

Description

Single and two pole magnetic circuit breakers with trip-free mechanism and push/pull on/off manual actuation. A choice of fast magnetic only or hydraulically delayed switching characteristics (S-type MO or HM CBE to EN 60934) ensures suitability for a wide range of applications. Convenient threadneck panel or plug-in mounting, and with a white push button indicator band showing clearly the tripped/off position. Available with auxiliary contacts (1 x N/O, 1 x N/C) for status signalling. Approved to CBE standard EN 60934 (IEC 60934).

Typical application

Control equipment, communications systems, power semiconductors.

Standard current ratings and typical internal resistance values

Current rating (A)	Internal resistance (Ω) per pole		
	-F4/-F5	-E1/H1/R1	-E2/H2/R2
0.02	583	2441	2449
0.05	94	376	365
0.08	35.8	148	144
0.1	23	94	84
0.15	9.9	39	38
0.2	5	30.5	22.4
0.3	2.44	9.9	9.7
0.5	0.79	3.16	3.1
0.75	0.39	1.55	1.51
1	0.25	0.79	0.77
1.25	0.15	0.58	0.56
1.5	0.10	0.37	0.36
1.75	0.083	0.30	0.29
2	0.059	0.20	0.24
2.5	0.044	0.146	0.138
3	0.028	0.10	0.099
4	< 0.02	0.059	0.057
5	< 0.02	0.040	0.038
6	< 0.02	0.026	0.026
8	< 0.02	< 0.02	< 0.02
10	< 0.02	< 0.02	< 0.02
12	< 0.02	< 0.02	< 0.02
15	< 0.02	< 0.02	< 0.02
16	< 0.02	< 0.02	< 0.02
20	< 0.02	< 0.02	< 0.02
25	< 0.02*	< 0.02	< 0.02
30	< 0.02*	< 0.02	< 0.02
40		< 0.02	
50		< 0.02	

* 50 % ON duty / 60 min.



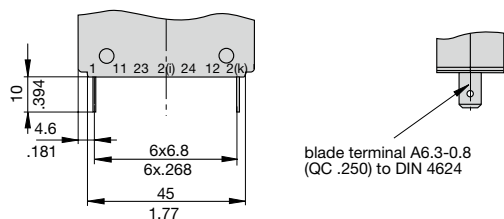
Technical data

For further details please see chapter: Technical Information

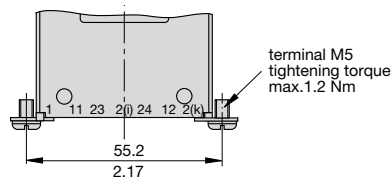
Voltage rating	3 AC 415 V; AC 240 V, 50/60 Hz; DC 80 V (higher DC voltages to special order)		
Current ratings	0.02...50 A DC 0.02...30 A AC		
Auxiliary circuit	1 A, AC 240 V/DC 65 V 0.5 A, DC 80 V		
Typical life			
3 AC 415 V, AC 240 V: 0.02...30 A	6,000 operations at 1 x I _N , inductive 10,000 operations at 1 x I _N , resistive		
DC 80 V: 0.02...25 A	6,000 operations at 1 x I _N , inductive		
0.02...30 A	10,000 operations at 1 x I _N , resistive		
40 + 50 A	5,000 operations at 1 x I _N , resistive		
Ambient temperature	-40...+85 °C (-40...+185 °F)		
Insulation co-ordination (IEC 60664 and 60664A)	rated impulse withstand voltage 2.5 kV reinforced insulation in operating area	pollution degree 2	
Dielectric strength (IEC 60664 and 60664A)			
operating area	test voltage AC 3,000 V		
Line to Load	test voltage AC 1,500 V		
pole to pole (2- and 3-pole)	test voltage AC 1,500 V		
main to auxiliary circuit	test voltage AC 1,500 V		
switching to trip circuit (version -X)	test voltage AC 1,500 V		
Insulation resistance	> 100 MΩ (DC 500 V)		
Interrupting capacity	6 x I _N at AC;		
IEC 60934 - test sequence E	4 x I _N at DC		
Interrupting capacity (UL 1077)	I _N	0.02...20 A	25...30 A
AC:	1-pole	AC 250 V/3,500A	AC 250 V/3,500A
	2-pole	AC 250 V/3,500A	AC 250 V/5,000A
DC:	1-pole	0.02...50 A	DC 80 V/3,500 A
	2-pole	0.02...30 A	DC 80 V/3500 A
Degree of protection (IEC 60529/DIN 40050)	operating area IP40 terminal area IP00		
Vibration			
with button down:	10 g (57-2000 Hz), ± 0.76 mm (10-57 Hz) at 0.9 x I _N		
other mounting planes:	10 g (57-2000 Hz) at I _N to IEC 60068-2-6, test Fc 10 frequency cycles/axis		
Shock	100 g (11 ms) at 1 x I _N , directions 1,2,3,4,5 100 g (11 ms) at 0.8 x I _N , direction 6 to IEC 60068-2-27, test Ea		
Corrosion	96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka		
Humidity	240 hours at 95 % RH to IEC 60068-2-78, test Cab		
Mass	approx. 70 g per pole		

