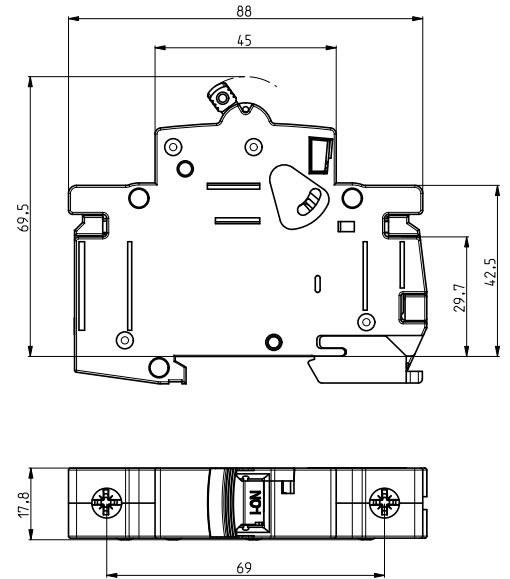


Technical data

Miniature circuit breaker ETIMAT P10

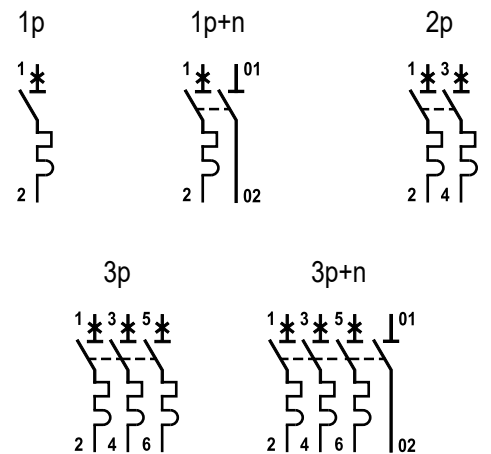
Technical data

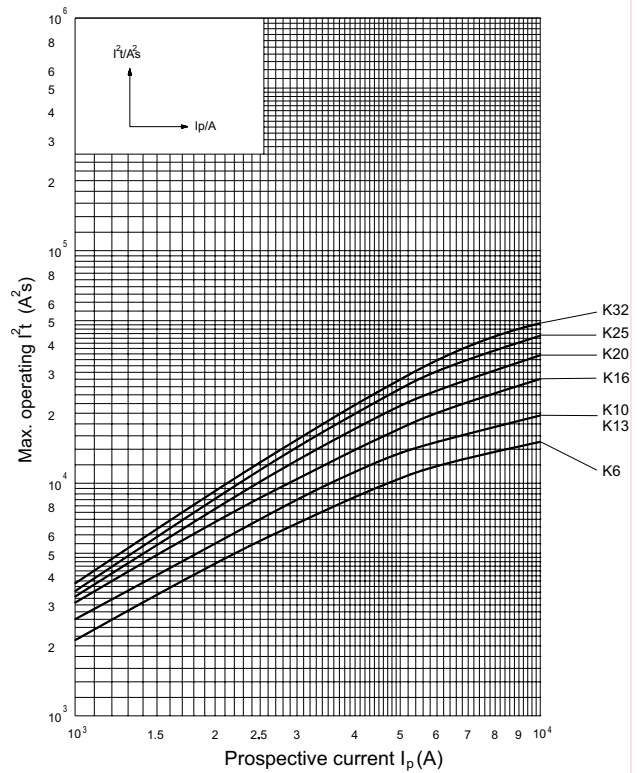
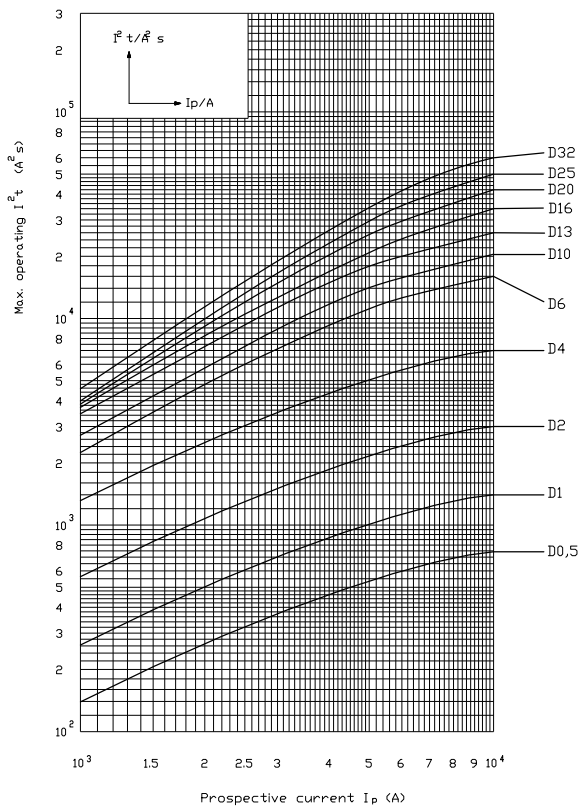
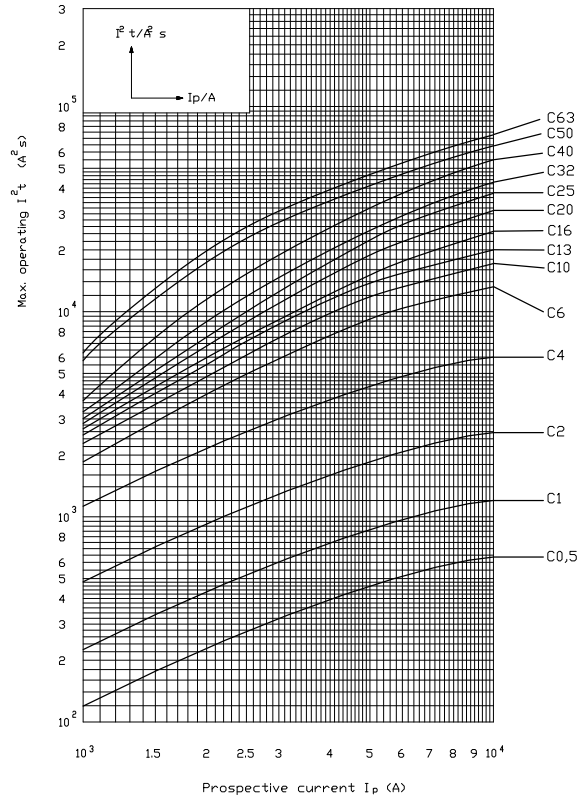
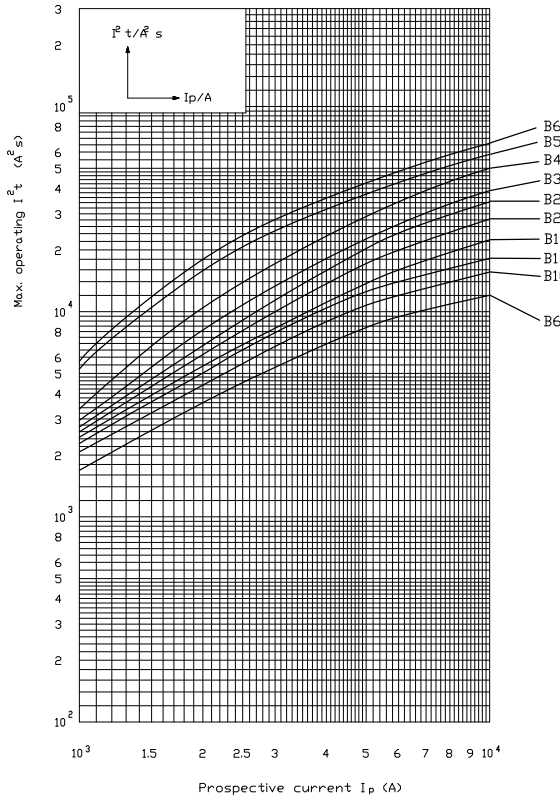
Rated voltage	230/400 V AC; max. 60 V DC / pole
Rated current	B:1-63A, C:0.5-63A, D:0.5-32A, K, Z:0.5-32A
Rated frequency	50/60Hz
Shock resistance	30g.min. 2 shocks, t = 13ms
Rated short-circuit capacity	10 kA
Energy limiting class	3; B,C
Tripping characteristic	B, C, D, K, Z
Back-up fuse	100A gG
Index of protection	IP 20 (IP 40)
Terminals	1-25mm ² , max. 2,5Nm
Terminal screw	M5 (Pozidrive PZ2)
Mechanical endurance	20000 op.c.
Electrical endurance	20000 op.c. (I _n ≤ 32A), 10000 op.c. (I _n > 32A)
Ambient temperature	max. -25°C ... +55°C
Storage temperature	max. -40°C ... +70°C
Supply possibility	top or bottom
Build-in width	18 mm/pol
Insulating class	B
Overvoltage category	III
Mounting on the rail	EN 60715
Mounting position	any
Sealing possibility	✓
Terminal cover	✓
Locking device	✓
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)
Standards	EN 60898, IEC 60898, IEC 60947-2



