

MINIATURE CIRCUIT BREAKERS LTS

- Series of miniature circuit breakers up to 63 A, AC 230/400 V a DC 60 V / pole.
- For protection of cables and conductors against overload and short-circuit.
- Tripping characteristics B, C, D according to EN 60898-1.
- Breaking capacity 10 kA.



Miniature circuit breakers 1-pole

I _n [A]	Characteristic B		Characteristic C		Characteristic D		Number of modules	Weight [kg]	Package [pcs]
	Type	Order code	Type	Order code	Type	Order code			
0,5	-	-	LTS-0,5C-1	OEZ:41967	LTS-0,5D-1	OEZ:41984	1	0.178	12
1	LTS-1B-1	OEZ:41952	LTS-1C-1	OEZ:41968	LTS-1D-1	OEZ:41985	1	0.195	12
1,6	-	-	LTS-1,6C-1	OEZ:41969	LTS-1,6D-1	OEZ:41986	1	0.178	12
2	LTS-2B-1	OEZ:41953	LTS-2C-1	OEZ:41970	LTS-2D-1	OEZ:41987	1	0.178	12
4	LTS-4B-1	OEZ:41954	LTS-4C-1	OEZ:41971	LTS-4D-1	OEZ:41988	1	0.178	12
6	LTS-6B-1	OEZ:41955	LTS-6C-1	OEZ:41972	LTS-6D-1	OEZ:41989	1	0.178	12
8	LTS-8B-1	OEZ:41956	LTS-8C-1	OEZ:41973	LTS-8D-1	OEZ:41990	1	0.178	12
10	LTS-10B-1	OEZ:41957	LTS-10C-1	OEZ:41974	LTS-10D-1	OEZ:41991	1	0.178	12
13	LTS-13B-1	OEZ:41958	LTS-13C-1	OEZ:41975	LTS-13D-1	OEZ:41992	1	0.178	12
16	LTS-16B-1	OEZ:41959	LTS-16C-1	OEZ:41976	LTS-16D-1	OEZ:41993	1	0.198	12
20	LTS-20B-1	OEZ:41960	LTS-20C-1	OEZ:41977	LTS-20D-1	OEZ:41994	1	0.196	12
25	LTS-25B-1	OEZ:41961	LTS-25C-1	OEZ:41978	LTS-25D-1	OEZ:41995	1	0.178	12
32	LTS-32B-1	OEZ:41962	LTS-32C-1	OEZ:41979	LTS-32D-1	OEZ:41996	1	0.196	12
40	LTS-40B-1	OEZ:41963	LTS-40C-1	OEZ:41980	LTS-40D-1	OEZ:41997	1	0.178	12
50	LTS-50B-1	OEZ:41964	LTS-50C-1	OEZ:41981	LTS-50D-1	OEZ:41998	1	0.178	12
63	LTS-63B-1	OEZ:41965	LTS-63C-1	OEZ:41982	LTS-63D-1	OEZ:41999	1	0.178	12



Miniature circuit breakers 1+N-pole

I _n [A]	Characteristic B		Characteristic C		Characteristic D		Number of modules	Weight [kg]	Package [pcs]
	Type	Order code	Type	Order code	Type	Order code			
2	LTS-2B-1N	OEZ:43292	LTS-2C-1N	OEZ:42011	LTS-2D-1N	OEZ:43294	2	0.347	6
4	LTS-4B-1N	OEZ:43293	LTS-4C-1N	OEZ:42012	LTS-4D-1N	OEZ:43295	2	0.347	6
6	LTS-6B-1N	OEZ:42000	LTS-6C-1N	OEZ:42013	LTS-6D-1N	OEZ:42024	2	0.347	6
8	LTS-8B-1N	OEZ:42001	LTS-8C-1N	OEZ:42014	LTS-8D-1N	OEZ:42025	2	0.347	6
10	LTS-10B-1N	OEZ:42002	LTS-10C-1N	OEZ:42015	LTS-10D-1N	OEZ:42026	2	0.347	6
13	LTS-13B-1N	OEZ:42003	LTS-13C-1N	OEZ:42016	LTS-13D-1N	OEZ:42027	2	0.347	6
16	LTS-16B-1N	OEZ:42004	LTS-16C-1N	OEZ:42017	LTS-16D-1N	OEZ:42028	2	0.347	6
20	LTS-20B-1N	OEZ:42005	LTS-20C-1N	OEZ:42018	LTS-20D-1N	OEZ:42029	2	0.347	6
25	LTS-25B-1N	OEZ:42006	LTS-25C-1N	OEZ:42019	LTS-25D-1N	OEZ:42030	2	0.347	6
32	LTS-32B-1N	OEZ:42007	LTS-32C-1N	OEZ:42020	LTS-32D-1N	OEZ:42031	2	0.347	6
40	LTS-40B-1N	OEZ:42008	LTS-40C-1N	OEZ:42021	LTS-40D-1N	OEZ:42032	2	0.347	6
50	LTS-50B-1N	OEZ:42009	LTS-50C-1N	OEZ:42022	LTS-50D-1N	OEZ:42033	2	0.347	6
63	LTS-63B-1N	OEZ:42010	LTS-63C-1N	OEZ:42023	LTS-63D-1N	OEZ:42034	2	0.347	6



Miniature circuit breakers 2-pole

I _n [A]	Characteristic B		Characteristic C		Characteristic D		Number of modules	Weight [kg]	Package [pcs]
	Type	Order code	Type	Order code	Type	Order code			
0,5	-	-	LTS-0,5C-2	OEZ:42050	LTS-0,5D-2	OEZ:42067	2	0.347	6
1	LTS-1B-2	OEZ:42035	LTS-1C-2	OEZ:42051	LTS-1D-2	OEZ:42068	2	0.347	6
1,6	-	-	LTS-1,6C-2	OEZ:42052	LTS-1,6D-2	OEZ:42069	2	0.347	6
2	LTS-2B-2	OEZ:42036	LTS-2C-2	OEZ:42053	LTS-2D-2	OEZ:42070	2	0.347	6
4	LTS-4B-2	OEZ:42037	LTS-4C-2	OEZ:42054	LTS-4D-2	OEZ:42071	2	0.347	6
6	LTS-6B-2	OEZ:42038	LTS-6C-2	OEZ:42055	LTS-6D-2	OEZ:42072	2	0.347	6
8	LTS-8B-2	OEZ:42039	LTS-8C-2	OEZ:42056	LTS-8D-2	OEZ:42073	2	0.347	6
10	LTS-10B-2	OEZ:42040	LTS-10C-2	OEZ:42057	LTS-10D-2	OEZ:42074	2	0.347	6
13	LTS-13B-2	OEZ:42041	LTS-13C-2	OEZ:42058	LTS-13D-2	OEZ:42075	2	0.347	6
16	LTS-16B-2	OEZ:42042	LTS-16C-2	OEZ:42059	LTS-16D-2	OEZ:42076	2	0.347	6
20	LTS-20B-2	OEZ:42043	LTS-20C-2	OEZ:42060	LTS-20D-2	OEZ:42077	2	0.347	6
25	LTS-25B-2	OEZ:42044	LTS-25C-2	OEZ:42061	LTS-25D-2	OEZ:42078	2	0.347	6
32	LTS-32B-2	OEZ:42045	LTS-32C-2	OEZ:42062	LTS-32D-2	OEZ:42079	2	0.347	6
40	LTS-40B-2	OEZ:42046	LTS-40C-2	OEZ:42063	LTS-40D-2	OEZ:42080	2	0.347	6
50	LTS-50B-2	OEZ:42047	LTS-50C-2	OEZ:42064	LTS-50D-2	OEZ:43090	2	0.347	6
63	LTS-63B-2	OEZ:42048	LTS-63C-2	OEZ:42065	LTS-63D-2	OEZ:43089	2	0.347	6

