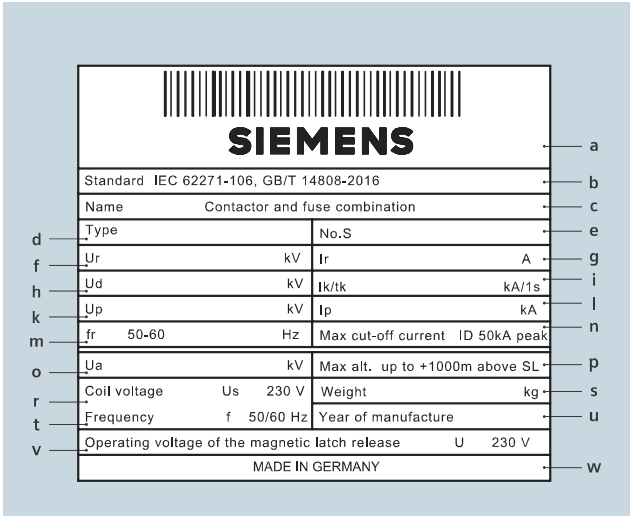
3TM4 High-Current

Designation	Remarks	Order No.
3TM4-CFC – Fuse Holders	Front modules, complete 1 fuse, vertical distance between terminals 205	**SWB:11241113**
1 Fuse per phase	Front modules, complete 1 fuse, vertical distance between terminals 275	**SWB:11241113**
	Front modules, complete 1 fuse, vertical distance between terminals 310	**SWB:11241113**
	Rear modules, complete 1 fuse, vertical distance between terminals 205	**SWB:11240763**
	Rear modules, complete 1 fuse, vertical distance between terminals 275	**SWB:88806203**
	Rear modules, complete 1 fuse, vertical distance between terminals 310	**SWB:11240773**
3TM4-CFC – Fuse Holders	Front modules, complete 2 fuses, vertical distance between terminals 205	**SWB:11241123**
2 Fuse per phase	Front modules, complete 2 fuses, vertical distance between terminals 275	**SWB:11241123**
	Front modules, complete 2 fuse, vertical distance between terminals 310	**SWB:11241123**
	Rear modules, complete 2 fuses, vertical distance between terminals 205	**SWB:11240733**
	Rear modules, complete 2 fuses, vertical distance between terminals 275	**SWB:88806093**
	Rear modules, complete 2 fuses, vertical distance between terminals 310	**SWB:11240743**
3TM4-CFC – Accessories	Baseplate without wheels – Fixed	**SWB:11210543**
	Baseplate with wheels – Withdrawable	**SWB:11210523**
	Contact Arm Support 7.2 kV	**SWB:88806063**
	Contact Arm Support 12 kV	**SWB:88806223**
	Circular plug-in contacts, complete with insulation	**SWB:88806233**
	Flat bolted connections, complete with insulation	**SWB:11240793**
	Bushings for pole-centre distance 120 mm	**SWB:89440400**
	Fixed contacts	**SWB:89412080**
	O-rings	**SWB:89415440**
	Additional insulation 7.2 kV – Drawings available	**SWB:88806043**
	Additional insulation 12 kV – Drawings available	**SWB:88806213**

2

To select the correct spare interrupter, please specify the type designation, serial number and year of manufacture of the contactor. All data is given on the rating plate. Vacuum interrupters and other spare parts must only be replaced by instructed personnel.

Data on the rating plate



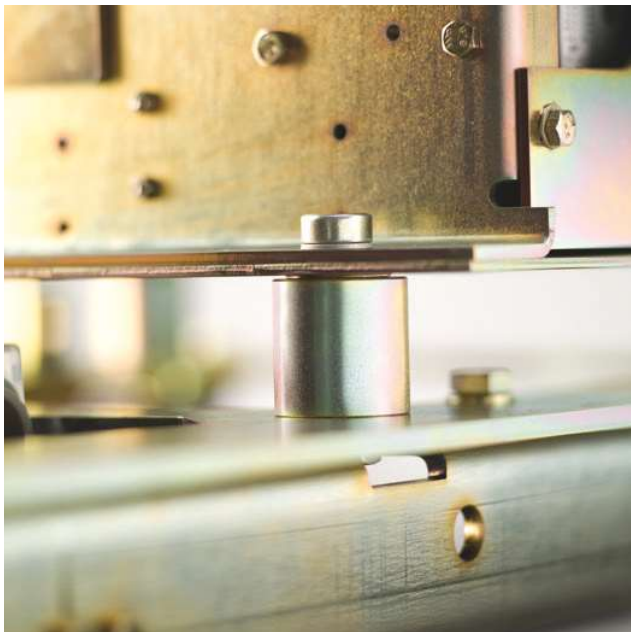
Note:

