

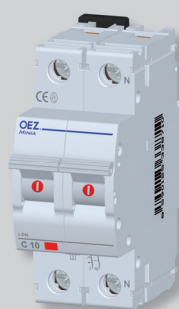
MINIATURE CIRCUIT BREAKERS LPN UP TO 63 A (10 kA)

- For building, commercial and industrial installations up to 63 A 230/400 V a.c. and 220/440 V d.c.
- For protection of cables and conductors against overload and short-circuit.
- Tripping characteristics B, C, D according to EN 60898.
- Current-limiting circuit breakers.
- Wide range of accessories – auxiliary and relative switches, undervoltage releases and shunt trips, interconnecting busbars etc.
- Breaking capacity I_{cn} 10 kA – to achieve higher I_{cn} (up to 120 kA) it is recommended to use cylindrical fuse-links PV in fuse switch-disconnectors.
- Possibility of interconnection with residual current circuit breakers OLE (OLI) and OFE (OFI) by means of interconnecting busbars.
- Possibility of locking and sealing in off or on position.
- N-pole of circuit breakers LPN-...-1N and LPN-...-3N contains neither thermal nor short-circuit release, in switching on it closes before and in switching off it opens after the other poles.
- For circuit breakers LPN-DC-... device polarity must be always observed in connecting.



Miniature circuit breakers, 1-pole

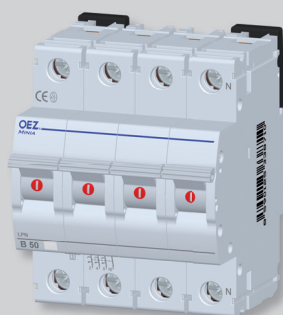
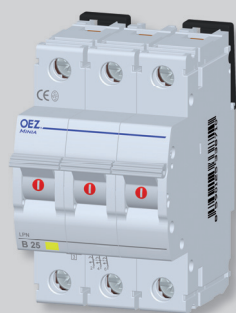
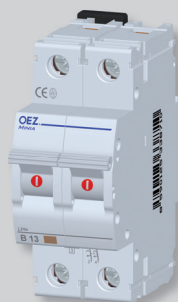
I_n [A]	Characteristic B		Characteristic C		Characteristic D		Number of modules	Weight [kg]	Package [pcs]
	Type	Product code	Type	Product code	Type	Product code			
0.2	LPN-0,2B-1	34159	LPN-0,2C-1	33880	LPN-0,2D-1	33901	1	0.135	12
0.4	LPN-0,4B-1	34160	LPN-0,4C-1	33881	LPN-0,4D-1	33902	1	0.135	12
0.5	-	-	LPN-0,5C-1	33882	LPN-0,5D-1	33903	1	0.135	12
0.6	LPN-0,6B-1	34161	LPN-0,6C-1	33883	LPN-0,6D-1	33904	1	0.135	12
0.8	LPN-0,8B-1	33863	LPN-0,8C-1	33884	LPN-0,8D-1	33905	1	0.135	12
1	LPN-1B-1	33864	LPN-1C-1	33885	LPN-1D-1	33906	1	0.135	12
1.2	LPN-1,2B-1	33865	LPN-1,2C-1	33886	LPN-1,2D-1	33907	1	0.135	12
1.6	LPN-1,6B-1	33866	LPN-1,6C-1	33887	LPN-1,6D-1	33908	1	0.135	12
2	LPN-2B-1	33867	LPN-2C-1	33888	LPN-2D-1	33909	1	0.135	12
4	LPN-4B-1	33868	LPN-4C-1	33889	LPN-4D-1	33910	1	0.135	12
6	LPN-6B-1	33869	LPN-6C-1	33890	LPN-6D-1	33911	1	0.135	12
8	LPN-8B-1	33870	LPN-8C-1	33891	LPN-8D-1	33912	1	0.135	12
10	LPN-10B-1	33871	LPN-10C-1	33892	LPN-10D-1	33913	1	0.135	12
13	LPN-13B-1	33872	LPN-13C-1	33893	LPN-13D-1	33914	1	0.135	12
16	LPN-16B-1	33873	LPN-16C-1	33894	LPN-16D-1	33915	1	0.135	12
20	LPN-20B-1	33874	LPN-20C-1	33895	LPN-20D-1	33916	1	0.135	12
25	LPN-25B-1	33875	LPN-25C-1	33896	LPN-25D-1	33917	1	0.135	12
32	LPN-32B-1	33876	LPN-32C-1	33897	LPN-32D-1	33918	1	0.135	12
40	LPN-40B-1	33877	LPN-40C-1	33898	LPN-40D-1	33919	1	0.135	12
50	LPN-50B-1	33878	LPN-50C-1	33899	LPN-50D-1	33920	1	0.135	12
63	LPN-63B-1	33879	LPN-63C-1	33900	LPN-63D-1	33921	1	0.135	12