MINIATURE CIRCUIT BREAKERS LTS



Miniature circuit breakers 3-pole

I _n [A]	Characteristic B		Characteristic C		Characteristic D		Number of modules	Weight [kg]	Package [pcs]
	Type	Order code	Type	Order code	Type	Order code			
0,5	-	-	LTS-0,5C-3	OEZ:42096	LTS-0,5D-3	OEZ:42113	3	0.485	4
1	LTS-1B-3	OEZ:42081	LTS-1C-3	OEZ:42097	LTS-1D-3	OEZ:42114	3	0.485	4
1,6	-	-	LTS-1,6C-3	OEZ:42098	LTS-1,6D-3	OEZ:42115	3	0.485	4
2	LTS-2B-3	OEZ:42082	LTS-2C-3	OEZ:42099	LTS-2D-3	OEZ:42116	3	0.485	4
4	LTS-4B-3	OEZ:42083	LTS-4C-3	OEZ:42100	LTS-4D-3	OEZ:42117	3	0.485	4
6	LTS-6B-3	OEZ:42084	LTS-6C-3	OEZ:42101	LTS-6D-3	OEZ:42118	3	0.489	4
8	LTS-8B-3	OEZ:42085	LTS-8C-3	OEZ:42102	LTS-8D-3	OEZ:42119	3	0.485	4
10	LTS-10B-3	OEZ:42086	LTS-10C-3	OEZ:42103	LTS-10D-3	OEZ:42120	3	0.485	4
13	LTS-13B-3	OEZ:42087	LTS-13C-3	OEZ:42104	LTS-13D-3	OEZ:42121	3	0.485	4
16	LTS-16B-3	OEZ:42088	LTS-16C-3	OEZ:42105	LTS-16D-3	OEZ:42122	3	0.491	4
20	LTS-20B-3	OEZ:42089	LTS-20C-3	OEZ:42106	LTS-20D-3	OEZ:42123	3	0.485	4
25	LTS-25B-3	OEZ:42090	LTS-25C-3	OEZ:42107	LTS-25D-3	OEZ:42124	3	0.485	4
32	LTS-32B-3	OEZ:42091	LTS-32C-3	OEZ:42108	LTS-32D-3	OEZ:42125	3	0.486	4
40	LTS-40B-3	OEZ:42092	LTS-40C-3	OEZ:42109	LTS-40D-3	OEZ:42126	3	0.485	4
50	LTS-50B-3	OEZ:42093	LTS-50C-3	OEZ:42110	LTS-50D-3	OEZ:42127	3	0.501	4
63	LTS-63B-3	OEZ:42094	LTS-63C-3	OEZ:42111	LTS-63D-3	OEZ:42128	3	0.487	4

Miniature circuit breakers 3+N-pole



I _n [A]	Characteristic B		Characteristic C		Characteristic D		Number of modules	Weight [kg]	Package [pcs]
	Type	Order code	Type	Order code	Type	Order code			
2	LTS-2B-3N	OEZ:42129	LTS-2C-3N	OEZ:43092	LTS-2D-3N	OEZ:43296	4	0.683	3
4	LTS-4B-3N	OEZ:42130	LTS-4C-3N	OEZ:43091	LTS-4D-3N	OEZ:43297	4	0.683	3
6	LTS-6B-3N	OEZ:42131	LTS-6C-3N	OEZ:42142	LTS-6D-3N	OEZ:42153	4	0.683	3
8	LTS-8B-3N	OEZ:42132	LTS-8C-3N	OEZ:42143	LTS-8D-3N	OEZ:42154	4	0.683	3
10	LTS-10B-3N	OEZ:42133	LTS-10C-3N	OEZ:42144	LTS-10D-3N	OEZ:42155	4	0.683	3
13	LTS-13B-3N	OEZ:42134	LTS-13C-3N	OEZ:42145	LTS-13D-3N	OEZ:42156	4	0.683	3
16	LTS-16B-3N	OEZ:42135	LTS-16C-3N	OEZ:42146	LTS-16D-3N	OEZ:42157	4	0.683	3
20	LTS-20B-3N	OEZ:42136	LTS-20C-3N	OEZ:42147	LTS-20D-3N	OEZ:42158	4	0.683	3
25	LTS-25B-3N	OEZ:42137	LTS-25C-3N	OEZ:42148	LTS-25D-3N	OEZ:42159	4	0.683	3
32	LTS-32B-3N	OEZ:42138	LTS-32C-3N	OEZ:42149	LTS-32D-3N	OEZ:42160	4	0.683	3
40	LTS-40B-3N	OEZ:42139	LTS-40C-3N	OEZ:42150	LTS-40D-3N	OEZ:42161	4	0.683	3
50	LTS-50B-3N	OEZ:42140	LTS-50C-3N	OEZ:42151	LTS-50D-3N	OEZ:43298	4	0.683	3
63	LTS-63B-3N	OEZ:42141	LTS-63C-3N	OEZ:42152	LTS-63D-3N	OEZ:43299	4	0.683	3

Accessories

Auxiliary and signal switches	PS-LT, SS-LT	page B33
Shunt trips	SV-LT	page B34
Undervoltage releases	SP-LT	page B34
Locking insert	OD-LT-VU02	page B35
Sealing insert	OD-LT-VP01	page B35
Interconnecting busbars	S1L, S2L, S3L, S4L	page B41
Terminal extension	AS-50-S-AL01	page B43

MINIATURE CIRCUIT BREAKERS LTS

Specifications

Type	LTS	
Standards	EN 60898-1	
Approval marks	 	
Number of poles	1, 1+N, 2, 3, 3+N	
Tripping characteristics	B, C, D	
Rated current	I_n	0,5 ÷ 63 A
Rated operating voltage	U_c	AC 230/400 V
Max. operating voltage	U_{max}	AC 250/440 V, DC 60 V / 1 protected pole
Min. operating voltage (1 pole)	U_{min}	AC/DC 24 V
Rated insulation voltage	U_i	AC 250/440 V
Rated frequency	f_n	50/60 Hz
Rated short-circuit breaking capacity (EN 60898-1)	I_{cn}	AC 10 kA
Rated short-circuit ultimate breaking capacity (EN 60947-2)	I_{cu}	AC 10 kA
Electrical endurance	10 000 cycles	
Mechanical endurance	10 000 cycles	
Energy limitation class	3	
Mounting on "U" rail according to EN 60715 - type	TH 35	
Degree of protection - with connected conductors	IP20	
Connection		
Conductor	see table Connection range	
Screw head type	PZ2	
Torque	max. 3.5 Nm	
Top or bottom connection	top/bottom	
Operating conditions		
Ambient temperature	°C	-25 ÷ +55 °C, max. 95 % air humidity
Storage temperature	°C	-40 ÷ +75 °C
Working position	arbitrary	
Climatic resistance (EN 60068-2-30)	6 operating cycles	

Connection range

Number of connected conductors	Rigid conductor (solid, stranded)	Conductor flexible with a sleeve	Conductor flexible without a sleeve ¹⁾
1x conductor	1x (0.75 ÷ 35) mm ²	1x (0.75 ÷ 25) mm ²	1x (1 ÷ 35) mm ²
2x conductor	2x (0.75 ÷ 10) mm ²	2x (0.75 ÷ 4) mm ²	2x (1 ÷ 4) mm ²
1x conductor + interconnecting busbar	1x (10 ÷ 25) mm ² + interconnecting busbar pin thickness max. 1.5 mm	1x (6 ÷ 16) mm ² ²⁾ + interconnecting busbar pin thickness max. 1.5 mm	-

¹⁾ The conductor must be twisted before insertion to a terminal; individual conductor fibres must not stick out of the terminal

²⁾ In case of use of a sleeve without plastic neck: conductor 1x (6 ÷ 25) mm²
If more conductors are used they must be of the same type and cross-section