For any query regarding spare parts, subsequent deliveries, etc. the following details are necessary:
– Type designation
– Serial No.
– Year of manufacture

Legend for the data on the rating plate	
a	Manufacturer
b	Classification according to IEC standard
c	Type designation
d	MLFB
e	Serial number
f	Rated voltage U_r
g	Rated current of the contactor part
h	Rated power-frequency withstand voltage U_d
i	Rated short-circuit breaking current of the contactor part Ik tk
k	Rated lightning impulse withstand voltage U_p
l	Rated short-circuit breaking current with fuses
m	Rated frequency f_r
n	Max. cut off current I_D
o	Operating voltage of the motor - withdrawable part
p	Site altitude
r	Operating voltage of the coil
s	Weight
t	Operating frequency of the Coil voltage f_r
u	Manufacture year
v	Magnetic latch release voltage U
w	Manufacturing location

IMG_6159-1.tif

Racking interface of Compact CFC withdrawable module



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High-Current CFC

Contents Page

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3TM4 Contactor-Fuse Combination

Medium-voltage part

Order No.	Rated voltage U_r	Rated voltage (L-N) U_r	Rated frequency fr	Rated operational current of the contactor part CFC operation depend on the fuses I_e	Thermal current I_{th}	Switching capacity at rated making current of the contactor part I_m	Switching capacity at rated breaking current I_c	Rated short-circuit breaking current (limit switching capacity) I_{SC}	Rated short-time withstand current (r.m.s. value) 1 s [1] I_k	Rated short-circuit making current I_m	Max. let-through current	Rated short-circuit breaking current I_{SC}	Contactor class	Switching rate without closing latch	Mechanical endurance of contactor without closing latch	Electrical endurance (AC-3) while breaking the rated operational current	Rated lightning impulse withstand voltage to earthed parts and from phase to phase U_p	Rated lightning impulse withstand voltage across the open contact gap U_p	Rated short-duration power-frequency withstand voltage to earthed parts and from phase to phase U_d	Rated short-duration power-frequency withstand voltage across the open contact gap U_d
	kV	kV	Hz	A	A	kA	kA	kA	kA	kA	kA	kA		"Oper. Cycles/h"	"Oper. Cycles"	"Oper. Cycles"	kV	kV	kV	kV
3TM42...	7.2	–	50 ... 60	450	450	5	3.6	5	8	125/130	46	50	C2	1200	1 mill.	0.5 mill.	60	60	20	20
3TM43..	7.2	–	50 ... 60	450	450	5	3.6	5	8	125/130	46	50	C2	1200	1 mill.	0.5 mill.	60	60	32	32
3TM44..	12	–	50 ... 60	450	450	5	3.6	5	8	125/130	46	50	C2	1200	1 mill.	0.5 mill.	75	75	28	28
3TM45..	12	–	50 ... 60	450	450	5	3.6	5	8	125/130	46	50	C2	1200	1 mill.	0.5 mill.	75	75	42	42

1) According to utilization category AC-1, AC-2, AC-3 and AC-4
2) According to utilization category AC-4 (cos φ = 0.35)
3) For short-time withstand current with longer times, see short-time withstand current/load characteristic

Mechanical data

Order No.	**Pole-centre distance** mm	**Switching rate** Operating cycles/h	**Mechanical endurance of the contactor-fuse combination** Operating cycles	**Electrical endurance of the vacuum interrupter** while breaking the rated normal current Operating cycles	**Weights** (including 6 fuses and control transformer) kg	**Operating cycle diagram no.** (see page 30)	**Fuse-links** Length x max. diameter mm x ∅mm	**Mechanical closing latch** Service life Operating cycles	**Mechanical closing latch** Switching rate Operating cycles/h
3TM42...	120	1200	1 million	0.5 million	110	1	442 x 85	200,000	60
3TM43..	120	1200	1 million	0.5 million	110	2	442 x 85	200,000	60
3TM44..	120	1200	1 million	0.5 million	110	2	442 x 85	200,000	60
3TM45..	120	1200	1 million	0.5 million	110	2	442 x 85	200,000	60