Miniature circuit breakers 1+N-pole

I_n [A]	Characteristic B		Characteristic C		Characteristic D		Number of modules	Weight [kg]	Package [pcs]
	Type	Product code	Type	Product code	Type	Product code			
2	-	-	LPN-2C-1N	33933	-	-	2	0.25	6
4	-	-	LPN-4C-1N	33934	-	-	2	0.25	6
6	LPN-6B-1N	33922	LPN-6C-1N	33935	LPN-6D-1N	33946	2	0.25	6
8	LPN-8B-1N	33923	LPN-8C-1N	33936	LPN-8D-1N	33947	2	0.25	6
10	LPN-10B-1N	33924	LPN-10C-1N	33937	LPN-10D-1N	33948	2	0.25	6
13	LPN-13B-1N	33925	LPN-13C-1N	33938	LPN-13D-1N	33949	2	0.25	6
16	LPN-16B-1N	33926	LPN-16C-1N	33939	LPN-16D-1N	33950	2	0.25	6
20	LPN-20B-1N	33927	LPN-20C-1N	33940	LPN-20D-1N	33951	2	0.25	6
25	LPN-25B-1N	33928	LPN-25C-1N	33941	LPN-25D-1N	33952	2	0.25	6
32	LPN-32B-1N	33929	LPN-32C-1N	33942	LPN-32D-1N	33953	2	0.25	6
40	LPN-40B-1N	33930	LPN-40C-1N	33943	LPN-40D-1N	33954	2	0.25	6
50	LPN-50B-1N	33931	LPN-50C-1N	33944	LPN-50D-1N	33955	2	0.25	6
63	LPN-63B-1N	33932	LPN-63C-1N	33945	LPN-63D-1N	33956	2	0.25	6

MINIATURE CIRCUIT BREAKERS LPN UP TO 63 A (10 kA)



Miniature circuit breakers, 2-pole

I _n [A]	Characteristic B		Characteristic C		Characteristic D		Number of modules	Weight [kg]	Package [pcs]
	Type	Product code	Type	Product code	Type	Product code			
0.2	-	-	LPN-0,2C-2	33968	LPN-0,2D-2	33989	2	0.26	6
0.4	-	-	LPN-0,4C-2	33969	LPN-0,4D-2	33990	2	0.26	6
0.5	-	-	LPN-0,5C-2	33970	LPN-0,5D-2	33991	2	0.26	6
0.6	-	-	LPN-0,6C-2	33971	LPN-0,6D-2	33992	2	0.26	6
0.8	-	-	LPN-0,8C-2	33972	LPN-0,8D-2	33993	2	0.26	6
1	LPN-1B-2	34162	LPN-1C-2	33973	LPN-1D-2	33994	2	0.26	6
1.2	-	-	LPN-1,2C-2	33974	LPN-1,2D-2	33995	2	0.26	6
1.6	-	-	LPN-1,6C-2	33975	LPN-1,6D-2	33996	2	0.26	6
2	LPN-2B-2	34163	LPN-2C-2	33976	LPN-2D-2	33997	2	0.26	6
4	LPN-4B-2	34164	LPN-4C-2	33977	LPN-4D-2	33998	2	0.26	6
6	LPN-6B-2	33957	LPN-6C-2	33978	LPN-6D-2	33999	2	0.26	6
8	LPN-8B-2	33958	LPN-8C-2	33979	LPN-8D-2	34000	2	0.26	6
10	LPN-10B-2	33959	LPN-10C-2	33980	LPN-10D-2	34001	2	0.26	6
13	LPN-13B-2	33960	LPN-13C-2	33981	LPN-13D-2	34002	2	0.26	6
16	LPN-16B-2	33961	LPN-16C-2	33982	LPN-16D-2	34003	2	0.26	6
20	LPN-20B-2	33962	LPN-20C-2	33983	LPN-20D-2	34004	2	0.26	6
25	LPN-25B-2	33963	LPN-25C-2	33984	LPN-25D-2	34005	2	0.26	6
32	LPN-32B-2	33964	LPN-32C-2	33985	LPN-32D-2	34006	2	0.26	6
40	LPN-40B-2	33965	LPN-40C-2	33986	LPN-40D-2	34007	2	0.26	6
50	LPN-50B-2	33966	LPN-50C-2	33987	-	-	2	0.26	6
63	LPN-63B-2	33967	LPN-63C-2	33988	-	-	2	0.26	6