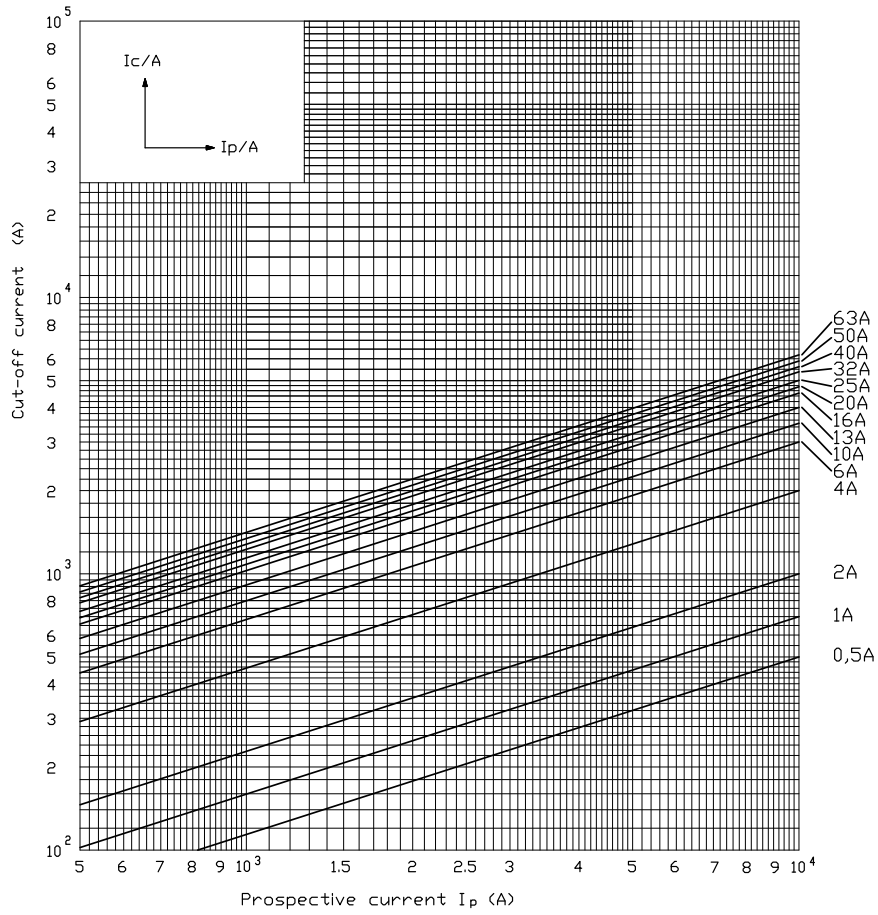
Tripping characteristics

Characteristic	Test current	Tripping time	Result
B, C, D	1,13 I _n	t ≥ 3600 s	No tripping
B, C, D	1,45 I _n	t < 3600 s	Tripping
B, C, D	2,55 I _n	1s < t < 60 s	Tripping
B	3,00 I _n	t ≤ 0,1 s	No tripping
C	5,00 I _n	t ≤ 0,1 s	No tripping
D	10,00 I _n	t ≤ 0,1 s	No tripping
B	5,00 I _n	t < 0,1 s	Tripping
C	10,00 I _n	t < 0,1 s	Tripping
D	20,00 I _n	t < 0,1 s	Tripping
K	1,05 I _n	t > 7200 s	No Tripping
K	1,20 I _n	t < 7200 s	Tripping
K	8,00 I _n	t ≤ 0,2 s	No Tripping
K	12,00 I _n	t < 0,2 s	Tripping
Z	2,00 I _n	t ≤ 0,2s	No Tripping
Z	3,00 I _n	t < 0,2s	Tripping