Low-voltage part

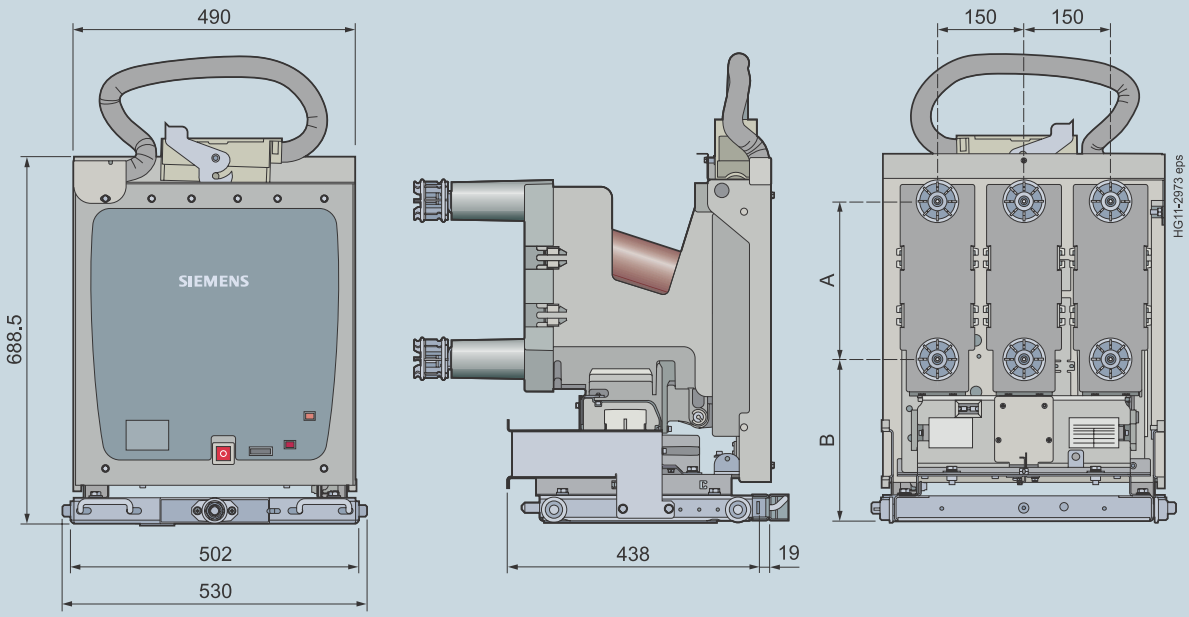
Order No.	Power consumption of the drive solenoid Holding power	Voltage range of the drive solenoid Operating voltage U_a	Minimum operating time for the drive solenoid	Closing time Lower and upper limit values at room temperature [1]	Opening time without latching system Lower and upper limit values at room temperature [1]	Optionally adjustable additional delay of the closing time	Optionally adjustable additional delay of the opening time	Opening time with latching system Lower and upper limit values at room temperature [1]	Closing latch Endurance	Closing latch Switching rate
	W	V	ms	ms	ms	ms	ms	ms	"Oper. Cycles"	"Oper. Cycles/h"
3TM42...	10 ... 20	0.8 ... 1.1	100	36 ... 56	25 ... 45	40 ... 60	35 ... 65 75 ... 115 125 ... 170	20 ... 40	200000	60
3TM43..	10 ... 20	0.8 ... 1.1	100	36 ... 56	25 ... 45	40 ... 60	35 ... 65 75 ... 115 125 ... 170	20 ... 40	200000	60
3TM44..	10 ... 20	0.8 ... 1.1	100	36 ... 56	25 ... 45	40 ... 60	35 ... 65 75 ... 115 125 ... 170	20 ... 40	200000	60
3TM45..	10 ... 20	0.8 ... 1.1	100	36 ... 56	25 ... 45	40 ... 60	35 ... 65 75 ... 115 125 ... 170	20 ... 40	200000	60