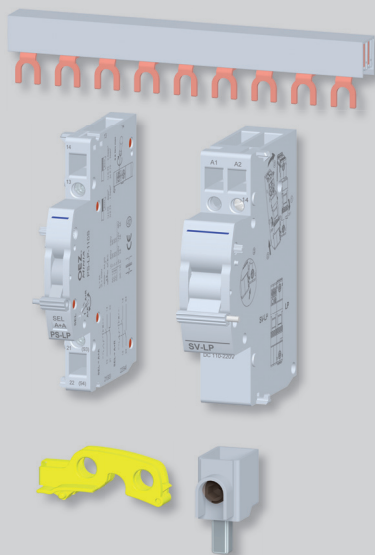
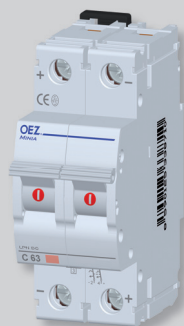
Miniature circuit breakers, 3-pole

I _n [A]	Characteristic B		Characteristic C		Characteristic D		Number of modules	Weight [kg]	Package [pcs]
	Type	Product code	Type	Product code	Type	Product code			
0.2	LPN-0,2B-3	34165	LPN-0,2C-3	34027	LPN-0,2D-3	34048	3	0.39	4
0.4	-	-	LPN-0,4C-3	34028	LPN-0,4D-3	34049	3	0.39	4
0.5	LPN-0,5B-3	34008	LPN-0,5C-3	34029	LPN-0,5D-3	34050	3	0.39	4
0.6	LPN-0,6B-3	34009	LPN-0,6C-3	34030	LPN-0,6D-3	34051	3	0.39	4
0.8	LPN-0,8B-3	34010	LPN-0,8C-3	34031	LPN-0,8D-3	34052	3	0.39	4
1	LPN-1B-3	34011	LPN-1C-3	34032	LPN-1D-3	34053	3	0.39	4
1.2	LPN-1,2B-3	34012	LPN-1,2C-3	34033	LPN-1,2D-3	34054	3	0.39	4
1.6	LPN-1,6B-3	34013	LPN-1,6C-3	34034	LPN-1,6D-3	34055	3	0.39	4
2	LPN-2B-3	34014	LPN-2C-3	34035	LPN-2D-3	34056	3	0.39	4
4	LPN-4B-3	34015	LPN-4C-3	34036	LPN-4D-3	34057	3	0.39	4
6	LPN-6B-3	34016	LPN-6C-3	34037	LPN-6D-3	34058	3	0.39	4
8	LPN-8B-3	34017	LPN-8C-3	34038	LPN-8D-3	34059	3	0.39	4
10	LPN-10B-3	34018	LPN-10C-3	34039	LPN-10D-3	34060	3	0.39	4
13	LPN-13B-3	34019	LPN-13C-3	34040	LPN-13D-3	34061	3	0.39	4
16	LPN-16B-3	34020	LPN-16C-3	34041	LPN-16D-3	34062	3	0.39	4
20	LPN-20B-3	34021	LPN-20C-3	34042	LPN-20D-3	34063	3	0.39	4
25	LPN-25B-3	34022	LPN-25C-3	34043	LPN-25D-3	34064	3	0.39	4
32	LPN-32B-3	34023	LPN-32C-3	34044	LPN-32D-3	34065	3	0.39	4
40	LPN-40B-3	34024	LPN-40C-3	34045	LPN-40D-3	34066	3	0.39	4
50	LPN-50B-3	34025	LPN-50C-3	34046	LPN-50D-3	34067	3	0.39	4
63	LPN-63B-3	34026	LPN-63C-3	34047	LPN-63D-3	34068	3	0.39	4