MINIATURE CIRCUIT BREAKERS LTS

Internal impedance Z, powers losses P, impedance of fault loop Z_f

I _n [A]	Characteristic B		Characteristic C		Characteristic D		Max. impedance of fault loop Z _f [Ω] ²⁾					
	Z ¹⁾ [mΩ/pole]	P ¹⁾ [W/pole]	Z ¹⁾ [mΩ/pole]	P ¹⁾ [W/pole]	Z ¹⁾ [mΩ/pole]	P ¹⁾ [W/pole]	Characteristic B		Characteristic C		Characteristic D	
	t ≤ 0.4 s	t ≤ 5 s	t ≤ 0.4 s	t ≤ 5 s	t ≤ 0.4 s	t ≤ 5 s	t ≤ 0.4 s	t ≤ 5 s	t ≤ 0.4 s	t ≤ 5 s	t ≤ 0.4 s	t ≤ 5 s
0.5	-	-	3551	0.9	3551	0.9	-	-	46.0	92.0	23.0	92.0
1	1954	2.0	1172	1.2	1089	1.1	46.0	46.0	23.0	46.0	15.3	46.0
1	-	-	510	1.3	466	1.2	-	-	14.4	28.8	9.6	28.8
2	461	1.8	297	1.2	273	1.1	23.0	23.0	11.5	23.0	7.6	23.0
4	98.0	1.6	76.0	1.2	68.0	1.1	11.5	11.5	5.8	11.6	3.8	11.6
6	52.0	1.9	43.0	1.6	39.0	1.4	7.6	7.6	3.8	7.6	2.5	7.6
8	22.0	1.4	11.9	0.8	11.8	0.8	5.8	5.8	2.8	5.7	1.9	5.7
10	19.3	1.9	9.1	0.9	8.6	0.9	4.6	4.6	2.3	4.6	1.1	4.6
13	12.3	2.1	9.1	1.5	8.2	1.4	3.6	3.6	1.7	3.4	0.9	3.4
16	7.1	1.8	6.0	1.5	4.8	1.2	2.9	2.9	1.4	2.8	0.7	2.8
20	6.1	2.5	5.0	2.0	4.1	1.6	2.3	2.3	1.1	2.2	0.5	2.2
25	4.8	3.0	3.7	2.3	3.7	2.3	1.8	1.8	0.9	1.8	0.4	1.8
32	2.6	2.7	2.6	2.6	2.6	2.7	1.4	1.4	0.7	1.4	0.3	1.4
40	2.2	3.4	2.1	3.3	2.1	3.3	1.1	1.1	0.6	1.2	0.3	1.2
50	1.6	4.0	1.4	3.6	1.4	3.6	0.9	0.9	0.5	1.0	0.2	1.0
63	1.3	5.0	1.3	5.0	1.3	5.0	0.7	0.7	0.4	0.8	0.2	0.8

¹⁾ Average values per protected pole

²⁾ For TN network, U₀ = AC 230 V, according to EN 60364-4-41; if the measured value exceeds the table value, we recommend to use residual current circuit breaker

Correction of rated current I_n

Correction of circuit breaker rated current I_{n1} is determined by relation I_{n1} = K_T x K_N x I_n where:

I_{n1} ... is corrected rated current of the circuit breaker

I_n ... is rated current of the circuit breaker (i.e. the one placed separately at reference temperature 30 °C)

K_T ... is correction factor taking ambient temperature into account

K_N ... is correction factor taking into account placement of more loaded circuit breakers side-by-side

1) Correction factor K_T

For concrete circuit breaker type (I_n, characteristic, number of poles), determine correction curve number (1, 2 or 3) in the table, and using the correction curve number and given ambient temperature on the graph, determine correction factor K_T.

Characteristic	Number pole	Rated current of the circuit breaker I _n [A]														
		0.5	1	1.6	2	4	6	10	13	16	20	25	32	40	50	63
		Correction curve number														
B	1	-	3	-	3	2	2	1	1	1	1	1	1	1	1	1
	1+N, 2	-	3	-	3	3	3	1	1	1	1	1	1	2	1	1
	3, 3+N	-	3	-	3	3	3	1	2	2	2	2	2	2	2	2
C	1	2	2	3	3	2	2	1	1	1	1	2	1	1	1	1
	1+N, 2	2	2	3	3	2	2	1	1	1	2	2	1	1	1	2
	3	2	2	3	3	3	3	1	2	2	2	2	1	2	2	2
D	3+N	2	2	3	3	3	3	1	2	2	2	2	2	2	2	2
	1	2	3	3	3	2	2	1	1	1	1	1	1	1	1	1
	1+N, 2	2	3	3	3	2	2	1	1	1	1	1	1	2	1	2
	3, 3+N	2	3	3	3	3	3	1	1	1	1	2	2	2	2	2

2) Correction factor K_N

Determine correction factor K_N according to the number of circuit breakers placed side-by-side.

Correction factor K _N for circuit breakers placed side-by-side				
Number of circuit breakers side-by-side	1	2 ÷ 3	4 ÷ 6	> 7
Correction factor K _N	1.00	0.90	0.88	0.85

Example

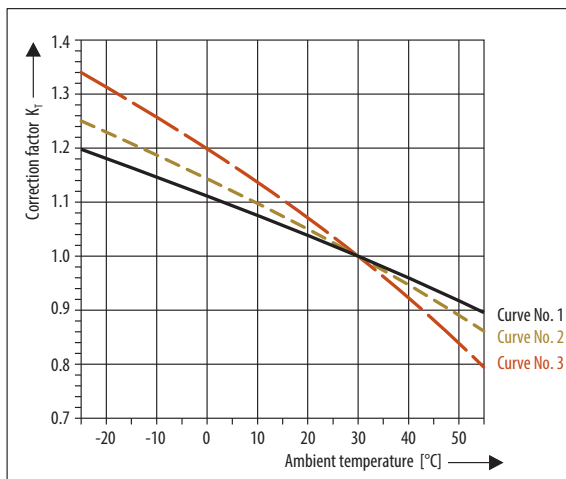
Task: how rated current I_n = 32 A will change for circuit breaker LTS-32C-3 at ambient temperature 10 °C and for 4 circuit breakers placed side-by-side?

Determination of K_T: for characteristic C, number of poles 3, and I_n 32 A, it is possible to take correction curve No. 1 from the table. For intersection of the correction curve No. 1 and ambient temperature 10 °C it is possible to determine correction factor K_T = 1.07 on the vertical scale of the graph.

Determination of K_N: for 4 circuit breakers LTS-32C-1 placed side-by-side it is possible to determine from the table correction factor K_N = 0.88

Correction I_{n1}: new rated current
 I_{n1} = K_T x K_N x I_n = 1.07 x 0.88 x 32 A = 30.13 A

Correction factor K_T depending on ambient temperature



MINIATURE CIRCUIT BREAKERS LTS

Selectivity and short-circuit current with backup fuse

Selectivity of LTS miniature circuit breakers of characteristic B with backup fuses [kA]

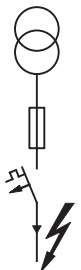
I _n [A]	Fuse of type gG								
	16 A	20 A	25 A	35 A	40 A	50 A	63 A	80 A	100 A
1	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2	0.6	1	3.3	10.0	10.0	10.0	10.0	10.0	10.0
4	0.4	0.5	0.9	2.1	2.7	3.8	10.0	10.0	10.0
6	0.4	0.5	0.8	1.9	2.3	3.1	6.7	10.0	10.0
8	-	0.5	0.8	1.7	2.0	2.6	5.0	6.2	10.0
10	-	0.5	0.7	1.5	1.7	2.2	4.0	4.9	10.0
13	-	0.4	0.7	1.4	1.6	2.1	3.5	4.2	8.4
16	-	0.4	0.6	1.2	1.5	1.9	3.1	3.8	7.2
20	-	-	0.6	1.2	1.4	1.8	2.9	3.5	6.6
25	-	-	-	1.1	1.3	1.6	2.7	3.2	5.7
32	-	-	-	-	1.1	1.4	2.3	2.8	4.9
40	-	-	-	-	-	1.4	2.3	2.8	4.9
50	-	-	-	-	-	-	1.9	2.3	3.9
63	-	-	-	-	-	-	-	2.3	3.6