Auxiliary contacts

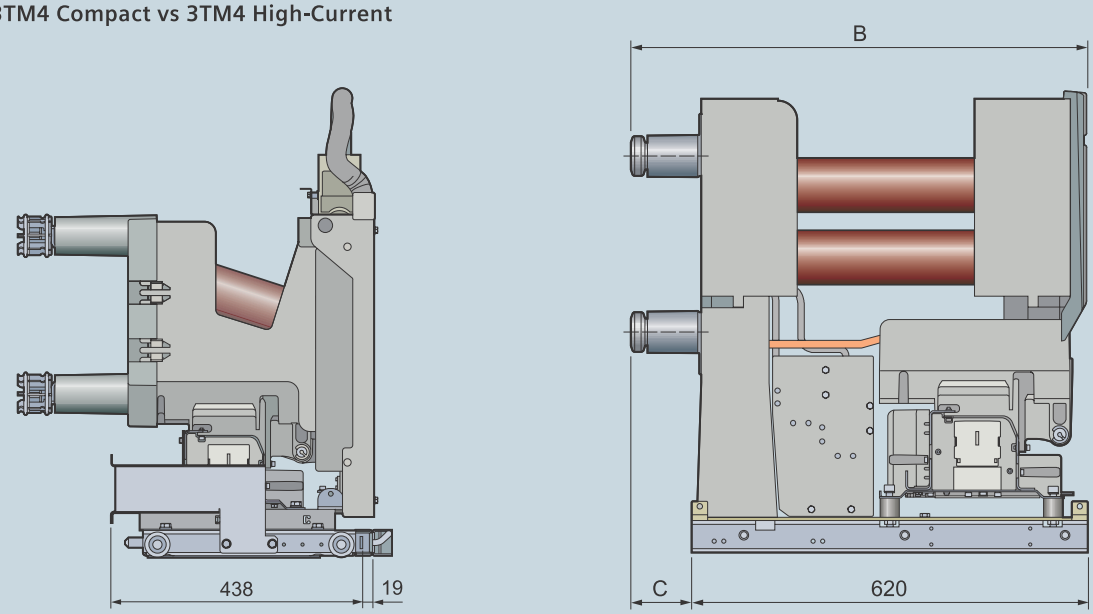
Order No.	Number of auxiliary contacts	Rated continuous current	Rated operational current Ie at rated voltage U_r Utilization category AC-12 for alternating current		Rated operational current Ie at rated voltage U_r Utilization category AC-14 for alternating current	Rated operational current Ie at rated voltage U_r Utilization category AC-15 for alternating current			Rated operational current Ie at rated voltage U_r Utilization category DC-13 for direct current				Connection cross-sections of the auxiliary contacts acc. to IEC EN 60947-5-1	
			24 V AC	230 V AC	125 V AC	24 V AC	230 V AC	400 V AC	24 V DC	60 V DC	110 V DC	220 V DC	With wire end ferrule	For AWG connections
		I_{th}	I_e	I_e	I_e	I_e	I_e	I_e	I_e	I_e	I_e	I_e		
		A	A	A	A	A	A	A	A	A	A	A	mm2	AWG
3TM42...	4 NO + 4 NC 6 NO + 6 NC	10	10	10	10	10	5.6	3.6	10	5	1.14	0.48	2 x (0.5 ... 1.0) 2 x (0.75 ... 2.5)	2 x (18 ... 12)
3TM43...	4 NO + 4 NC 6 NO + 6 NC	10	10	10	10	10	5.6	3.6	10	5	1.14	0.48	2 x (0.5 ... 1.0) 2 x (0.75 ... 2.5)	2 x (18 ... 12)
3TM44...	4 NO + 4 NC 6 NO + 6 NC	10	10	10	10	10	5.6	3.6	10	5	1.14	0.48	2 x (0.5 ... 1.0) 2 x (0.75 ... 2.5)	2 x (18 ... 12)
3TM45...	4 NO + 4 NC 6 NO + 6 NC	10	10	10	10	10	5.6	3.6	10	5	1.14	0.48	2 x (0.5 ... 1.0) 2 x (0.75 ... 2.5)	2 x (18 ... 12)