Miniature circuit breakers, 3+N-pole

I _n [A]	Characteristic B		Characteristic C		Characteristic D		Number of modules	Weight [kg]	Package [pcs]
	Type	Product code	Type	Product code	Type	Product code			
2	LPN-2B-3N	34069	-	-	-	-	4	0.505	3
4	LPN-4B-3N	34070	-	-	-	-	4	0.505	3
6	LPN-6B-3N	34071	LPN-6C-3N	34082	LPN-6D-3N	34093	4	0.505	3
8	LPN-8B-3N	34072	LPN-8C-3N	34083	LPN-8D-3N	34094	4	0.505	3
10	LPN-10B-3N	34073	LPN-10C-3N	34084	LPN-10D-3N	34095	4	0.505	3
13	LPN-13B-3N	34074	LPN-13C-3N	34085	LPN-13D-3N	34096	4	0.505	3
16	LPN-16B-3N	34075	LPN-16C-3N	34086	LPN-16D-3N	34097	4	0.505	3
20	LPN-20B-3N	34076	LPN-20C-3N	34087	LPN-20D-3N	34098	4	0.505	3
25	LPN-25B-3N	34077	LPN-25C-3N	34088	LPN-25D-3N	34099	4	0.505	3
32	LPN-32B-3N	34078	LPN-32C-3N	34089	LPN-32D-3N	34100	4	0.505	3
40	LPN-40B-3N	34079	LPN-40C-3N	34090	LPN-40D-3N	34101	4	0.505	3
50	LPN-50B-3N	34080	LPN-50C-3N	34091	-	-	4	0.505	3
63	LPN-63B-3N	34081	LPN-63C-3N	34092	-	-	4	0.505	3

MINIATURE CIRCUIT BREAKERS LPN UP TO 63 A (10 kA)



DC miniature circuit breakers, 1-pole

I _n [A]	Characteristic C		Number of modules	Weight [kg]	Package [pcs]
	Type	Product code			
2	LPN-DC-2C-1	34115	1	0.14	12
4	LPN-DC-4C-1	34116	1	0.14	12
6	LPN-DC-6C-1	34117	1	0.14	12
8	LPN-DC-8C-1	34118	1	0.14	12
10	LPN-DC-10C-1	34119	1	0.14	12
13	LPN-DC-13C-1	34120	1	0.14	12
16	LPN-DC-16C-1	34121	1	0.14	12
20	LPN-DC-20C-1	34122	1	0.14	12
25	LPN-DC-25C-1	34123	1	0.14	12
32	LPN-DC-32C-1	34124	1	0.14	12
40	LPN-DC-40C-1	34125	1	0.14	12
50	LPN-DC-50C-1	34126	1	0.14	12
63	LPN-DC-63C-1	34127	1	0.14	12

DC miniature circuit breakers, 2-pole

I _n [A]	Characteristic C		Number of modules	Weight [kg]	Package [pcs]
	Type	Product code			
2	LPN-DC-2C-2	34141	2	0.27	6
4	LPN-DC-4C-2	34142	2	0.27	6
6	LPN-DC-6C-2	34143	2	0.27	6
8	LPN-DC-8C-2	34144	2	0.27	6
10	LPN-DC-10C-2	34145	2	0.27	6
13	LPN-DC-13C-2	34146	2	0.27	6
16	LPN-DC-16C-2	34147	2	0.27	6
20	LPN-DC-20C-2	34148	2	0.27	6
25	LPN-DC-25C-2	34149	2	0.27	6
32	LPN-DC-32C-2	34150	2	0.27	6
40	LPN-DC-40C-2	34151	2	0.27	6
50	LPN-DC-50C-2	34152	2	0.27	6
63	LPN-DC-63C-2	34153	2	0.27	6