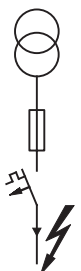
Selectivity of LTS miniature circuit breakers of characteristic D with backup fuses [kA]

I _n [A]	Fuse of type gG								
	16 A	20 A	25 A	35 A	40 A	50 A	63 A	80 A	100 A
0.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1	0.6	0.9	2.0	10.0	10.0	10.0	10.0	10.0	10.0
1.6	0.5	0.6	1.1	3.5	4.9	9.1	10.0	10.0	10.0
2	0.4	0.6	0.9	2.5	3.2	4.4	10.0	10.0	10.0
4	-	0.5	0.7	1.6	2.0	2.6	5.0	6.4	10.0
6	-	0.4	0.7	1.3	1.6	2.1	3.7	4.6	10.0
8	-	0.6	1.1	1.2	1.6	2.6	3.2	6.0	6.0
10	-	0.6	1.1	1.2	1.6	2.6	3.2	6.0	6.0
13	-	0.5	1.0	1.1	1.4	2.3	2.8	5.0	5.0
16	-	0.5	1.0	1.1	1.4	2.3	2.8	5.0	5.0
20	-	0.5	0.9	1.1	1.4	2.2	2.7	4.7	4.7
25	-	-	0.9	1.1	1.4	2.2	2.7	4.7	4.7
32	-	-	-	0.9	1.2	1.9	2.4	4.1	4.1
40	-	-	-	-	1.2	1.9	2.4	4.1	4.1
50	-	-	-	-	-	1.6	2.0	3.1	3.1
63	-	-	-	-	-	-	2.0	3.1	3.1

Max. short-circuit current with backup fuse [kA]

In case that short-circuit current passing through the circuit breaker is not known in the place of installation or is higher than breaking capacity of the circuit breaker, backup fuse must be used to eliminate circuit breaker overload.

Characteristic B	I _n [A]	Backup fuse of gG type					
		50 A	63 A	80 A	100 A	125 A	160 A
	1	50	50	70	25	25	25
	2	50	50	70	25	25	25
	4	50	50	70	25	25	25
	6	50	50	70	25	25	25
	8	50	50	70	20	20	20
	10	50	50	70	20	20	20
	13	50	50	70	15	15	15
	16	50	50	70	15	15	15
	20	50	50	70	25	25	25
	25	50	50	70	25	25	25
	32	50	50	70	25	25	25
	40	-	50	70	10	10	10
	50	-	-	70	10	10	10
	63	-	-	-	10	10	10

Characteristic D	I _n [A]	Backup fuse of gG type					
		50 A	63 A	80 A	100 A	125 A	160 A
	0.5	50	50	70	25	25	25
	1	50	50	70	25	25	25
	1.6	50	50	70	25	25	25
	2	50	50	70	25	25	25
	4	50	50	70	25	25	25
	6	50	50	25	25	25	25
	8	50	50	25	20	20	20
	10	50	50	10	10	10	10
	13	50	50	15	15	15	15
	16	50	50	70	25	25	25
	20	50	50	70	25	25	25
	25	50	50	70	25	25	25
	32	50	50	70	25	25	25
	40	-	50	70	10	10	10
	50	-	-	70	10	10	10
	63	-	-	-	10	10	10

Selectivity of LTS miniature circuit breakers of characteristic C with backup fuses [kA]

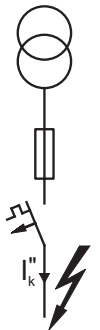
I _n [A]	Fuse of type gG								
	16 A	20 A	25 A	35 A	40 A	50 A	63 A	80 A	100 A
0.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1	0.8	1.6	8.3	10.0	10.0	10.0	10.0	10.0	10.0
1.6	0.5	0.8	1.6	10.0	10.0	10.0	10.0	10.0	10.0
2	0.4	0.6	1.0	2.9	3.9	5.9	10.0	10.0	10.0
4	-	0.5	0.8	1.9	2.3	3.1	6.1	7.9	10.0
6	-	0.5	0.7	1.4	1.7	2.3	4.2	5.3	10.0
8	-	-	0.6	1.1	1.3	1.7	3.0	3.7	8.0
10	-	-	0.6	1.1	1.3	1.7	3.0	3.7	8.0
13	-	-	0.6	1.1	1.2	1.6	2.5	3.1	5.8
16	-	-	0.6	1.1	1.2	1.6	2.5	3.1	5.8
20	-	-	0.5	1.0	1.1	1.4	2.3	2.8	5.1
25	-	-	-	1.0	1.1	1.4	2.3	2.8	5.1
32	-	-	-	-	1.0	1.3	2.1	2.5	4.4
40	-	-	-	-	-	1.3	2.1	2.5	4.4
50	-	-	-	-	-	-	1.8	2.2	3.5
63	-	-	-	-	-	-	-	2.2	3.5

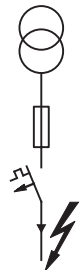
The time selectivity of particular combination up to the value of short-circuit current I_k'' shown in the table is ensured in case of short-circuit behind the LTS circuit breaker with back-up fuse-link.

Which means that at short-circuit of particular combination under the I_k'' value only the circuit breaker actuates. In case the short-circuit current value is bigger than I_k'' value then also the back-up fuse-link actuates.

Example:

Miniature circuit breaker LTS-10B-.. actuates earlier than back-up fuse-link with rated current 50 A up to short-circuit current 2.2 kA.

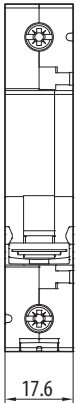


Characteristic C	I _n [A]	Backup fuse of gG type					
		50 A	63 A	80 A	100 A	125 A	160 A
	0.5	50	50	70	25	25	25
	1	50	50	70	25	25	25
	1.6	50	50	70	25	25	25
	2	50	50	70	25	25	25
	4	50	50	70	25	25	25
	6	50	50	25	25	25	25
	8	50	50	25	20	20	20
	10	50	50	10	10	10	10
	13	50	50	15	15	15	15
	16	50	50	70	25	25	25
	20	50	50	70	25	25	25
	25	50	50	70	25	25	25
	32	50	50	70	25	25	25
	40	-	50	70	10	10	10
	50	-	-	70	10	10	10
	63	-	-	-	10	10	10

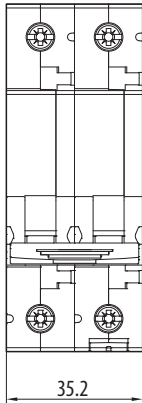
MINIATURE CIRCUIT BREAKERS LTS

Dimensions

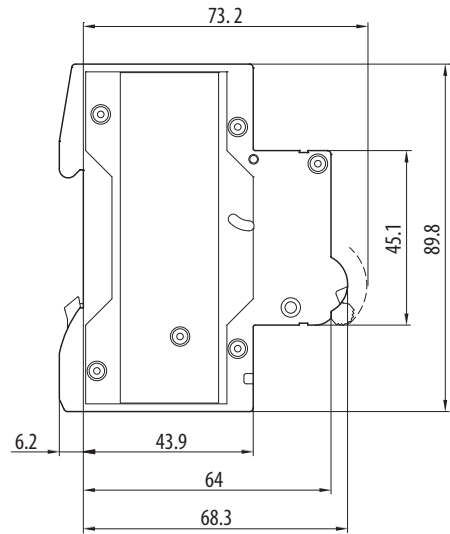
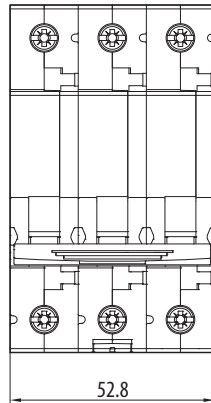
LTS...-1