3TM4 Compact

Dimension drawing

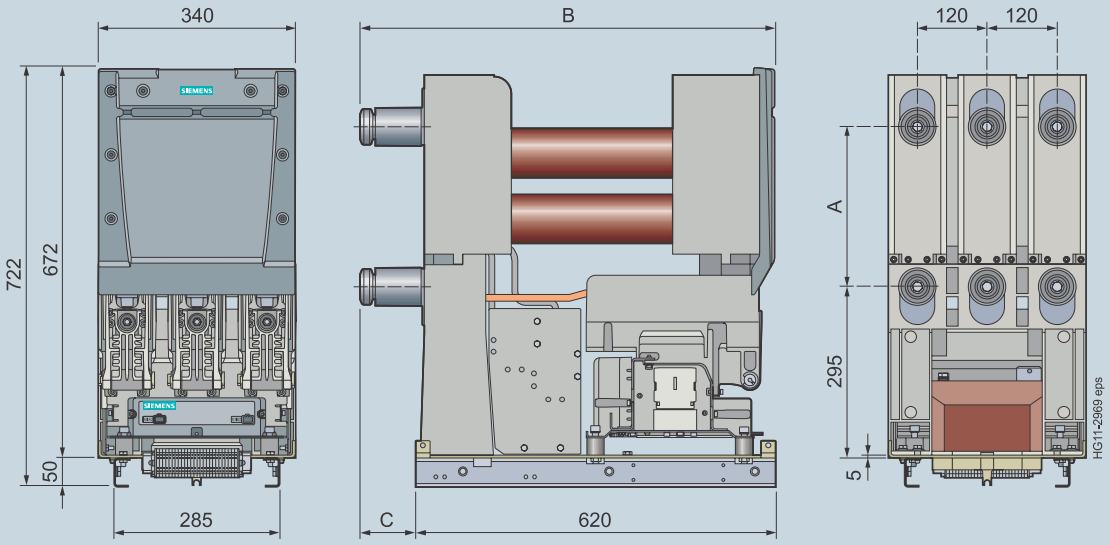


3TM4 Compact vs 3TM4 High-Current



3TM4 High-Current

Dimension drawing

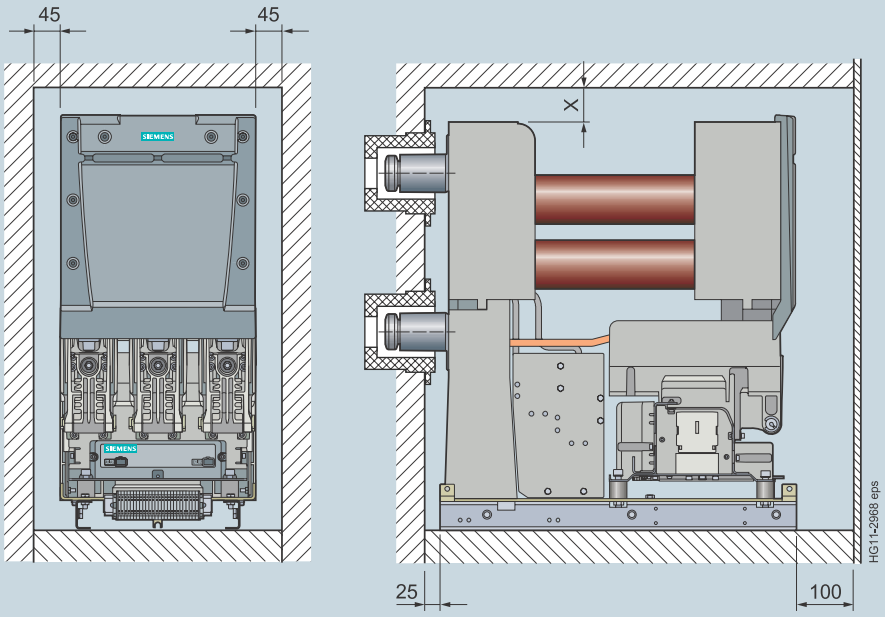


Rated Voltage	A	B	C
12 kV	205	260	94
	275	280	81 1)
7,2 kV	205	260	94
	275	280	81 1)