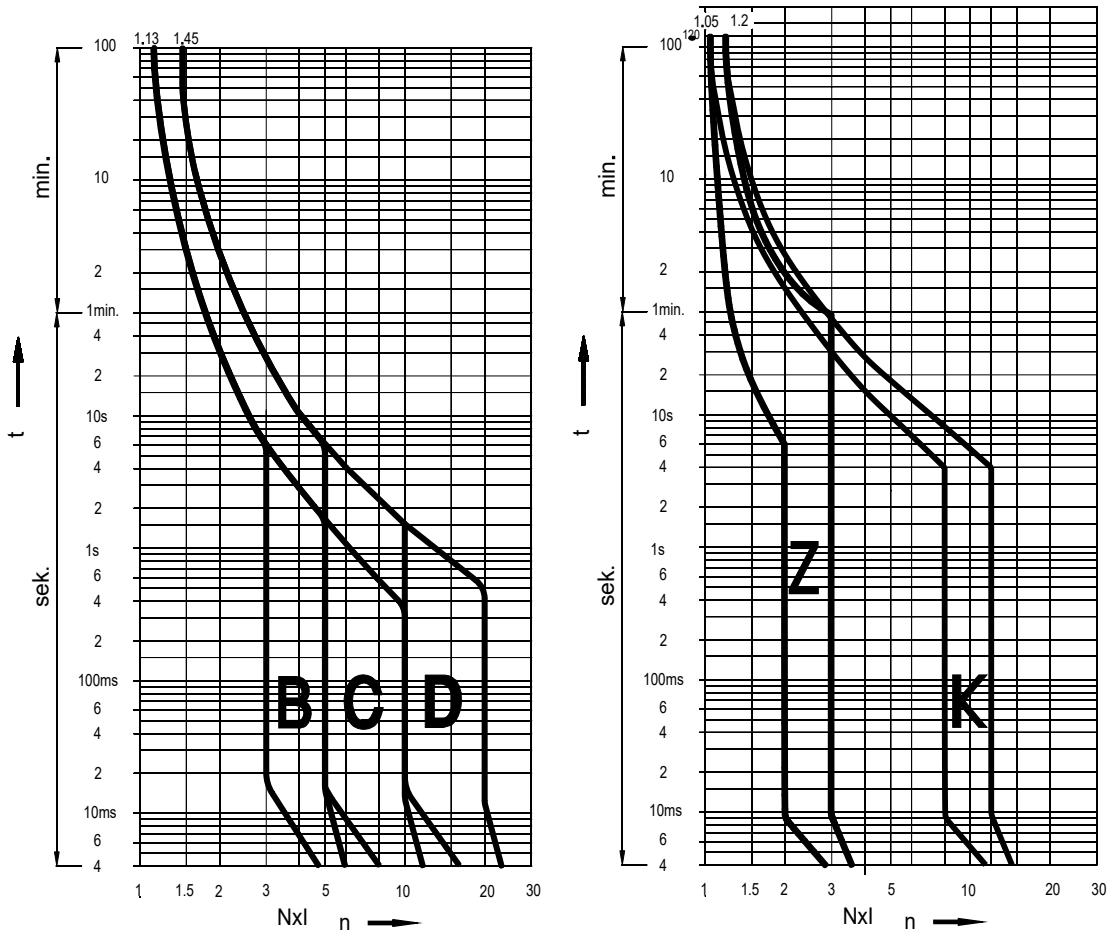




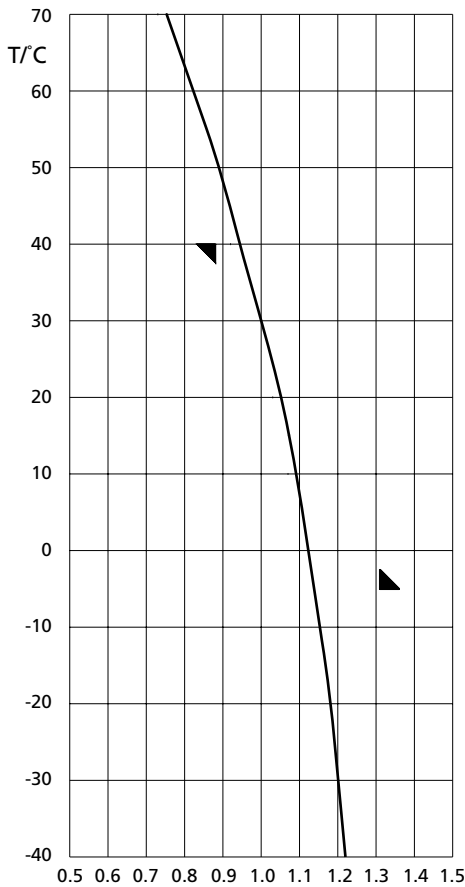
Technical data



I/t characteristic at 50 and 60Hz



Effect of the ambient temperature on the tripping characteristic



Correction factor is valid for current with times over 30 s
 $I(x^{\circ}C)$ - test current at x ambient temperature
 $I(30^{\circ}C)$ - test current at 30°C ambient temperature

$$k = \frac{I(x^{\circ}C)}{I(30^{\circ}C)}$$

I_n [A]	Ambient temperature T/°C											
	-40	-30	-20	-10	0	10	20	30	40	50	60	70
0,5	0,61	0,6	0,59	0,57	0,56	0,54	0,52	0,5	0,47	0,44	0,41	0,38
1	1,22	1,2	1,18	1,15	1,12	1,09	1,05	1	0,94	0,88	0,82	0,75
1,6	1,95	1,92	1,89	1,84	1,79	1,74	1,68	1,6	1,51	1,42	1,32	1,2
2	2,44	2,4	2,36	2,30	2,24	2,18	2,1	2	1,88	1,77	1,65	1,5
4	4,88	4,8	4,72	4,61	4,49	4,36	4,20	4	3,77	3,55	3,29	3
6	7,32	7,2	7,09	6,91	6,73	6,54	6,31	6	5,66	5,33	4,94	4,5
10	12,2	12	11,8	11,5	11,2	10,9	10,5	10	9,44	8,89	8,23	7,5
13	15,9	15,6	15,4	14,9	14,5	14,1	13,6	13	12,2	11,5	10,7	9,75
16	19,5	19,2	18,9	18,4	17,9	17,4	16,8	16	15,1	14,2	13,2	12
20	24,4	24	23,6	23	22,4	21,8	21	20	18,8	17,7	16,5	15
25	30,5	30	29,5	28,8	28	27,2	26,3	25	23,6	22,2	20,6	18,8
32	39	38,4	37,8	36,9	35,9	34,9	33,6	32	30,2	28,4	26,3	24
40	48,8	48	47,8	46,1	44,9	43,6	42	40	37,7	35,5	32,9	30
50	61	60	59,1	57,6	56,1	54,5	52,6	50	47,2	44,4	41,2	37,5
63	76,9	75,6	74,4	72,6	70,7	68,7	66,2	63	59,4	56	51,9	47,3

Conductor cross-section [mm ²]	Number of single conductors, rigid, single-wire CU conductor				
	1	2	3	4	5
1,5	✓	✓	✓	✓	✗
2,5	✓	✓	✓	✗	✗
4	✓	✓	✓	✗	✗
6	✓	✓	✗	✗	✗
10	✓	✓	✗	✗	✗
16	✓	✗	✗	✗	✗
25	✓	✗	✗	✗	✗

Remark: When you use more than 2 cables you have to be careful how those cables are inserted, due to insure proper pressure on each cable

Conductor cross-section [mm ²]	Number of single conductors, flexible Cu conductors without cable ferrule					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	✗	✗	✗
10	✓	✓	✗	✗	✗	✗
16	✓	✗	✗	✗	✗	✗
25	✓	✗	✗	✗	✗	✗

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

Technical data

Resistance and power loss

characteristic	I _n [A]	R/pole [mΩ]	P/pole [w]
C, D, K, Z	0,5	5700	1,43
	1	1540	1,54
	2	365	1,46
	4	104	1,66
B, C, D, K, Z	6	47	1,68
	10	21	2,1
	13	13,1	2,21
	16	9,7	2,48
	20	6,8	2,70
	25	5,0	3,13
B, C	32	3,1	3,2
	40	2,4	3,80
	50	1,7	4,25
	63	1,23	4,90

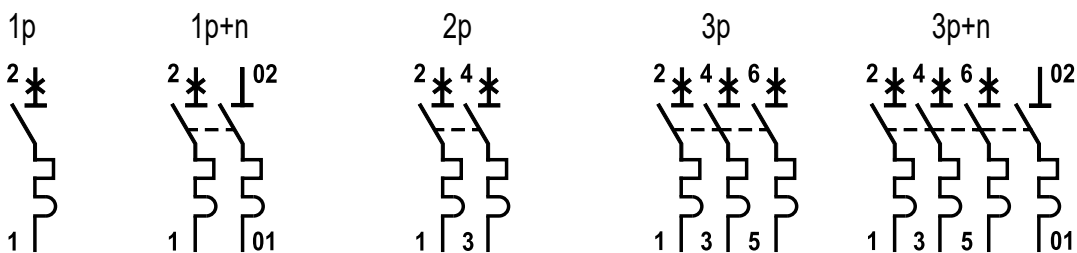
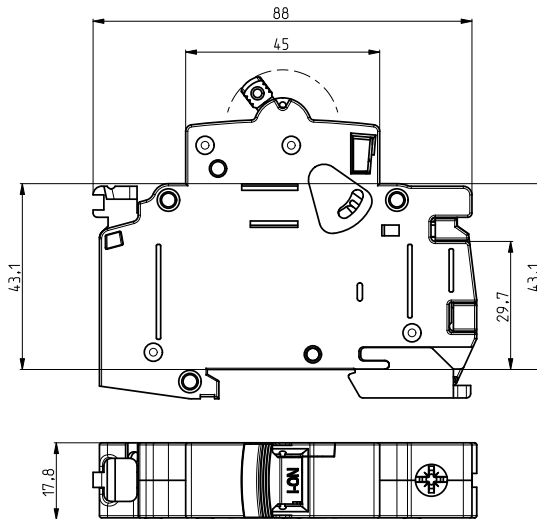
Selectivity

type	gG NV [kA]										
	20	25	32	35	40	50	63	80	100	125	160
B 6	0,5	0,78	1,2	1,4	1,7	2,4	4,6	7,0	10	10	10
B 10/13	0,45	0,65	1,1	1,3	1,6	2,2	4,0	6,5	10	10	10
B 16		0,55	1,0	1,2	1,5	2,0	3,6	5,5	9,5	10	10
B 20			0,85	1,2	1,5	1,8	3,1	4,6	9,0	10	10
B 25				1,1	1,4	1,7	2,9	4,0	8,0	10	10
B 32					1,3	1,6	2,5	3,4	5,5	9,0	10
B 40						1,5	2,2	3,1	4,9	8,0	10
B 50							2,1	2,9	4,0	6,2	10
B 63								2,5	3,3	5,1	8,0

type	gG NV [kA]										
	20	25	32	35	40	50	63	80	100	125	160
C,D,K,Z 6	0,52	0,82	1,3	1,5	2,0	2,7	5,1	9,0	10	10	10
C,D,K,Z 10/13	0,47	0,70	1,1	1,4	1,8	2,3	4,0	7,0	10	10	10
C,D,K,Z 16		0,61	0,92	1,2	1,5	1,9	3,2	5,0	9,0	10	10
C,D,K,Z 20			0,90	1,1	1,4	1,7	2,9	4,2	8,0	10	10
C,D,K,Z 25				1,0	1,3	1,6	2,7	3,9	6,0	10	10
C,D,K,Z 32					1,2	1,5	2,3	3,4	5,2	9,0	10
C 40						1,4	2,1	3,0	4,6	8,0	10
C 50							2,0	2,7	3,8	7,0	10
C 63								2,3	3,2	5,5	9,0