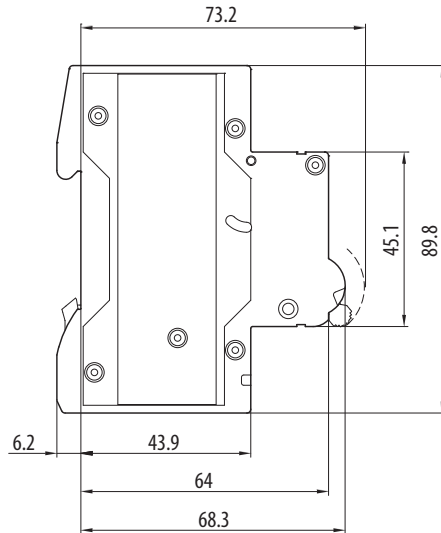
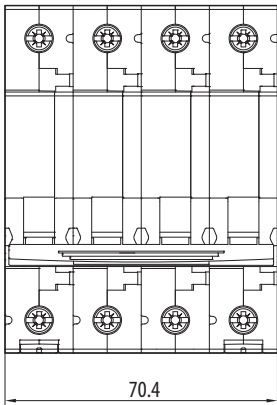
LTS...-2
LTS...-1N



LTS...-3



LTS...-3N

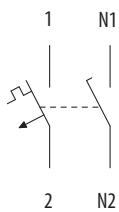


Diagram

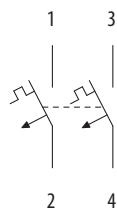
LTS...-1



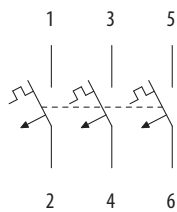
LTS...-1N



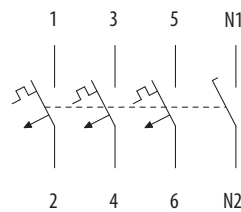
LTS...-2



LTS...-3

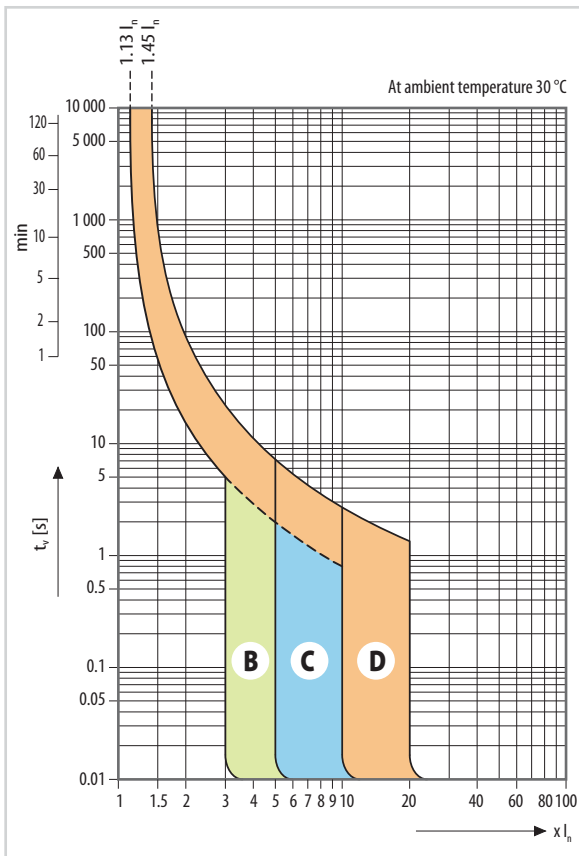


LTS...-3N



MINIATURE CIRCUIT BREAKERS LTS

Characteristics



- **Characteristic B:** for protection of line of electrical circuits with equipment, which does not cause current surges. The short-circuit release is set to $(3 \div 5) I_n$.
- **Characteristic C:** for protection of line of electrical circuits with equipment, which causes current surges. The short-circuit release is set to $(5 \div 10) I_n$.
- **Characteristic D:** for protection of line of electrical circuits with equipment, which causes high current surges. The short-circuit release is set to $(10 \div 20) I_n$.

Tripping characteristics of circuit breakers according to EN 60898-1

Thermal release	Tripping characteristic type	
	B	C, D
Conventional non-tripping current I_m for $t \geq 1$ hr	$I_m = 1.13 I_n$	
Conventional tripping current I_t for $t < 1$ hr	$I_t = 1.45 I_n$	
Current I_3 for	$1 s < t < 60 s$ (for $I_n \leq 32 A$) $1 s < t < 120 s$ (for $I_n > 32 A$)	$I_3 = 2.55 I_n$

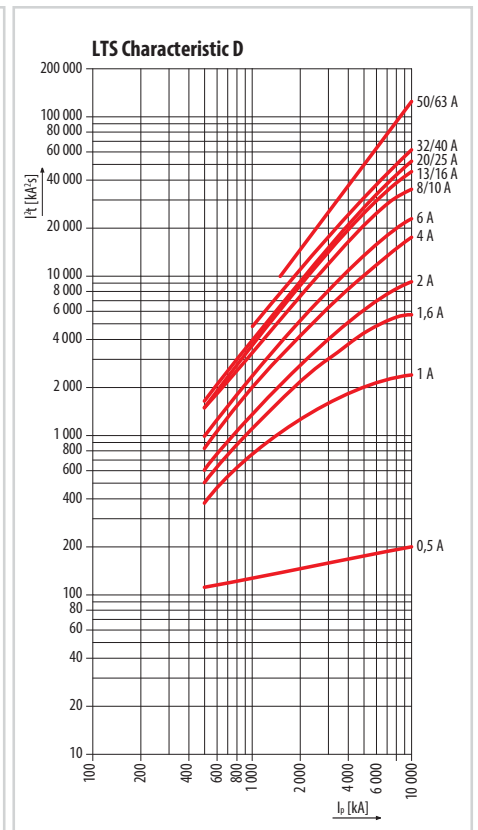
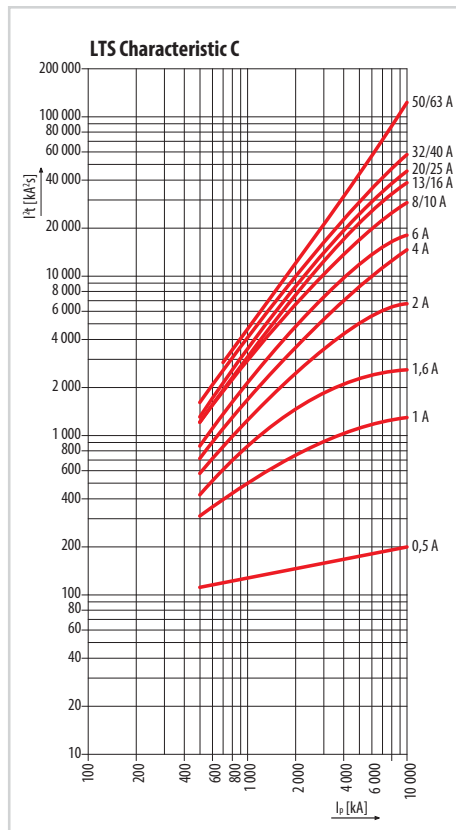
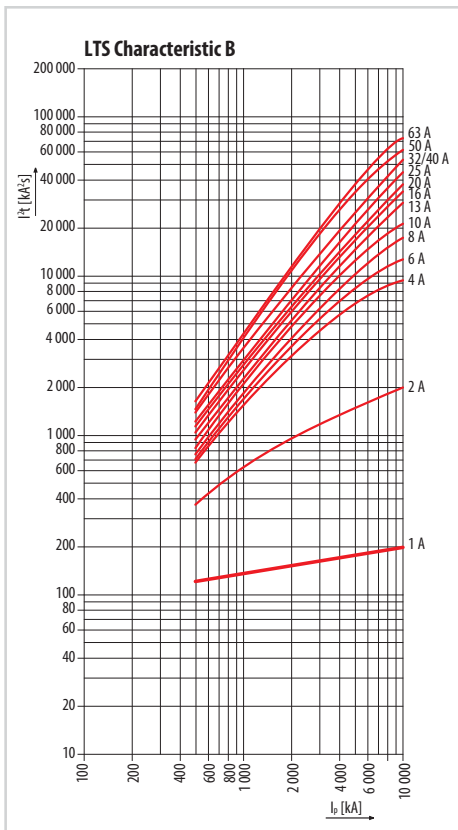
t - break time of the circuit breaker