1) Value up to centre of connection drill-hole

Installation space and position

Minimum value of dielectric distance



Example – With circular plug-in contacts

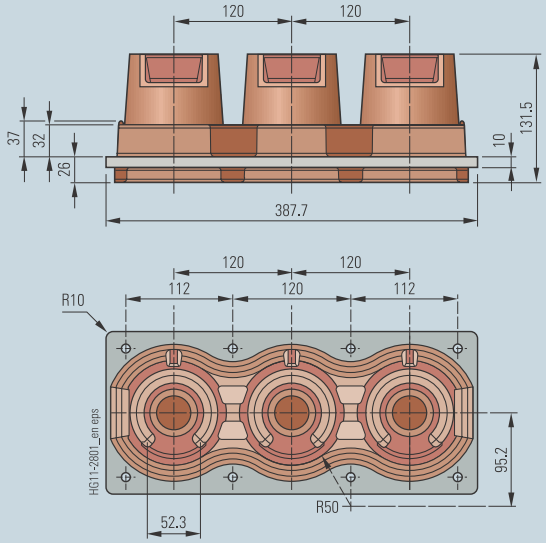
SIOS

www.support.industry.siemens.com/cs/start?lc=en-WW

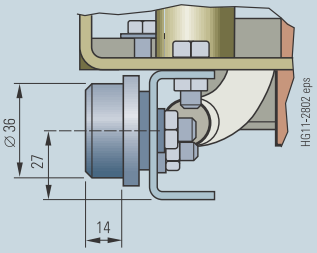
3

3TM4 High-Current

Bushing

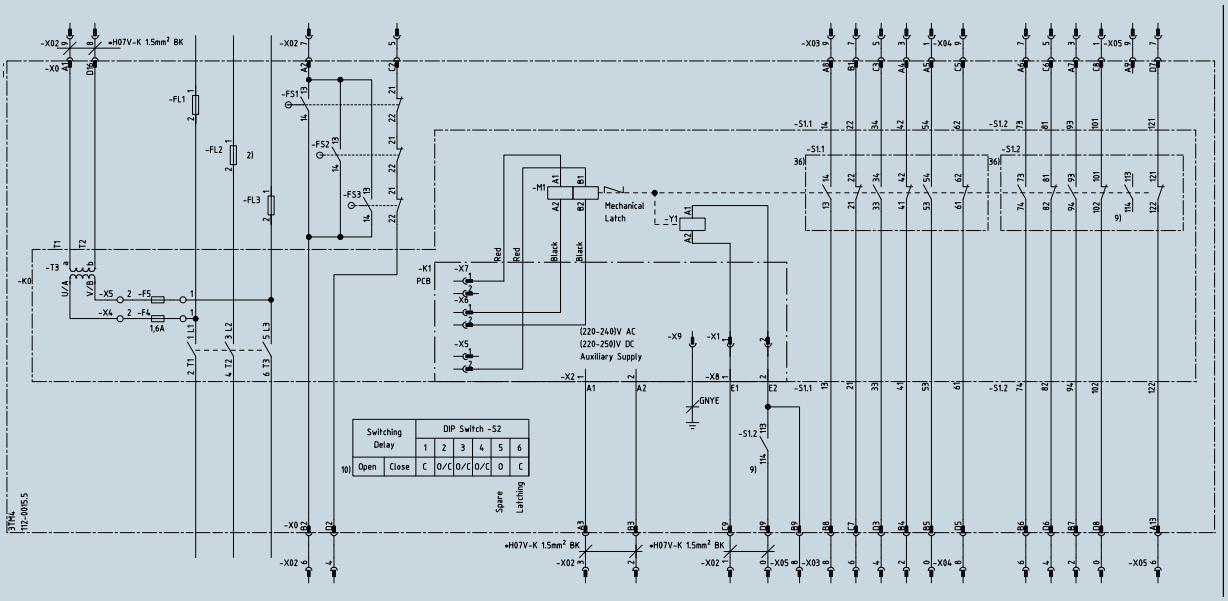


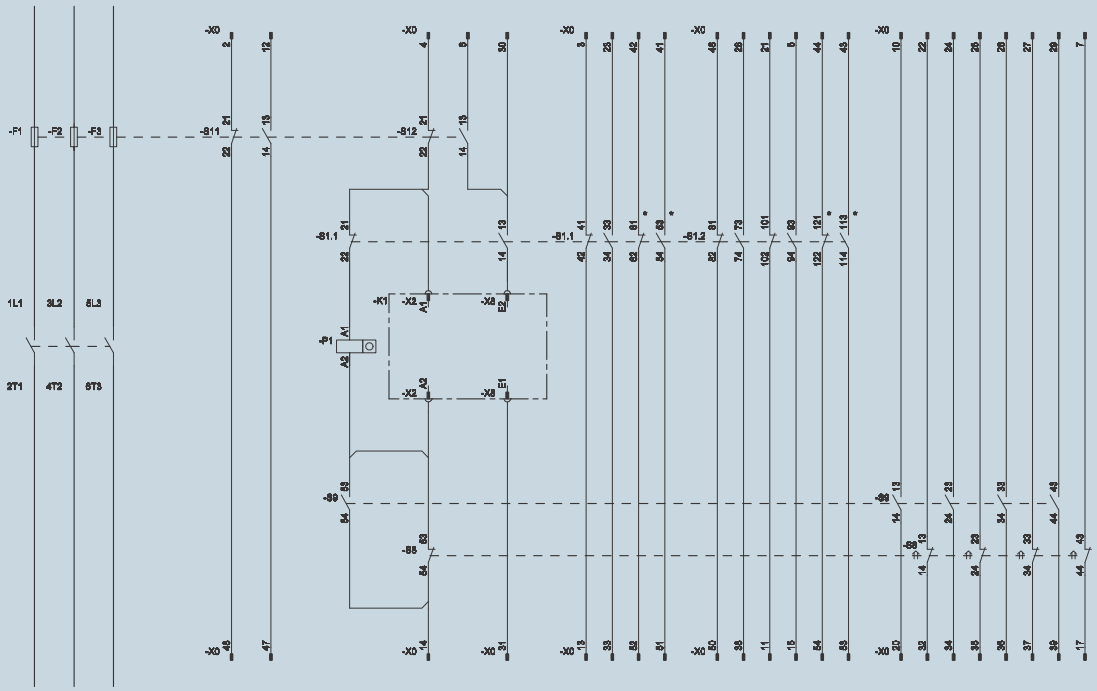
Base plate with wheels

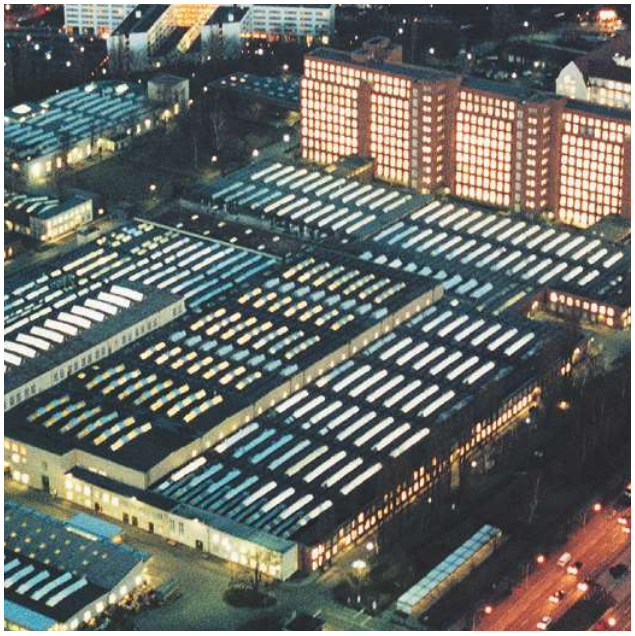


3TM4 Compact

3TM4 High-Current







R-HG11-180.eps

Switchgear Factory in Berlin, Germany

Contents | Page

Annex

Inquiry form

Please copy, fill in and return to your Siemens partner.

Inquiry concerning

☐ Contactor-fuse combination 3TM42/43/44/45

Please

☐ Submit an offer
☐ Call us
☐ Visit us

Your address

Company

Dept.

Name

Street

Postal code/city

Phone

Fax

E-mail

Siemens AG

Dept.

Name

Street

Postal code/city

Fax

Technical data

				Other values
Rated voltage	☐ 7.2 kV	☐ 12 kV		☐ ___ kV
Rated lightning impulse withstand voltage	To earth Open contact gap	☐ 60 kV ☐ 40 kV	☐ 75 kV ☐ 60 kV	☐ ___ kV ☐ ___ kV
Rated short-duration power frequency withstand voltage	☐ 20 kV	☐ 28 kV	☐ 32 kV	☐ ___ kV