Terminal design

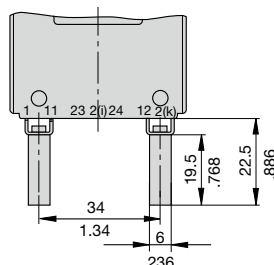
Terminal design -P1



Terminal design -K4

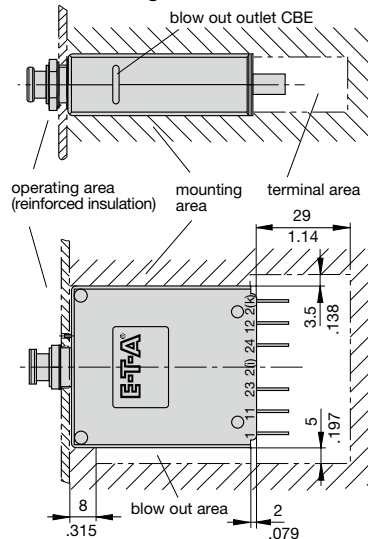


Terminal design -R1

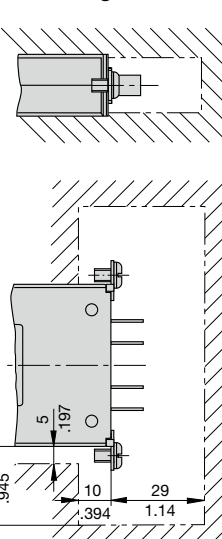


Installation drawings

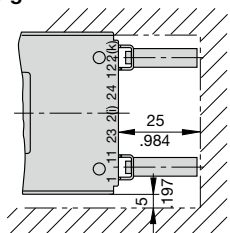
Terminal design -P



Terminal design -K

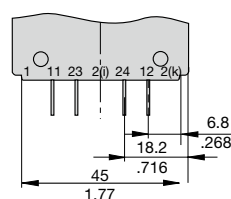


Terminal design -R

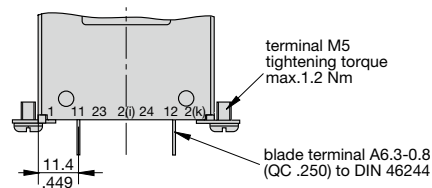


Auxiliary contact terminal design

1 N/O, 1 N/C

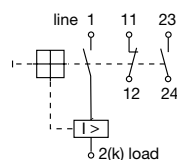


1 N/C

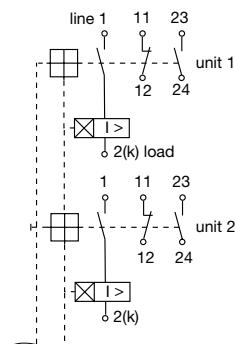


Internal connection diagrams

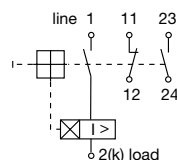
1-pole, protected magnetically



double pole



1-pole, protected hydraulic-magnetically



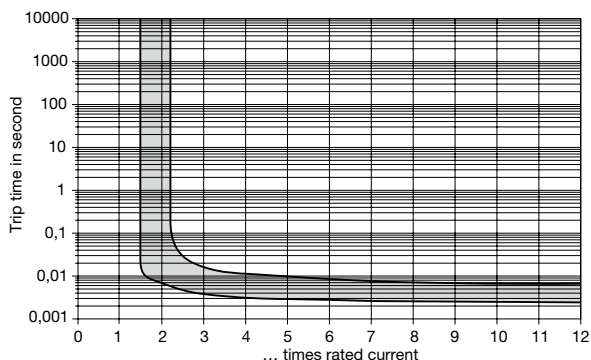
Approvals

Authority	Standard	Rated voltage	Current ratings