Electromagnetic release	Tripping characteristic type		
	B	C	D
Current I_4 for	$0.1 s < t < 45 s$ (for $I_n \leq 32 A$) $0.1 s < t < 90 s$ (for $I_n > 32 A$) $0.1 s < t < 15 s$ (for $I_n \leq 32 A$) $0.1 s < t < 30 s$ (for $I_n > 32 A$) $0.1 s < t < 4 s^{1)}$ (for $I_n \leq 32 A$) $0.1 s < t < 8 s$ (for $I_n > 32 A$)	$I_4 = 3 I_n$	$I_4 = 5 I_n$
Current I_5 for	$t < 0.1 s$	$I_5 = 5 I_n$	$I_5 = 10 I_n$ $I_5 = 20 I_n$

t - break time of the circuit breaker

¹⁾ for $I_n \leq 10 A$ it is permissible that $t < 8 s$

Characteristics I²t



ACCESSORIES



Auxiliary switches

- Accessory to:
 - miniature circuit breakers LTP, LTS, LVN, LTN-UC
 - residual current circuit breakers: LFN, LFE
 - switches: MSO, AVN-DC
- For signalling the position of contacts of the device in switching off by releases or manually, i.e. in switching off by overload, short-circuit, shunt trip or undervoltage release, residual current and manually by control lever.
- Mounting:
 - on the right side of the device
 - 2 auxiliary switches can be connected to one device in combination with the other accessories - see page B40.
- Width 9 mm.
- Auxiliary switch function can be checked by test lever on the front side of the device (version PS-...-TE).
- Variant for switching small direct current voltages up to DC 30 V.
- They are suitable for application in SELV and PELV circuits - sufficient insulation is provided between the circuit breaker and the auxiliary switch.

Design	Arrangement of contacts ¹⁾	Type	Order code	Number of modules	Weight [kg]	Package [pcs]
Standard	11	PS-LT-1100	OEZ:42297	0.5	0.065	1
	20	PS-LT-2000	OEZ:42299	0.5	0.071	1
	02	PS-LT-0200	OEZ:42298	0.5	0.065	1
With test lever	11	PS-LT-1100-TE	OEZ:42300	0.5	0.054	1
	20	PS-LT-2000-TE	OEZ:42302	0.5	0.058	1
	02	PS-LT-0200-TE	OEZ:42301	0.5	0.080	1
For small voltages standard	11	PS-LT-1100-MN	OEZ:42303	0.5	0.075	1
For small voltages with test lever	11	PS-LT-1100-MN-TE	OEZ:42304	0.5	0.054	1

¹⁾ Each digit indicates successively the number of make and break contacts



Signal switches

- Accessory to:
 - miniature circuit breakers LTP, LTS, LVN, LTN-UC
 - residual current circuit breakers: LFN, LFE
- For position signalling of main contacts of the device in switching off by releases, i.e. in switching off by overload, short-circuit, shunt trip and undervoltage release or residual current.
- Mounting:
 - on the right side of the device
 - 2 signal switches can be connected to one device in combination with the other accessories - see page B40.
- Auxiliary switch function can be checked by test lever on the front side of the device (version SS-...-TE).
- Signal switch can be reset by means of the red reset lever on the front side of the device without switching the device on by the control lever (version SS-...-RE).
- They are suitable for application in SELV and PELV circuits - sufficient insulation is provided between the circuit breaker and the signal switch

Design	Arrangement of contacts ¹⁾	Type	Order code	Number of modules	Weight [kg]	Package [pcs]
Standard	11	SS-LT-1100	OEZ:42306	0.5	0.065	1
	20	SS-LT-2000	OEZ:42307	0.5	0.075	1
	02	SS-LT-0200	OEZ:42308	0.5	0.078	1
With test lever	11	SS-LT-1100-TE-RE	OEZ:42309	0.5	0.055	1
	20	SS-LT-2000-TE-RE	OEZ:42310	0.5	0.057	1
	02	SS-LT-0200-TE-RE	OEZ:42311	0.5	0.057	1

¹⁾ Each digit indicates successively the number of make and break contacts

ACCESSORIES



Shunt trips

- Accessory to:
 - miniature circuit breakers LTS, LVN, LTN-UC
 - residual current circuit breakers: LFN, LFE
- They are used for device switching off by applied voltage.
- Mounting:
 - on the right side of the device
 - one shunt trip can be connected to one device in combination with the other accessories - see page B40.

Rated voltage U_c	Type	Order code	Number of modules	Weight [kg]	Package [pcs]
AC/DC 24 ÷ 60 V	SV-LT-X060	OEZ:42312	1	0.106	1
AC 110 ÷ 415 V / DC 110 V	SV-LT-X400	OEZ:42313	1	0.098	1

Undervoltage releases

- Accessory to:
 - miniature circuit breakers LTS, LVN, LTN-UC
 - residual current circuit breakers: LFN, LFE
- They are used for tripping the device at loss of voltage as well as at gradual decrease of voltage.
- They are used for elimination of closing of circuit breaker if voltage is lower than 35 % U_c (switching is possible at voltage higher than 85 % U_c).
- They are often used for protection against device restart following mains failure.
- Mounting:
 - on the right side of the device
 - one undervoltage release can be connected to one device in combination with the other accessories - see page B40.

Rated voltage U_c	Arrangement of contacts ¹⁾	Type	Order code	Number of modules	Weight [kg]	Package [pcs]
AC 230 V	-	SP-LT-A230	OEZ:42315	1	0.109	1
	20	SP-LT-A230-2000	OEZ:42317	1	0.123	1
DC 24 V	-	SP-LT-D024	OEZ:42319	1	0.113	1
	20	SP-LT-D024-2000	OEZ:42321	1	0.117	1
DC 110 V	-	SP-LT-D110	OEZ:42320	1	0.105	1
	20	SP-LT-D110-2000	OEZ:42322	1	0.128	1

¹⁾ Each digit indicates successively the number of make and break contacts

ACCESSORIES



Locking insert OD-LT-VU01

- Accessory to:
 - miniature circuit breakers LVN, LTN-UC
 - residual current circuit breakers: OLI, OLE
 - switches: AVN-DC
- For safe locking of the control lever in off or on position.
- The protective function of the devices is functional even in locked position.
- Maximum diameter of lock rod - 3 mm.
- The lock is not included in the package.

Type	Order code	Weight [kg]	Package [pcs]
OD-LT-VU01	OEZ:42324	0.012	1



Locking insert OD-LT-VU02

- Accessory to:
 - miniature circuit breakers: LTP, LTS, LVN, LTN-UC
 - residual current circuit breakers: OLI, OLE, LFN, LFE
 - switches: MSO, AVN-DC
- For safe locking of the control lever in off or on position.
- The protective function of the devices is functional even in locked position.
- Maximum diameter of lock rod - 6 mm.
- The lock is not included in the package.
- **In installation it is necessary to press the fixing springs of the insert by two fingers against each other, and then slide them in the holes in the circuit breaker. In case of pressing the insert against the circuit breaker body a part of the plastic cover could break off!**

Type	Order code	Weight [kg]	Package [pcs]
OD-LT-VU02	OEZ:42325	0.003	1



Sealing insert OD-LT-VP01

- Accessory to:
 - miniature circuit breakers LTP, LTS, LVN, LTN-UC
 - residual current circuit breakers: OLI, OLE
 - switches: MSO, AVN-DC
- For covering and sealing of terminal screws.