Secondary equipment

For possible combinations see pages 20 to 22

Auxiliary contacts	☐ 4 NO + 4 NC	☐ 6 NO + 6 NC		☐ ___
Operating voltage of the magnet coil	☐ ___ V DC		☐ ___ V AC, ___ Hz	
Closing latch	☐ Available		☐ Not available	
Operating voltage of the closing latch	☐ ___ V DC		☐ ___ V AC, ___ Hz	
Operating voltage supply	☐ Separate supply		☐ Generated via control transformer	
Fuse holder with insulating cover	☐ One fuse per phase		☐ Two fuses per phase	
Width across flats	☐ 205 mm	☐ 275 mm	☐ 310 mm	☐ ___ mm
Connection	☐ Flat bolted connection ☐ Circular plug-in contact		☐ With fixed contact/bushing	
Installation	☐ fixed		☐ withdrawable	
Low-voltage connection	☐ Terminal strip			
Operating instructions in	☐ German	☐ English	☐ French	☐ Spanish ☐ ___

Application and other requirements

☐ Please check off ___ Please fill in

You prefer to configure your 3TM4 CFC on your own?

Please visit our online configuration page so you can select the features with high end graphical user interface.

You can see the configured device in 3D and experience the configuration process in the graphical representation.

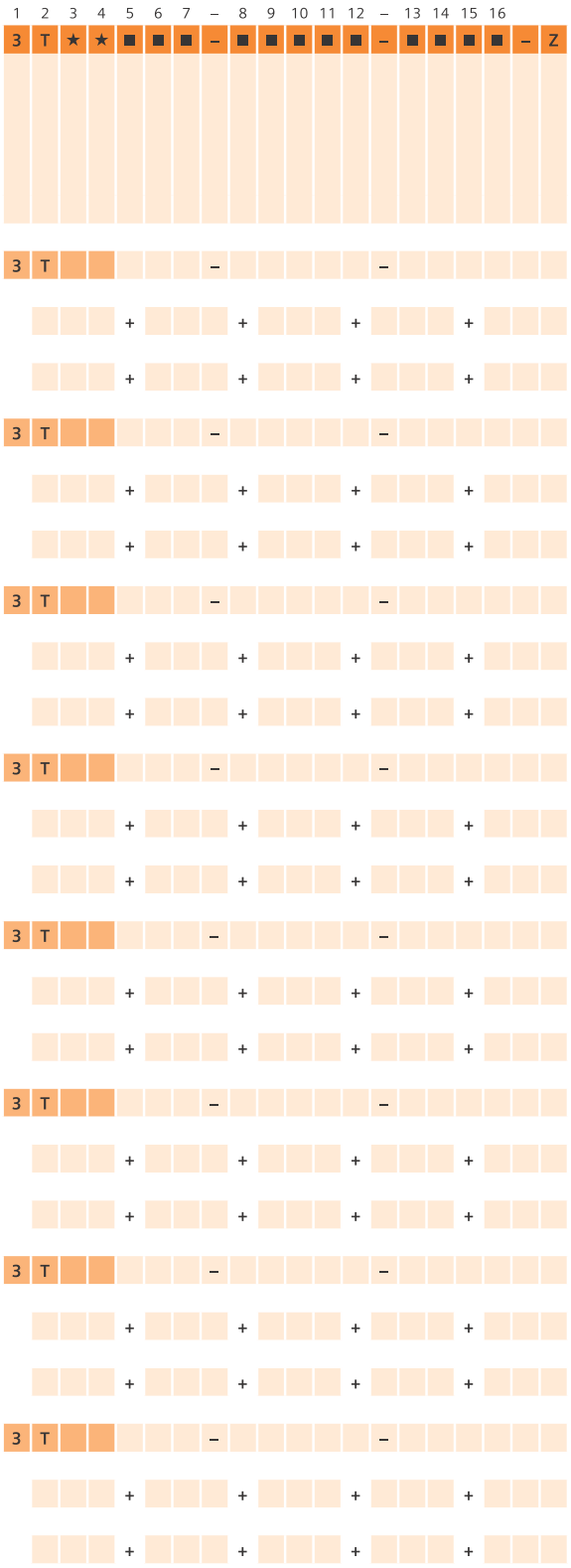
Please click the link or scan the QR code to go our online configurator to configure the type of 3TM4 Contactor Fuse Combination of your choice. After the configuration you can simply add the component to your shopping cart to order through SIEMENS sales channels.

Required documentation of the product generated automatically with a link or you can simply go SIOS - SIEMENS Industry Online Support to search and download the documentation.

SIOS
www.support.industry.siemens.com/cs/start?lc=en-WW

Configurator
www.siemens.com/3tm-configurator

For configuration of your
3TM4 High-Current



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