VDE	IEC / EN 60934	AC 240/415 V AC 240 V DC 80 V	0.02 A...30 A 0.02 A...30 A 0.02 A...50 A
UL	UL 1077	AC 250 V DC 80 V DC 80 V	0.02 A...30 A 0.02 A...50 A 100 A (2 poles in parallel)
UL	UL 489A	DC 80 V	0.05 A...30 A (1 + 2 pole)
CSA	C22.2 No 235	AC 250 V DC 80 V	0.02 A...30 A 0.02 A...30 A
CQC	GB 17701	AC 240/415 V AC 240 V DC 80 V DC 110 V	0.02 A...30 A 0.02 A...30 A 0.02 A...50 A 0.02 A...50 A (8340-G)
QPL Sweden Defence Material Admin.	MIL-C-55629	AC 240 V DC 50 V AC 240 V AC 240 / 415 V	1 A...30 A (8340-F410) 1 A...30 A (8340-410) 1 A...30 A (8340-F420) 1 A...30 A (8340-F430)

Typical time/current characteristics

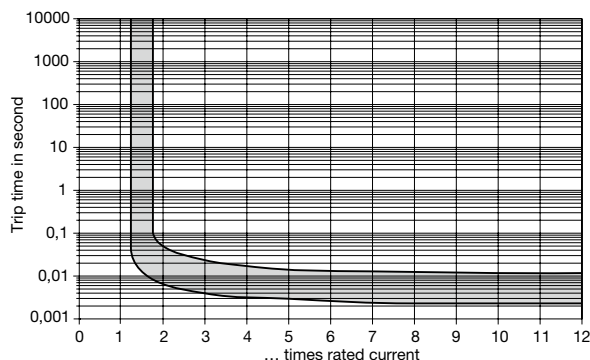
Curve F4 for DC, magnetic (instantaneous)

($I_N > 20$ A, 50% ON period, 60 min.) at +23 °C / +73.4 °F

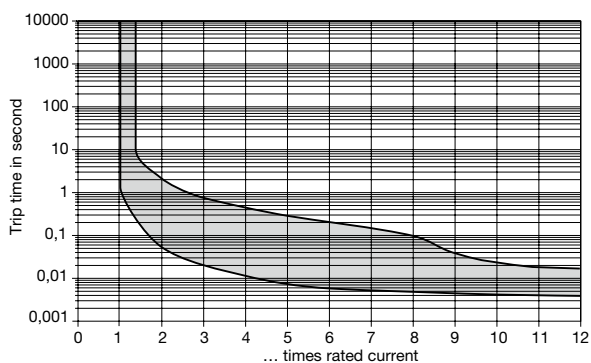


Curve F5 for AC 50/60 Hz (instantaneous)