Miniature circuit breaker ETIMAT P10 QC (screwless terminal)

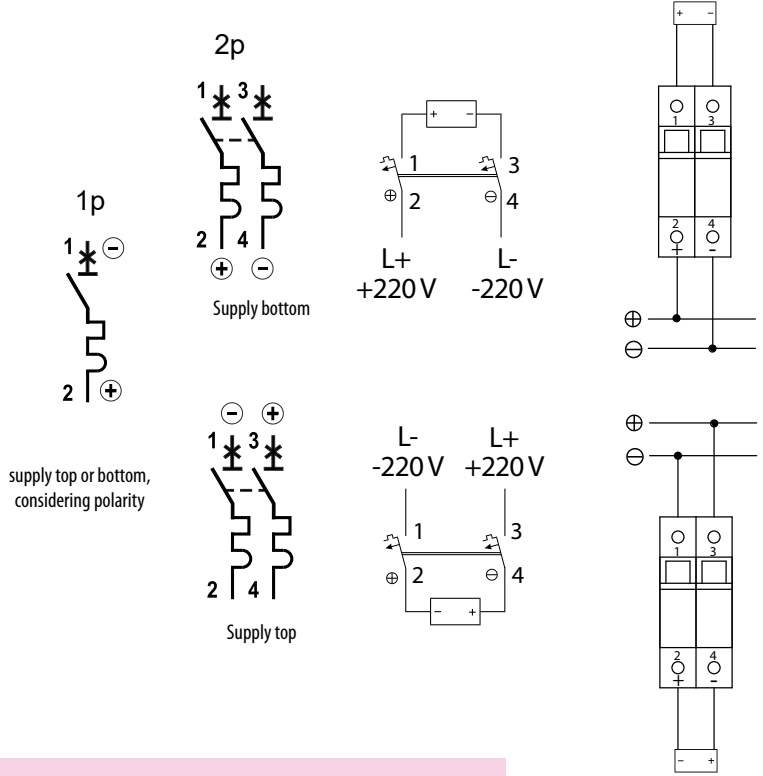
Technical data	
Rated voltage	230/400 V AC; max. 60 V DC / pole
Rated current	B:6-20A, C:0.5-20A, D:0.5-20A, K:0.5-20A
Rated frequency	50/60Hz
Shock resistance	30g.min. 2 shocks, t = 13ms
Rated short-circuit capacity	10 kA
Energy limiting class	3; B,C
Tripping characteristic	B, C, D, K
Back-up fuse	100A gG
Index of protection	IP 20 (IP 40)
Terminals	1-4mm ²
Mechanical endurance	20000 op.c.
Electrical endurance	20000 op.c.
Ambient temperature	max. -25°C to +55°C
Storage temperature	max. -40°C to +70°C
Build-in width	18 mm/pol
Insulating class	B
Mounting on the rail	EN 60715
Mounting position	any
Sealing possibility	✓
Terminal cover	✓
Locking device	✓
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)
Standards	EN 60898, IEC 60898, EN 60947-2



Technical data

Miniature circuit breaker ETIMAT P10 DC

Technical data	
Rated voltage - for 1-pole U_n - for 2-pole U_n	220 V DC 220 V /440 V DC
Rated time constant L/R	4 ms
Rated current I_n	0,5-32A (K & Z), 0,5-63A (C), 2-63A (B)
Rated short-circuit capacity	10 kA
Tripping characteristic	B, C, K, Z
Energy limiting class	3
Insulating class	B
Back-up fuse	100 A gG
Terminals	1-25mm ² , max. 2,5Nm
Terminal screw	M5 (Poqidrive PZ2)
Mounting position	any
Resistance to vibrations (IEC 60068-2-7)	5g (10,60 & 500Hz)
Standards	IEC 60898, EN 60898, DIN VDE 0641



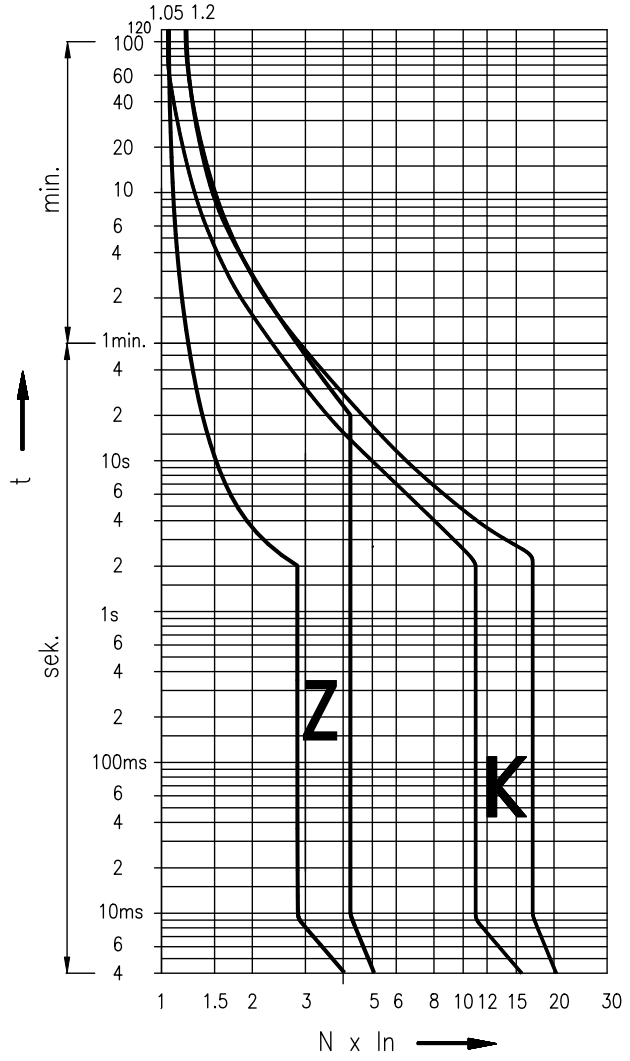
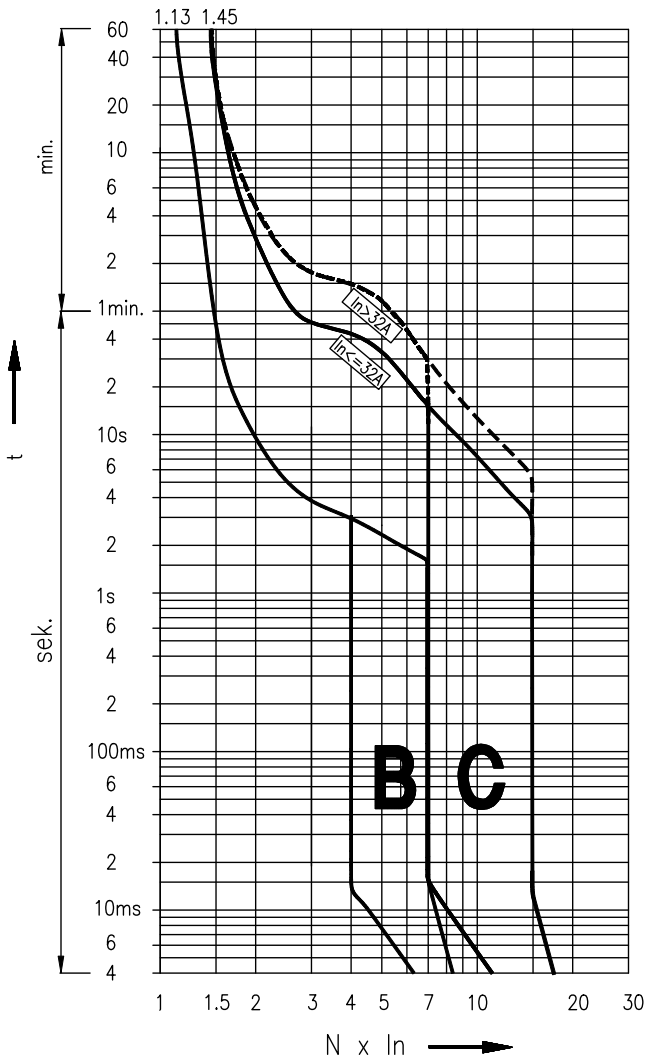
Connecting diagrams in direct current electric circuits				
Rated voltage of circuit breaker	220 V ---	220/440 V ---	220/440 V ---	220/440 V ---
Voltage between conductors - max.	220 V ---	440 V ---	440 V ---	440 V ---
Voltage between conductor and earth - max.	220 V ---	220 V ---	440 V ---	220 V ---
Circuit breaker	1-pole	2-pole	2-pole	2-pole
Connecting diagram				

