

## Description

Single pole thermal-magnetic circuit breakers with tease-free, trip-free, press-to-reset snap action mechanism and special dual button manual release which avoids the danger of unintended disconnection (M-type TM CBE to EN 60934). Surface mounted, compact design available with fast acting, standard and delayed switching characteristics. Options include auxiliary contact and remote electrical disconnection.

## Typical applications

Heavy duty vehicles, battery systems, process control.

## Ordering information

Type No.	
446 / 447 / 449	single pole base mounting
Terminal design, mounting	
K	screw terminals M12, insertion nuts M8
S	screw terminals M12, insertion nuts 5/16"
Manual release	
H	standard
Version	
N	general application (type 446 only)
FN	general application (types 447 and 449 only)
Auxiliary contacts (optional)	
Si	2 electrically separate auxiliary contacts with screw terminals M 3.5 and blade terminals DIN 46244-C-MS-S
Remote trip (optional for types 447 and 449)	
FA12	DC 12 V coil voltage
FA24	DC 24 V coil voltage
Current ratings	
30...400 A	type 446
100...400 A	type 447
125...500 A	type 449

447 - K - H - FN - [ ] - [ ] - 200 A ordering example

The exact part number required can be built up from the table of choices shown above. Ordering references for optional features should be omitted if not required.

## Standard current ratings and typical internal resistance values

Current rating (A)	Internal resistance (Ω)	Current rating (A)	Internal resistance (Ω)
<b>446</b>		<b>447</b>	
30	0.006	100	< 0.002
40	0.0048	125	< 0.001
50	0.0038	160	< 0.001
60	0.0028	225	< 0.001
70	0.0025	300	< 0.001
80	0.0023	400	< 0.001
90	0.0019	<b>449</b>	
100	0.0016	125	< 0.001
125	< 0.001	160	< 0.001
150	< 0.001	225	< 0.001
170	< 0.001	315	< 0.001
200	< 0.001	350	< 0.001
225	< 0.001	400	< 0.001
250	< 0.001	500	< 0.001
300	< 0.001	only with 50 % ON duty	
350	< 0.001		
400	< 0.001		