Accessories

Auxiliary and relative switches	PS-LP-...	page B19
Shunt trips	SV-LP-...	page B22
Undervoltage releases	SP-LP-...	page B25
Locking insert	OD-LP-VU01	page B28
Sealing insert	OD-LP-VP01	page B29
Insulating barriers	OD-LP-MP01	page B30
Interconnecting busbars	G1L-..., G2L-..., G3L-..., G4L-..., S1L-..., S2L-..., S3L-...	page E52
Terminal extensions	AS-...	page E57

MINIATURE CIRCUIT BREAKERS LPN UP TO 63 A (10 kA)

Description

NOTICEABLE CONTACT STATE INDICATOR

- Unambiguously define the state of the circuit breaker.

Lever down



SWITCHED OFF

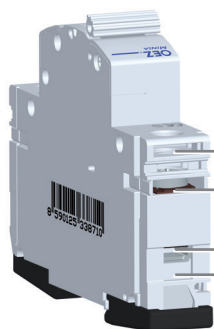
Lever up



SWITCHED ON

EASY CONNECTION

- **Upper and lower combined terminal with a secured screw** makes it possible to connect interconnecting busbars with forks and conductors up to 25 mm² by one screw.
- **Plastic cover** fills in the space under the terminal and thus prevents wrong insertion of conductor to the terminal.
- Top and bottom **connection of circuit breakers** by the interconnecting busbar.
- Bottom **connection of circuit breakers and residual current circuit breakers** by the interconnecting busbar.
- **Interconnecting busbars and terminal extensions** see on page E52 - E57.



Secured screw

For interconnecting busbars with forks

For conductors up to 25 mm²

Plastic cover

For interconnecting busbars with pins

NON-INTERCHANGEABILITY OF RATED CURRENT

- **Non-removable coloured sign** according to the rated current of the circuit breaker. Target colours correspond with the colours of the threaded fuse-links.

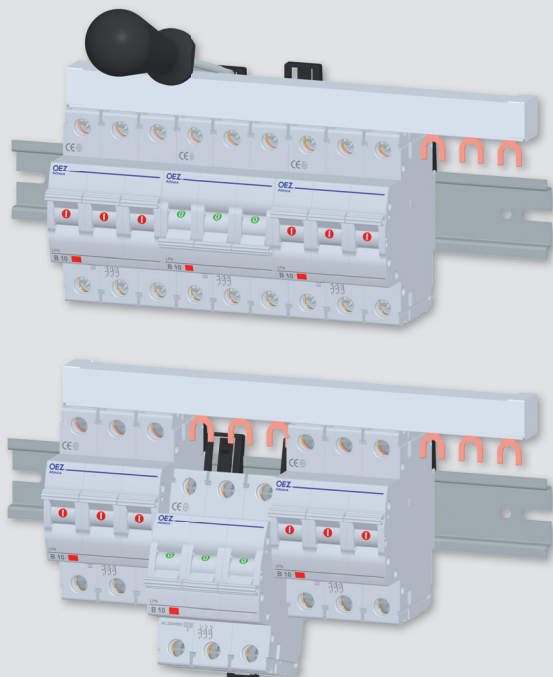
I _n [A]		Colour
0.2 ÷ 1.6	■	black
2	■	pink
4	■	brown
6	■	green
8	■	light green
10	■	red
13	■	sandy
16	■	grey
20	■	blue
25	■	yellow
32	■	violet
40	■	black
50	■	white
63	■	copper

- **Printing** on circuit breaker is made by a laser – it is indelible.