Type	Order code	Weight [kg]	Package [pcs]
OD-LT-VP01	OEZ:42323	0.002	1

ACCESSORIES





Specifications of auxiliary and signal switches

Type				PS-LT SS-LT	PS-LT-1100-MN PS-LT-1100-MN-TE
Standards				EN 60947-5-1 EN 62019	EN 60947-5-1 EN 62019
Approval marks					
Arrangement of contacts ¹⁾				11, 20, 02	11, 20, 02
Rated operating voltage/current	U_e/I_e	AC-13	400 V	2 A	-
			230 V	6 A	-
		AC-14	400 V	2 A	-
			230 V	6 A	-
		DC-13	220 V	1 A	-
			110 V	1 A	-
			60 V	3 A	-
		24 V	6 A	-	
Max. voltage/current				-	DC 30 V / 50 mA
Min. voltage/current				24 V / 50 mA	DC 5 V / 1 mA
Backup protection - fuse / miniature circuit breaker				6 A gG / 6A characteristic B, C	6 A gG / 6A characteristic B, C
Mechanical endurance				10 000 operating cycles	10 000 operating cycles
Electrical endurance at I_e				10 000 operating cycles	10 000 operating cycles
Degree of protection				IP20	IP20
Connection					
Conductor Cu rigid (solid, stranded)				0.5 ÷ 2.5 mm ²	0.5 ÷ 2.5 mm ²
Conductor Cu flexible				0.5 ÷ 2.5 mm ²	0.5 ÷ 2.5 mm ²
Torque				0.5 Nm	0.5 Nm
Connection				top/bottom	top/bottom
Operating conditions					
Ambient temperature				-25 ÷ +55 °C	-25 ÷ +55 °C
Working position				arbitrary	arbitrary
Climatic resistance dle IEC 60068-2-30				28 operating cycles	28 operating cycles
Shocks (EN 60068-2-27)		m/s^2		150 za 11 ms half-sine pulse	150 za 11 ms half-sine pulse
Vibration resistance according to 60068-2-6		m/s^2		50 at 10 ÷ 150 Hz	50 at 10 ÷ 150 Hz

¹⁾ Each digit indicates successively the number of make and break contacts

ACCESSORIES

Specifications of shunt trips and undervoltage releases

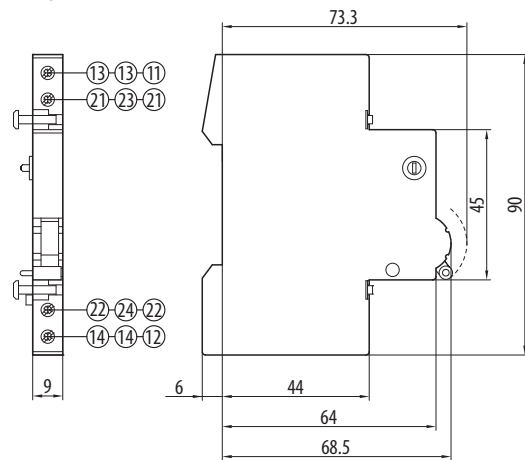
Type		SV-LT	SP-LT
Standards		EN 60947-1	EN 60947-1
Approval marks		 	 
Mounting		on the right side of the device	on the right side of the device
Degree of protection		IP20	IP20
Control circuit coil			
Rated voltage	U_c	AC/DC 24 ÷ 60 V	AC 230 V
Range of rated voltage		AC 110 ÷ 415 V / DC 110 V	DC 24, 110 V
Voltage range for switching off		$0.7 \div 1.1 U_c$	$0.85 \div 1.1 U_c$
Voltage range for switching off		-	$< 0.35 \div 0.7 U_c$
Rated frequency	f_n	50/60 Hz	50/60 Hz
Backup protection - fuse / miniature circuit breaker		6 A gG / 6 A characteristic B, C	6 A gG / 6 A characteristic B, C
Contact			
Arrangement of contacts ¹⁾		-	20
Rated operating voltage/current	U_c/I_c	AC-1	230 V / 6 A
Min. voltage/current		-	24 V / 50 mA
Backup protection - fuse / miniature circuit breaker		-	6 A gG / 6 A char. B, C
Connection			
Conductor Cu rigid (solid, stranded)		0.5 ÷ 2.5 mm ²	0.5 ÷ 2.5 mm ²
Conductor Cu flexible		0.5 ÷ 2.5 mm ²	0.5 ÷ 2.5 mm ²
Torque		0.8 Nm	0.8 Nm
Connection		top/bottom	top/bottom
Operating conditions			
Mechanical endurance		10 000 operating cycles	10 000 operating cycles
Electrical endurance		2 000 operating cycles	2 000 operating cycles
Ambient temperature		-25 ÷ +55 °C	-25 ÷ +55 °C
Working position		arbitrary	arbitrary
Climatic resistance according to IEC 60068-2-30		28 operating cycles	28 operating cycles
Shocks (EN 60068-2-27)	m/s^2	50 za 11 ms half-sine pulse	50 za 11 ms half-sine pulse
Vibration resistance according to IEC 60068-2-6	m/s^2	50 at 10 ÷ 150 Hz	50 at 10 ÷ 150 Hz

¹⁾ Each digit indicates successively the number of make and break contacts

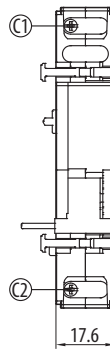
ACCESSORIES

Dimensions

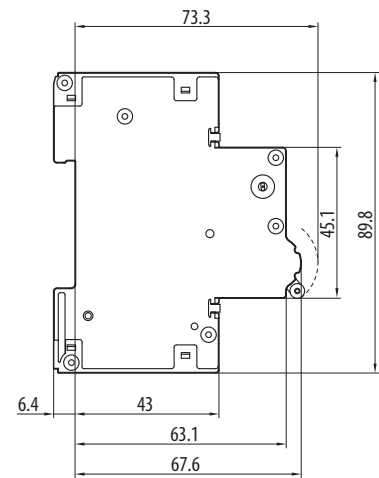
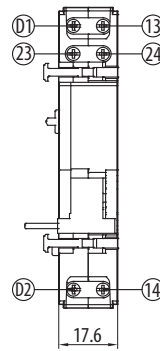
PS-LT, SS-LT