Conductor cross-section [mm ²]	Number of single conductors, rigid, single-wire CU conductor				
	1	2	3	4	5
1,5	✓	✓	✓	✓	✗
2,5	✓	✓	✓	✗	✗
4	✓	✓	✓	✗	✗
6	✓	✓	✗	✗	✗
10	✓	✗	✗	✗	✗
16	✓	✗	✗	✗	✗
25	✓	✗	✗	✗	✗

Remark: When you use more than 2 cables you have to be careful how those cables are inserted, due to insure proper pressure on each cable

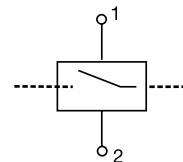
Conductor cross-section [mm ²]	Number of single conductors, flexible Cu conductors without cable ferrule					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	✗	✗	✗
10	✓	✓	✗	✗	✗	✗
16	✓	✗	✗	✗	✗	✗
25	✓	✗	✗	✗	✗	✗

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed



Shunt trip release DA ETIMAT P10

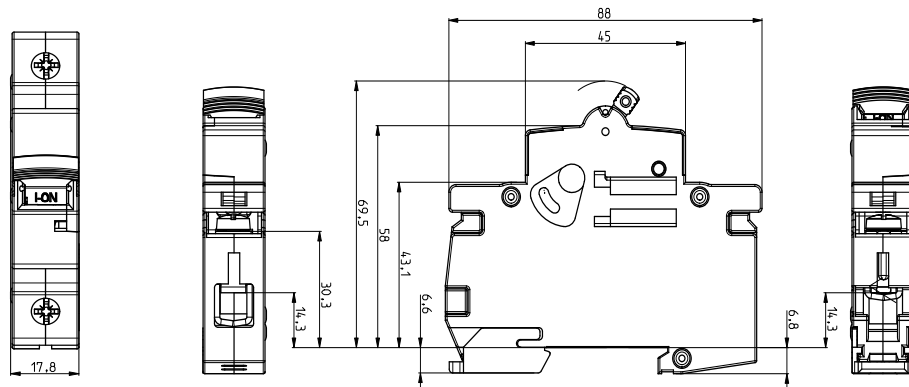
Technical data	
Rated voltage	12-60V AC/DC, 110-250V AC/DC
Rated frequency	50/60Hz, DC
Max inrush current	3A
Index of protection	IP 20 (IP 40)
Terminals	1-25mm ² , max. 2,5Nm
Ambient temperature	M5 (Pozidrive PZ2)
Terminal screw	max. 35°C
Storage temperature	max. -40°C ... +70°C
Mounting on the rail	EN 60715
Mounting position	any
Sealing possibility	✓
Terminal cover	✓
Locking device	✓

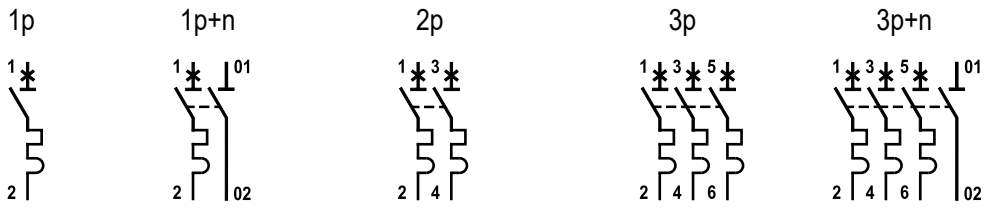


Note: Same dimensions as ETIMAT P10

Miniature circuit breaker ETIMAT P6

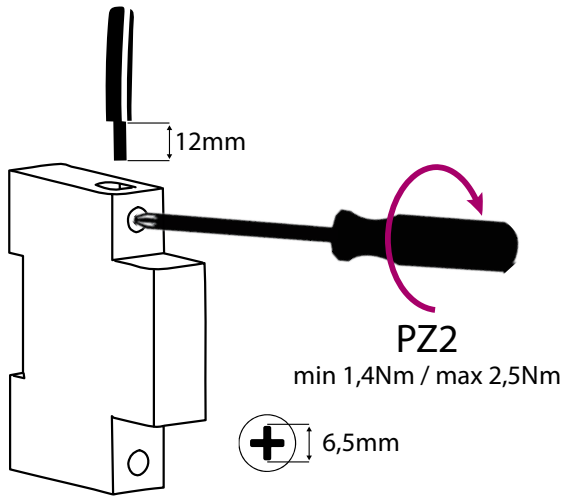
Technical data	
Rated voltage	240/415V AC; max 60V DC/pol
Min. operating voltage	12V AC/DC
Max operating voltage	250/440V AC
Rated current	0,5-63A
Rated frequency	50/60Hz
Rated insulation voltage	500V
Rated impulse withstand voltage	6kV (acc. to 60947-2)
Shock resistance	30g, min 2 shocks, t=13ms
Rated short-circuit capacity	6 kA
Energy limiting class	3; B,C
Tripping characteristic	B, C, D
Back-up fuse	100A gG
Index of protection	IP 20 (IP 40)
Terminals	1-25mm ² , min 1,4Nm / max 2,5Nm
Terminal screw	M5 (Pozidrive PZ2)
Mechanical endurance	20.000 op. cycles
Electrical endurance	20.000 op. cycles
Ambient temperature	max -40°C ... +70°C
Storage temperature	max -60°C ... +70°C
Supply possibility	top or bottom
Build-in width	18mm/pol
Insulating class	B
Overvoltage category	III
Pollution degree	2
Mounting on the rail	EN 60715
Mounting position	any
Sealing possibility	✓
Terminal cover	✓
Contact position indicator	✓
Locking device	✓
Resistance to vibrations acc. to IEC 60068-2-7	5g (10,60 & 500Hz)
Standards	IEC/EN 60898-1, IEC 60947-2



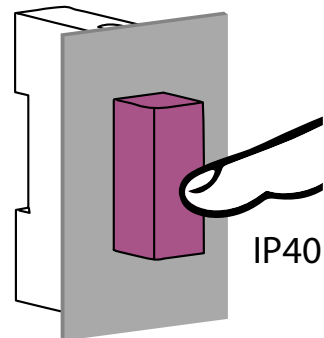
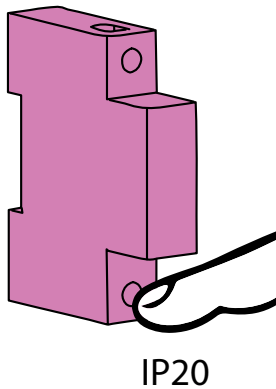
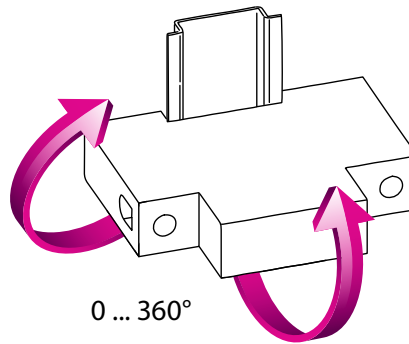