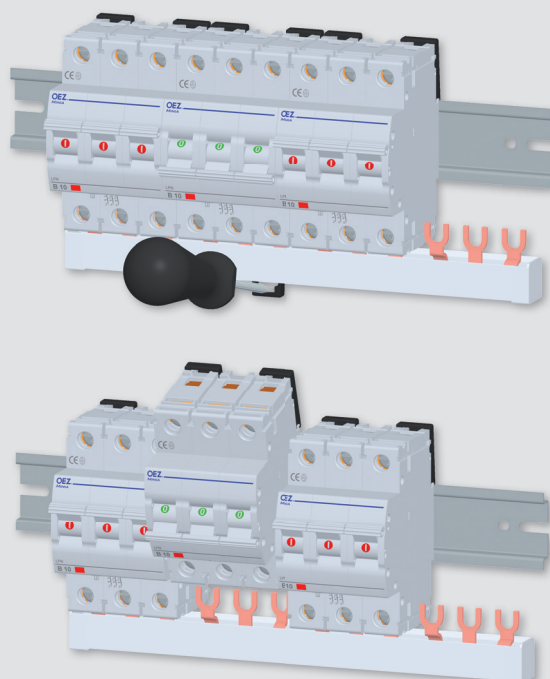
WITHDRAWAL OF CIRCUIT BREAKER FROM THE LINE OF DEVICES

- Without interruption of adjacent current circuits.
- Provided by special top and bottom pawl.
- Withdrawal at top connection (circuit breakers, tumbler power switches) and at bottom connection (circuit breakers and residual current circuit breakers).

Top connection



Bottom connection



MINIATURE CIRCUIT BREAKERS LPN UP TO 63 A (10 kA)

Specifications

Type		LPN	LPN-DC
Standards		EN 60898-1	EN 60898-2 ¹⁾
Approval marks			
Number of poles		1, 1+N, 2, 3, 3+N	1, 2
Tripping characteristics		B, C, D	C
Rated current	I_n	0.2 ÷ 63 A	2 ÷ 63 A
Rated operating voltage	U_e	230/400 V a.c. / 60/220 V d.c. ²⁾	220/440 V d.c. ²⁾
Max. operating voltage	U_{max}	253/440 V a.c. / 66/242 V d.c. ²⁾	242/484 V d.c. ²⁾
Min. operating voltage	U_{min}	12 V a.c. / d.c.	12 V d.c.
Rated frequency	f_n	40 ÷ 60 Hz	-
Rated short-circuit breaking capacity (EN 60898-1)	I_{cn}	10 kA	-
Rated short-circuit breaking capacity (EN 60898-2)	I_{cn}	-	10 kA ($\tau \leq 5$ ms)
Short-circuit service breaking capacity (EN 60898-2)	I_{cs}	-	100 % I_{cn}
Endurance	mechanical	20 000 operating cycles	20 000 operating cycles
	electrical	4 000 operating cycles	4 000 operating cycles
Energy limitation class		3	3
Rated impulse withstand voltage (1.2/50 μ s)	U_{imp}	6 kV	6 kV
Overvoltage category (IEC 664-1)		IV	IV
Mounting on "U" rail according to EN - type		TH 35	TH 35
Degree of protection		IP20	IP20
Connection	conductor Cu - rigid (solid, stranded)	0.5 ÷ 25 mm ² , 2x(0.5 ÷ 10) mm ²	0.5 ÷ 25 mm ² , 2x(0.5 ÷ 10) mm ²
	conductor Cu - flexible	0.5 ÷ 16 mm ²	0.5 ÷ 16 mm ²
	interconnecting busbar IEC - thickness	2 mm	2 mm
	torque	2 Nm	2 Nm
	top or bottom connection	yes	yes ³⁾
Operating conditions	ambient temperature	-30 ÷ +55 °C	-30 ÷ +55 °C
	working position	arbitrary	arbitrary
	seismic resistance	IEC 980:1993 ⁴⁾	IEC 980:1993 ⁴⁾

¹⁾ DC tests

²⁾ Single-pole connection / two-pole connection

³⁾ It is necessary to keep the polarity marked on the circuit breaker in d.c. circuits