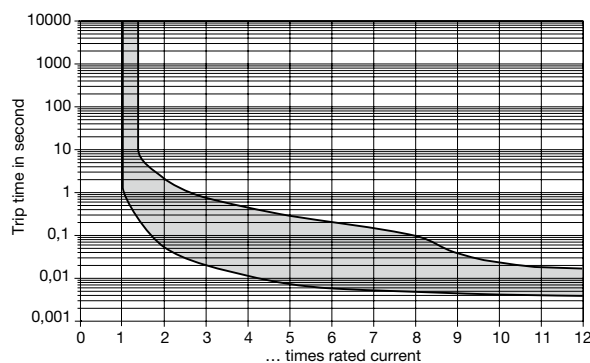
($I_N > 20$ A, 50 % ED/60 min.)



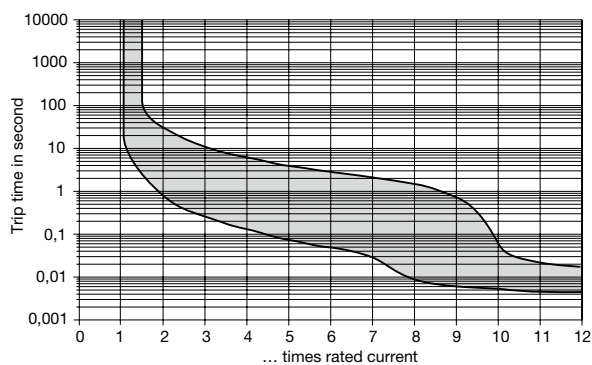
Curve E1 for DC (short delay)



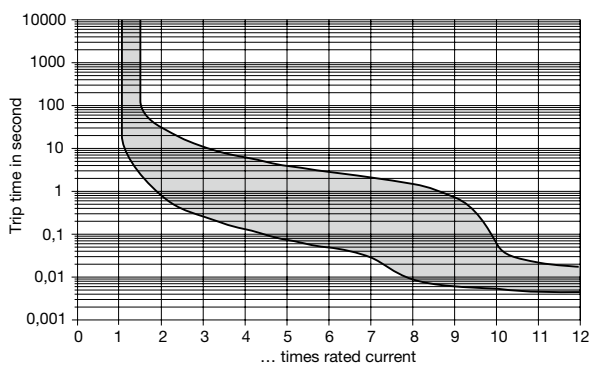
Curve E2 (short delay) for AC 50/60 Hz



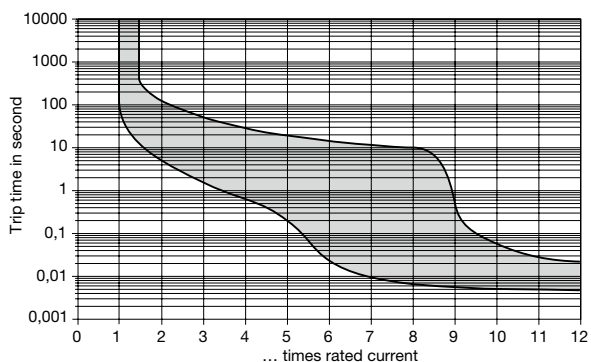
Curve H1 for DC (medium delay)



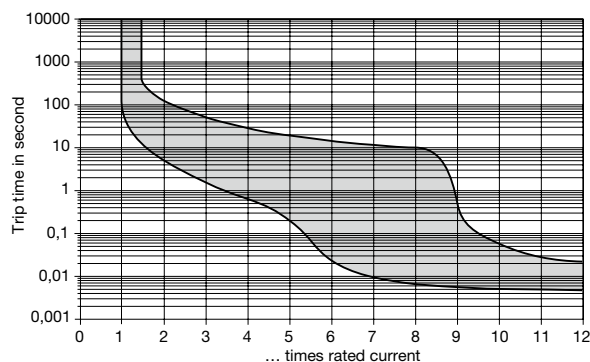
Curve H2 (medium delay) for AC 50/60 Hz



Curve R1 for DC (long delay)



Curve R2 (long delay) for AC 50/60 Hz



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