Tripping characteristics

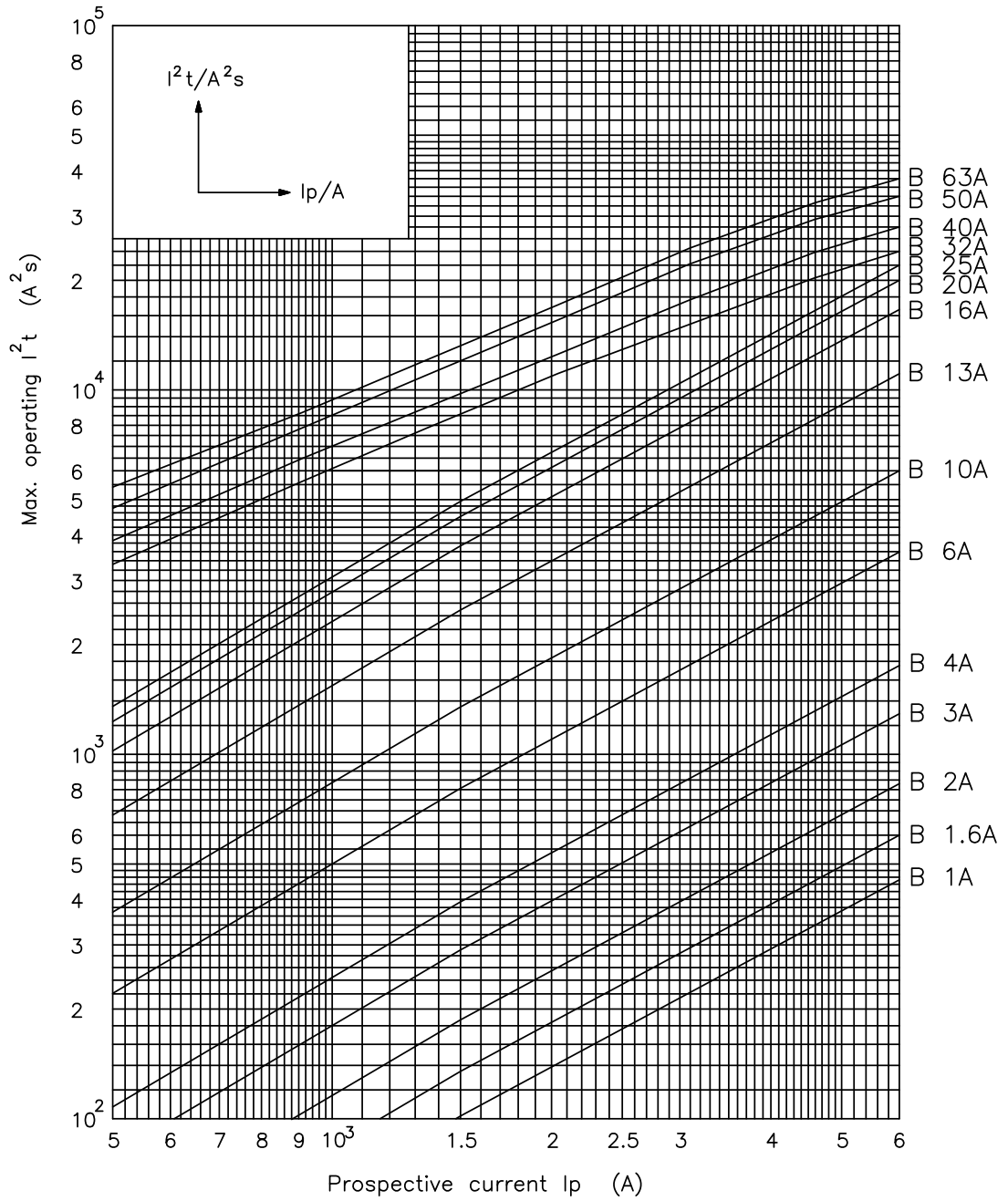
Characteristic	Test current	Tripping time	Result
B, C, D	$1,13 I_n$	$t \geq 3600 \text{ s}$	No tripping
B, C, D	$1,45 I_n$	$t < 3600 \text{ s}$	Tripping
B, C, D	$2,55 I_n$	$1 \text{ s} < t < 60 \text{ s}$	Tripping
B	$3,00 I_n$	$t \leq 0,1 \text{ s}$	No tripping
C	$5,00 I_n$	$t \leq 0,1 \text{ s}$	No tripping
D	$10,00 I_n$	$t \leq 0,1 \text{ s}$	No tripping
B	$5,00 I_n$	$t < 0,1 \text{ s}$	Tripping
C	$10,00 I_n$	$t < 0,1 \text{ s}$	Tripping
D	$20,00 I_n$	$t < 0,1 \text{ s}$	Tripping