⁴⁾ It passed the seismic tests for NPP Dukovany and Temelin

Internal impedance Z, powers losses P, impedance Z_s

I_n [A]	$Z^{1)}$ [mΩ/pole]	$P^{1)}$ [W/pole]	Max. impedance of fault loop Z_s [Ω] ²⁾		
			characteristic B	characteristic C	characteristic D
0.2	30650	1.25	230.9	128.3	72.2
0.4	7670	1.25	115.5	64.2	36.1
0.5	5440	1.35	92.4	51.3	28.9
0.6	3400	1.20	77.0	42.8	24.1
0.8	2130	1.35	57.8	32.1	18.0
1	1350	1.35	46.2	25.7	14.4
1.2	763	1.10	38.5	21.4	12.0
1.6	544	1.40	28.9	16.0	9.0
2	392	1.55	23.1	12.8	7.2
4	75.50	1.20	11.6	6.4	3.6
6	26.00	0.95	7.7	4.3	2.4
8	17.40	1.10	5.8	3.2	1.8
10	12.60	1.25	4.6	2.6	1.4
13	10.80	1.85	3.6	2.0	1.1
16	7.56	1.95	2.9	1.6	0.9
20	5.70	2.30	2.3	1.3	0.7
25	4.24	2.65	1.8	1.0	0.6
32	2.72	2.80	1.4	0.8	0.5
40	2.18	3.50	1.2	0.6	0.4
50	1.56	3.90	0.9	0.5	0.3
63	1.37	5.40	0.7	0.4	0.2

¹⁾ Average values per pole protected

²⁾ For TN network, $U = 230$ V, break time up to 0.4 s; if the measured value exceeds the table value, use residual current circuit breaker

MINIATURE CIRCUIT BREAKERS LPN UP TO 63 A (10 kA)

Correction of rated currents of miniature circuit breakers LPN

I_n [A]	Correction of rated currents for ambient temperature -30 °C up to + 60 °C [A] ¹⁾									
	-30 °C	-20 °C	-10 °C	0 °C	10 °C	20 °C	30 °C	40 °C	50 °C	60 °C
0.2	0.26	0.25	0.24	0.23	0.22	0.21	0.2	0.19	0.18	0.19
0.4	0.52	0.50	0.48	0.46	0.44	0.42	0.4	0.37	0.35	0.34
0.5	0.65	0.63	0.60	0.58	0.55	0.53	0.5	0.47	0.44	0.42
0.6	0.78	0.75	0.72	0.69	0.66	0.63	0.6	0.56	0.53	0.50
0.8	1.04	1	0.96	0.92	0.88	0.84	0.8	0.74	0.70	0.67
1	1.30	1.25	1.20	1.15	1.10	1.05	1	0.93	0.88	0.84
1.2	1.56	1.50	1.44	1.38	1.32	1.26	1.2	1.12	1.06	1.01
1.6	2.08	2	1.92	1.84	1.76	1.68	1.6	1.49	1.41	1.34
2	2.60	2.50	2.40	2.30	2.20	2.10	2	1.90	1.80	1.70
4	5.20	5	4.80	4.60	4.40	4.20	4	3.70	3.50	3.40
6	7.80	7.50	7.20	6.90	6.60	6.30	6	5.60	5.30	5
8	10.40	10	9.60	9.20	8.80	8.40	8	7.40	7	6.70
10	13	12.50	12	11.50	11	10.50	10	9.30	8.80	8.40
13	16.90	16.30	15.60	15	14.30	13.70	13	12.10	11.40	10.90
16	20.80	20	19.20	18.40	17.60	16.80	16	14.90	14.10	13.40
20	26	25	24	23	22	21	20	18.60	17.60	16.80
25	32.50	31.30	30	28.80	27.50	26.30	25	23.30	22	21
32	41.60	40	38.40	36.80	35.20	33.60	32	29.80	28.20	26.90
40	52	50	48	46	44	42	40	37.20	35.20	33.60
50	65	62.50	60	57.50	55	52.50	50	46.50	44	42
63	81.90	78.80	75.60	72.50	69.30	66.20	63	58.60	55.40	52.90