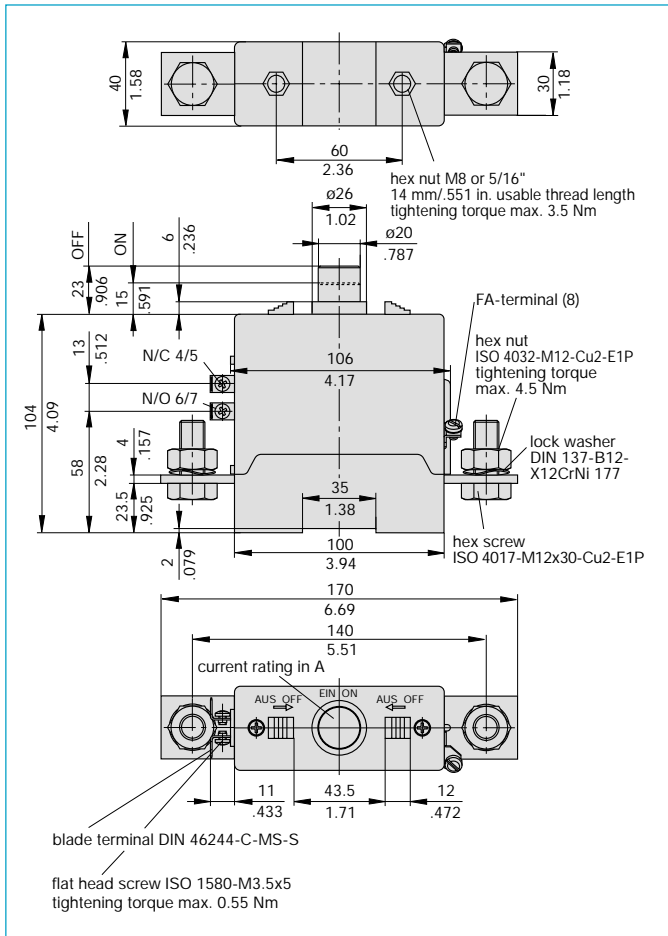
## Technical data

Voltage rating	DC 28 V	
Current rating range	type 446: 30...400 A type 447: 100...400 A type 449: 125...500 A	
Auxiliary circuit	10 A	
Electrical remote disconnection (-FA)	operating voltage DC 12 V or DC 24 V operating current approx. 18 A or 12 A max. pulse time 10 ms < t <sub>ON</sub> < 20 ms / t <sub>OFF</sub> > 10 s switching time < 20 ms	
Typical life	1,000 operations at I <sub>N</sub> 2,000 operations mechanical	
Ambient temperature	-55...+75 °C (-67...+167 °F)	
Insulation co-ordination (IEC 60664 and 60664A)	Rated impulse withstand voltage 1.5 kV	Pollution degree 3
Dielectric strength (IEC 60664 and 60664A)	operating area main circuit to auxiliary contacts Test voltage AC 1,000 V	
Insulation resistance	>100 MΩ (DC 500 V)	
Interrupting capacity I <sub>cn</sub>	10,000 A	
Degree of protection (IEC 60529/DIN 40050)	operating area IP 40 terminal area IP 00	
Vibration	without auxiliary contacts: 10 g (56-500 Hz) ±0.76 mm (10-55 Hz) with auxiliary contacts: 4 g (56-500 Hz) ±0.30 mm (10-56 Hz) to VG 95210, sheet 19/IEC 60068-2-6, test Fc	
Shock	without auxiliary contacts: 50 g (11 ms) with auxiliary contacts: 20 g (11 ms) to VG 95210, sheet 28/IEC 60068-2-27, test Ea	
Corrosion	96 hours at 5 % salt mist to VG 95210, sheet 2/IEC 60068-2-11, test Ka	
Humidity	240 hours at 95 % RH to VG 95210, sheet 7/IEC 60068-2-3, test C	
Mass	approx. 850 g	

## Approvals

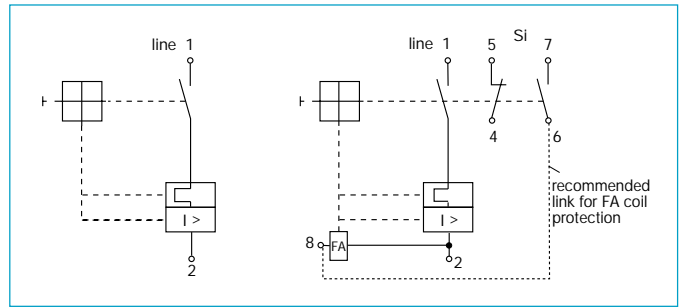
Authority	Voltage ratings	Current ratings
VG 95345, part 15	DC 28 V	125...500 A (449)
QPL Sweden	DC 28 V	125...400 A (447)
UL	DC 28 V	30...400 A (446)
		100...400 A (447)
		125...350 A (449)

## Dimensions

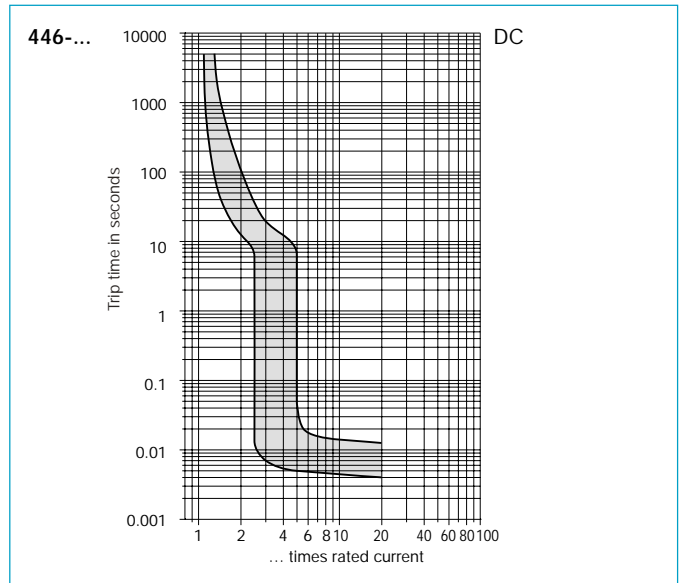


This is a metric design and millimeter dimensions take precedence ( $\frac{\text{mm}}{\text{inch}}$ )

## Internal connection diagrams



## Typical time/current characteristics at +23°C/+73.4°F



## Typical time/current characteristics