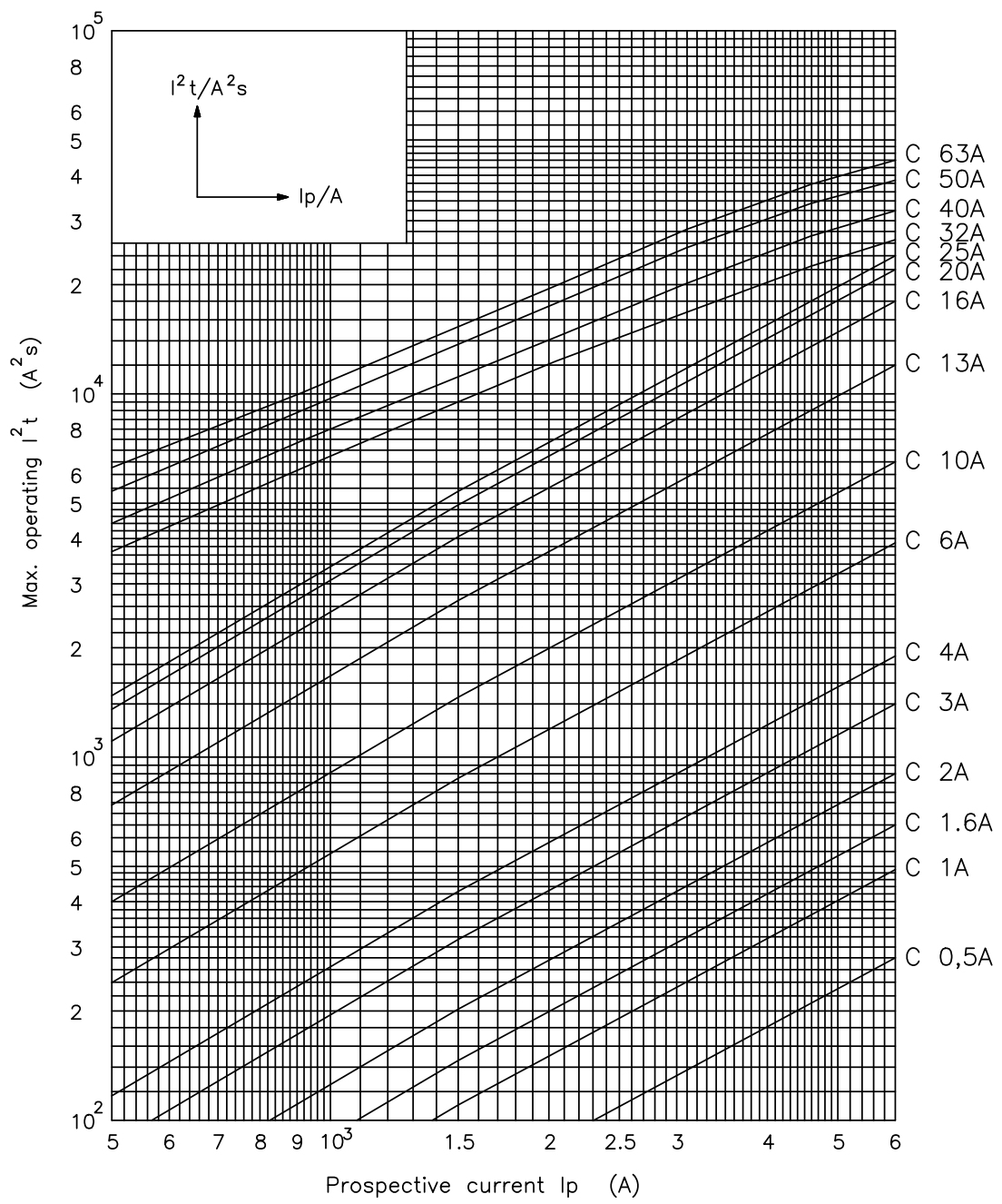


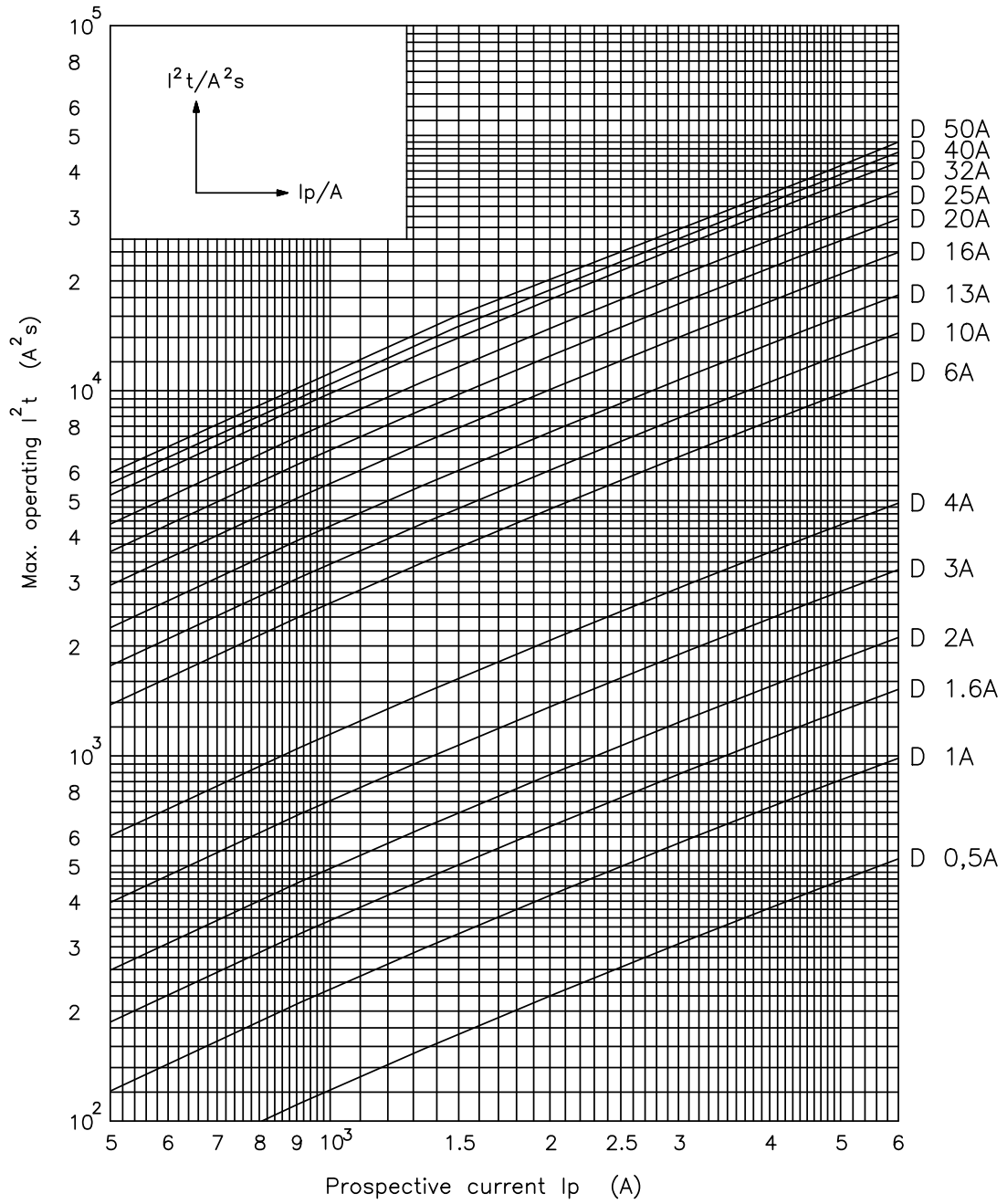
Any mounting position

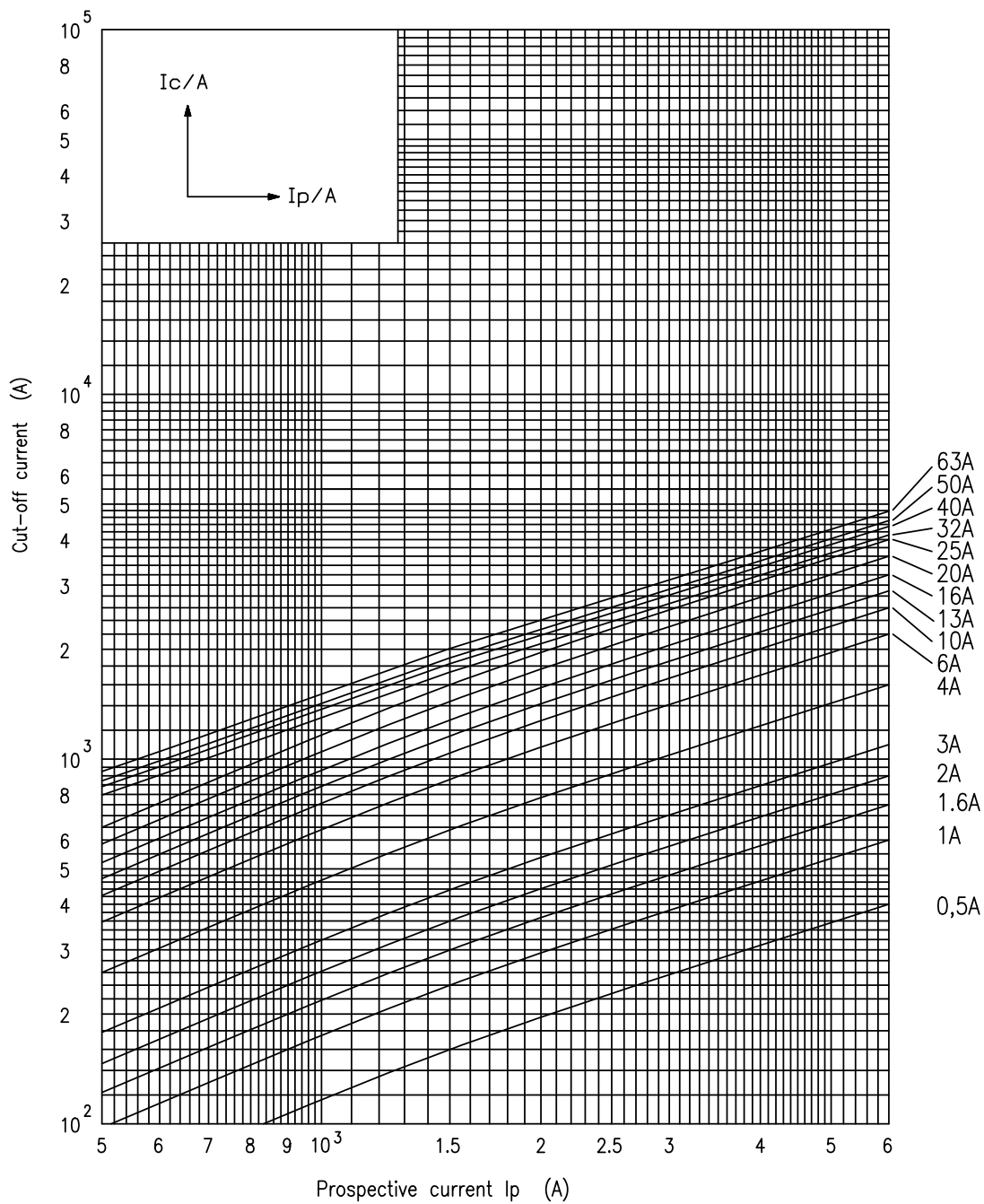


Technical data



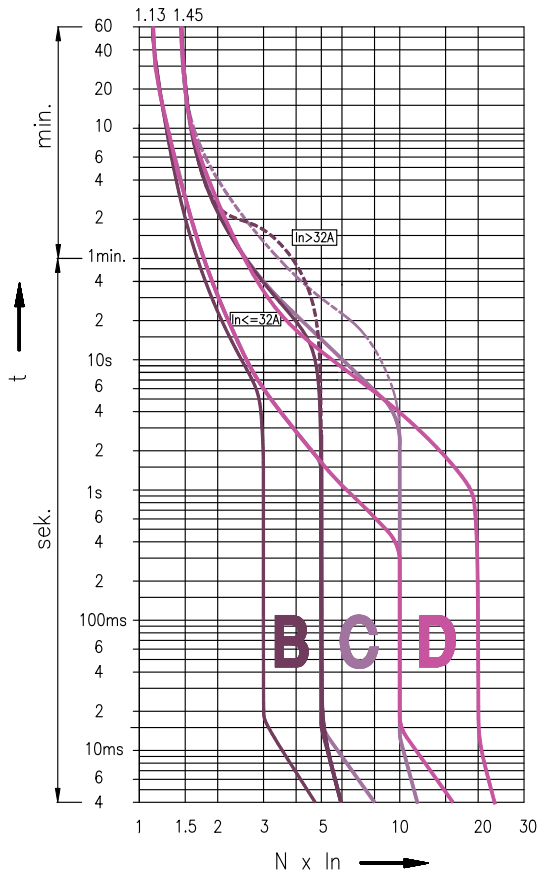






Technical data

I/t characteristic at 50 and 60Hz



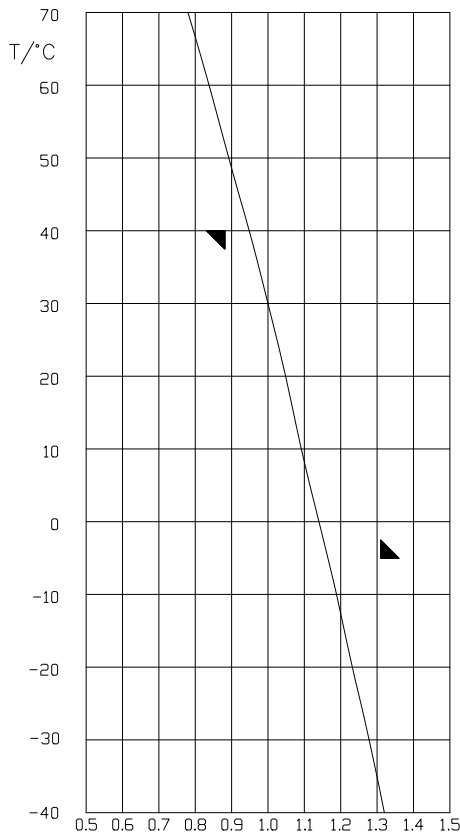
Conductor cross-section [mm ²]	Number of single conductors, rigid, single-wire CU conductor				
	1	2	3	4	5
1,5	✓	✓	✓	✓	✗
2,5	✓	✓	✓	✗	✗
4	✓	✓	✓	✗	✗
6	✓	✓	✗	✗	✗
10	✓	✓	✗	✗	✗
16	✓	✗	✗	✗	✗
25	✓	✗	✗	✗	✗

Remark: When you use more than 2 cables you have to be careful how those cables are inserted, due to insure proper pressure on each cable

Conductor cross-section [mm ²]	Number of single conductors, flexible Cu conductors without cable ferrule					
	1	2	3	4	5	6
1,5	✓	✓	✓	✓	✓	✓
2,5	✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓
6	✓	✓	✓	✗	✗	✗
10	✓	✓	✗	✗	✗	✗
16	✓	✗	✗	✗	✗	✗
25	✓	✗	✗	✗	✗	✗

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

Effect of the ambient temperature on the tripping characteristic



In (A)	Ambient temperature T/°C											
	-40	-30	-20	-10	0	10	20	30	40	50	60	70
0,5	0,66	0,64	0,62	0,60	0,57	0,55	0,53	0,5	0,48	0,45	0,42	0,39
1	1,32	1,28	1,23	1,19	1,14	1,09	1,05	1	0,95	0,89	0,84	0,78
1,6	2,11	2,05	1,97	1,90	1,82	1,74	1,68	1,6	1,52	1,42	1,34	1,25
2	2,64	2,56	2,46	2,38	2,28	2,18	2,10	2	1,90	1,78	1,68	1,56
4	5,28	5,12	4,92	4,76	4,56	4,36	4,20	4	3,80	3,56	3,36	3,12
6	7,92	7,68	7,38	7,14	6,84	6,54	6,30	6	5,70	5,34	5,04	4,68
10	13,2	12,8	12,3	11,9	11,4	10,9	10,5	10	9,50	8,90	8,40	7,80
13	17,2	16,6	16,0	15,5	14,8	14,2	13,7	13	12,4	11,6	10,9	10,1
16	21,1	20,5	19,7	19,0	18,2	17,4	16,8	16	15,2	14,2	13,4	12,5
20	26,4	25,6	24,6	23,8	22,8	21,8	21,0	20	19,0	17,8	16,8	15,6
25	33,0	32,0	30,8	29,8	28,5	27,3	26,3	25	23,8	22,3	21,0	19,5
32	42,2	41,0	39,4	38,1	36,5	34,9	33,6	32	30,4	28,5	26,9	25,0
40	52,8	51,2	49,2	47,6	45,6	43,6	42,0	40	38,0	35,6	33,6	31,2