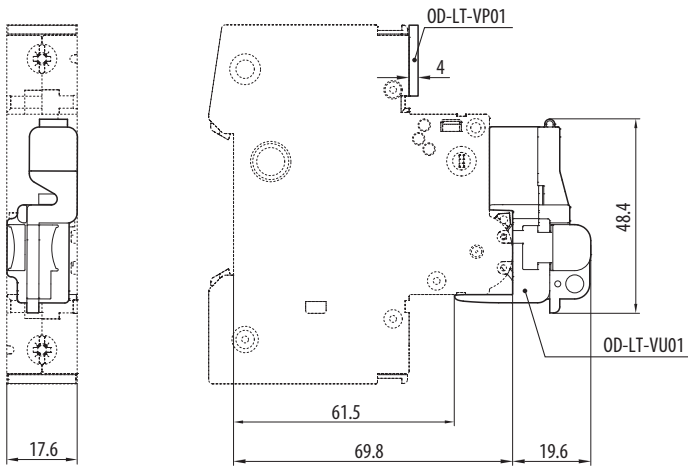
SV-LT



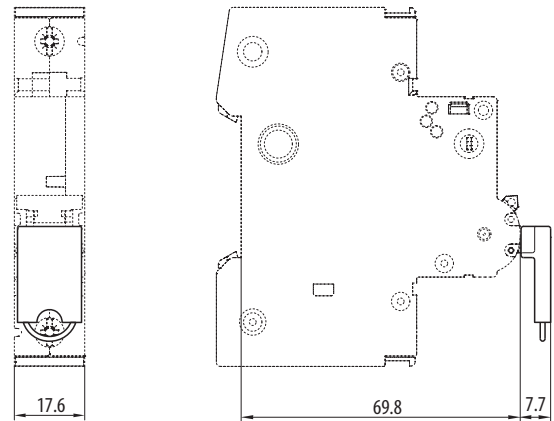
SP-LT



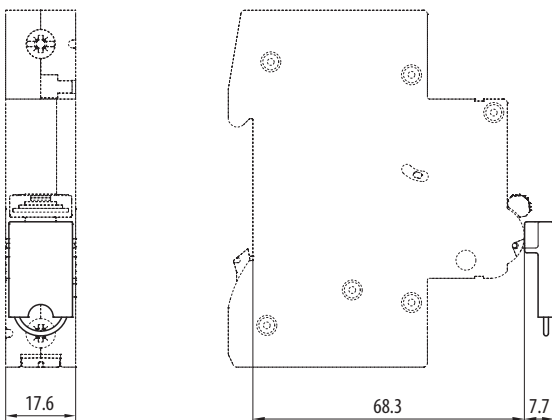
LTN-UC, LVN + OD-LT-VU01 + OD-LT-VP01



LTN-UC, LVN + OD-LT-VU02

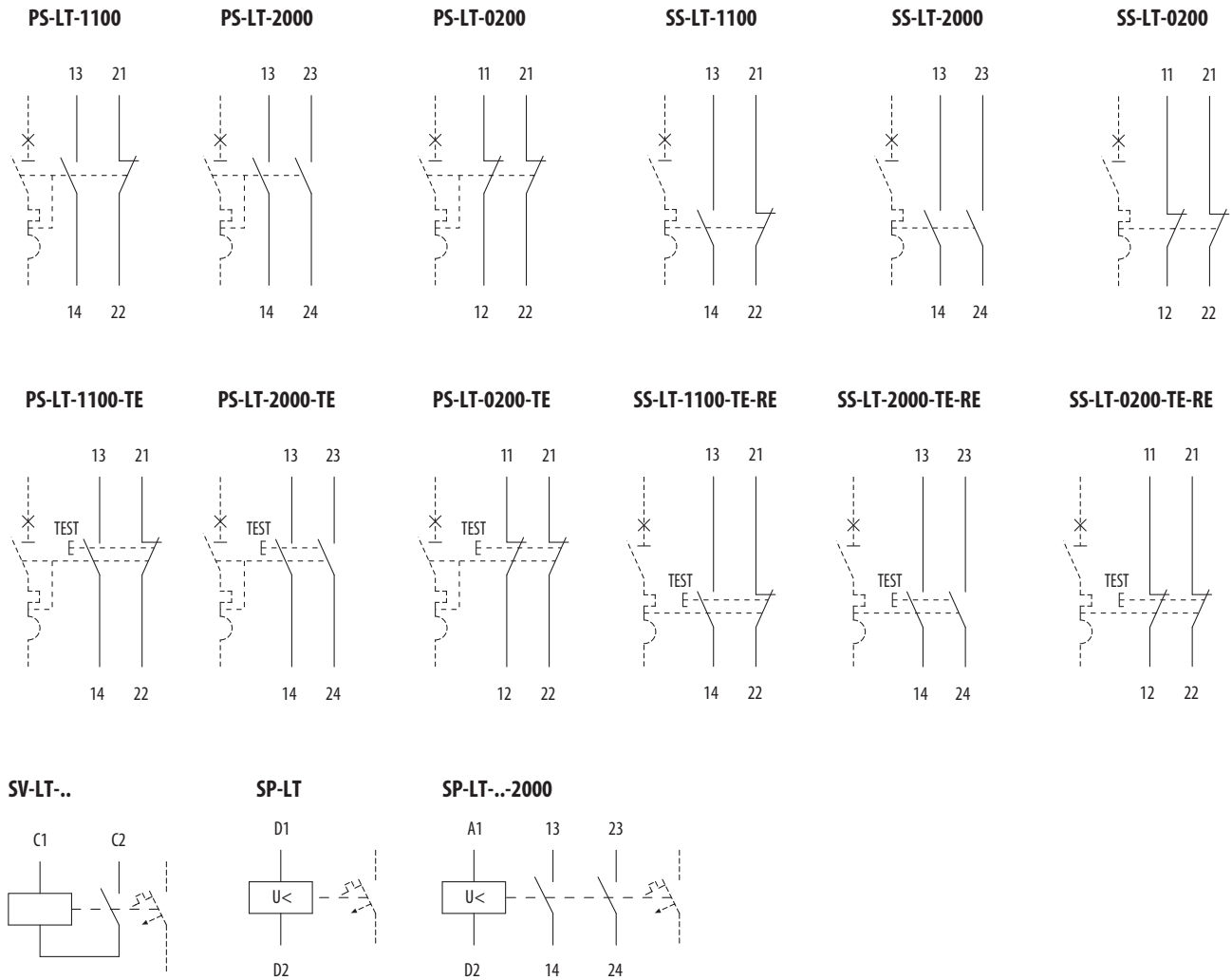


LTP, LTS + OD-LT-VU02



ACCESSORIES

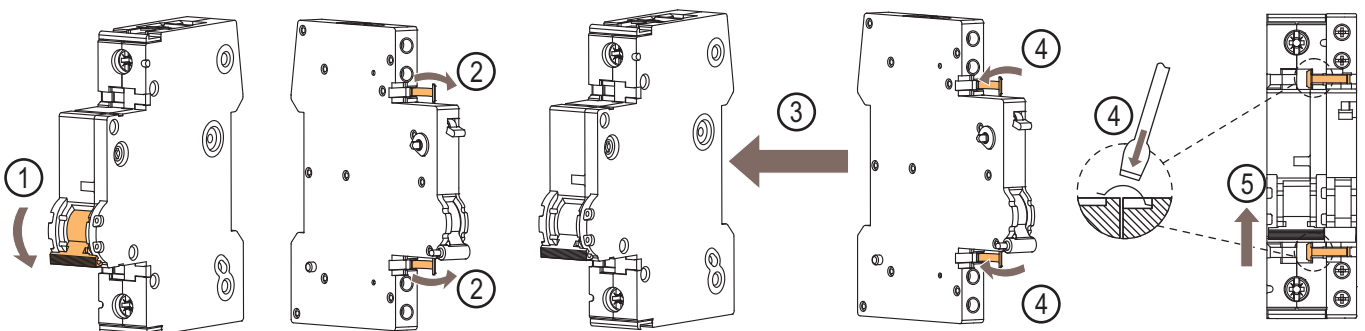
Diagram



Installation of auxiliary switch, shunt trips or undervoltage releases

For installation of an auxiliary switch, shunt trip or undervoltage releases on a circuit breaker, residual current circuit breaker or switch, the same procedure shall apply as described on the example of installation of the auxiliary switch on the circuit breaker in the following points.

1. In mounting the levers of auxiliary switch and of the circuit breaker are in OFF position.
2. Tilt both fixing springs of the auxiliary switch to the right so that they do not get between the auxiliary switch and circuit breaker in installation.
3. Slide the auxiliary switch onto the circuit breaker from the right.
4. Lock the fixing springs in the circuit breaker body so that the auxiliary switch cannot release.
5. Check correct function by switching.



ACCESSORIES

Combination of accessories