50	66,0	64,0	61,5	59,5	57,0	54,5	52,6	50	47,5	44,5	42,0	39,0
63	83,2	80,6	77,5	75,0	71,8	68,7	66,2	63	59,9	56,1	52,9	49,1

Correction factor is valid for current with times over 30 s
 $I(x^{\circ}C)$ - test current at x ambient temperature
 $I(30^{\circ}C)$ - test current at 30°C ambient temperature

$$k = \frac{I(x^{\circ}C)}{I(30^{\circ}C)}$$

Resistance and power dissipation

characteristic	I _n [A]	R/pole [mΩ]	P/pole [w]
B, C	0,5	3587	1,16
	1	935	1,21
	1,6	382	1,26
	2	264	1,37
	3	*	*
	4	69,6	1,38
	6	40,3	1,96
	10	16,9	2,00
	13	11,4	2,08
	16	8,17	2,26
	20	6,73	2,53
	25	5,03	2,96
	32	3,92	3,44
	40	*	*
	50	2,22	3,57
	63	1,71	4,59
D	0,5	*	*
	1	1183	1,55
	1,6	*	*
	2	303	1,58
	3	135	1,52
	4	81,8	1,66
	6	40,0	1,78
	10	17,3	1,57
	13	11,3	2,04
	16	8,59	2,31
	20	7,17	2,73
	25	4,77	2,91
	32	3,92	3,44
	40	*	*
	50	*	*
	63	*	*

Selectivity

ETIMAT	gG NV										
	20	25	32	35	40	50	63	80	100	125	160
B 6	0,5	0,78	1,2	1,4	1,7	2,4	4,6	6,0	6,0	6,0	6,0
B 10/13	0,45	0,65	1,1	1,3	1,6	2,2	4,0	6,0	6,0	6,0	6,0
B 16		0,55	1,0	1,2	1,5	2,0	3,6	5,5	6,0	6,0	6,0
B 20			0,85	1,2	1,5	1,8	3,1	4,6	6,0	6,0	6,0
B 25				1,1	1,4	1,7	2,9	4,0	6,0	6,0	6,0
B 32					1,3	1,6	2,5	3,4	5,5	6,0	6,0
B 40						1,5	2,2	3,1	4,9	6,0	6,0
B 50							2,1	2,9	4,0	6,0	6,0
B 63								2,5	3,3	5,1	6,0

ETIMAT	gG NV										
	20	25	32	35	40	50	63	80	100	125	160
C,D 6	0,52	0,82	1,3	1,5	2,0	2,7	5,1	6,0	6,0	6,0	6,0
C,D 10/13	0,47	0,70	1,1	1,4	1,8	2,3	4,0	6,0	6,0	6,0	6,0
C,D 16		0,61	0,92	1,2	1,5	1,9	3,2	5,0	6,0	6,0	6,0
C,D 20			0,90	1,1	1,4	1,7	2,9	4,2	6,0	6,0	6,0
C,D 25				1,0	1,3	1,6	2,7	3,9	6,0	6,0	6,0
C,D 32					1,2	1,5	2,3	3,4	5,2	6,0	6,0
C,D 40						1,4	2,1	3,0	4,6	6,0	6,0
C,D 50							2,0	2,7	3,8	6,0	6,0
C,D 63								2,3	3,2	5,5	6,0

R: measured at 0.1*I_n
P: measured at I_n

Effect of number of poles on the tripping characteristic ETIMAT P6

Correction factor K_n

Number of devices	Kn
1	1
2	0,95
3	0,91
4	0,87
5	0,84
6	0,81
7	0,79
8	0,78
9	0,77
>9	0,77