¹⁾ Valid for 1 pole and any characteristic at reference temperature 30 °C

Correction of rated currents of miniature circuit breakers installed side by side [A] ²⁾							
1	2	3	4	5	6	7	8
0.2	0.19	0.18	0.18	0.18	0.17	0.17	0.17
0.4	0.38	0.37	0.36	0.35	0.34	0.34	0.34
0.5	0.48	0.46	0.45	0.44	0.43	0.43	0.43
0.6	0.57	0.55	0.53	0.52	0.51	0.51	0.51
0.8	0.76	0.73	0.71	0.69	0.68	0.68	0.68
1	0.95	0.92	0.89	0.87	0.86	0.85	0.85
1.2	1.14	1.10	1.07	1.04	1.02	1.02	1.02
1.6	1.52	1.47	1.42	1.39	1.37	1.36	1.36
2	1.90	1.80	1.80	1.70	1.70	1.70	1.70
4	3.80	3.70	3.60	3.50	3.40	3.40	3.40
6	5.70	5.50	5.30	5.20	5.10	5.10	5.10
8	7.60	7.30	7.10	6.90	6.80	6.80	6.80
10	9.50	9.20	8.90	8.70	8.60	8.50	8.50
13	12.40	11.90	11.60	11.30	11.20	11.10	11.10
16	15.20	14.70	14.20	13.90	13.70	13.60	13.60
20	19	18.30	17.80	17.30	17.10	17	17
25	23.80	22.90	22.30	21.70	21.40	21.30	21.30
32	30.40	29.30	28.50	27.70	27.30	27.20	27.20
40	38	36.60	35.60	34.70	34.10	34	34
50	47.50	45.80	44.50	43.40	42.70	42.50	42.50
63	59.90	57.70	56.10	54.60	53.70	53.60	53.60

²⁾ Valid for reference temperature 30 °C

Selectivity of LPN miniature circuit breakers characteristics B with back-up fuses [kA]

LPN I_n [A]	PN, PV gG							
	20	25	32	40	50	63	80	100
≤ 1.2	0.5	6	10	10	10	10	10	10
1.6	0.5	5	10	10	10	10	10	10
2	x	1	6	10	10	10	10	10
4	x	1	1.5	6	10	10	10	10
6	x	1	1.5	2	6	10	10	10
8	x	1	1.5	2	6	10	10	10
10	x	1	1.5	2	5	10	10	10
13	x	x	1.5	2	2.5	6	10	10
16	x	x	1.5	2	2.5	6	10	10
20	x	x	x	2	2.5	5	10	10
25	x	x	x	x	2.5	5	10	10
32	x	x	x	x	x	3.5	6	10
40	x	x	x	x	x	1	5	10
50	x	x	x	x	x	x	3	6
63	x	x	x	x	x	x	3	6

x - without selectivity

Selectivity of LPN miniature circuit breakers characteristics C with back-up fuses [kA]

LPN I_n [A]	PN, PV gG							
	20	25	32	40	50	63	80	100
≤ 1.2	0.5	6	10	10	10	10	10	10
1.6	0.5	5	10	10	10	10	10	10
2	x	1	6	10	10	10	10	10
4	x	1	1.5	6	10	10	10	10
6	x	1	1.5	2	6	10	10	10
8	x	1	1.5	2	6	10	10	10
10	x	x	1.5	2	5	10	10	10
13	x	x	1.5	2	2.5	6	10	10
16	x	x	1.5	2	2.5	6	10	10
20	x	x	x	x	2.5	5	10	10
25	x	x	x	x	2.5	5	10	10
32	x	x	x	x	x	3.5	6	10
40	x	x	x	x	x	x	5	10
50	x	x	x	x	x	x	3	6
63	x	x	x	x	x	x	x	6

x - without selectivity

Selectivity of LPN miniature circuit breakers characteristics D with back-up fuses [kA]

LPN I_n [A]	PN, PV gG							
	20	25	32	40	50	63	80	100
≤ 1.2	0.5	6	10	10	10	10	10	10
1.6	0.5	5	10	10	10	10	10	10
2	x	1	6	10	10	10	10	10
4	x	1	1.5	6	10	10	10	10
6	x	1	1.5	2	6	10	10	10
8	x	x	1.5	2	6	10	10	10
10	x	x	x	2	5	10	10	10
13	x	x	x	x	2.5	6	10	10
16	x	x	x	x	2.5	6	10	10
20	x	x	x	x	x	5	10	10
25	x	x	x	x	x	x	10	10
32	x	x	x	x	x	x	6	10
40	x	x	x	x	x	x	x	10
50	x	x	x	x	x	x	x	x
63	x	x	x	x	x	x	x	x

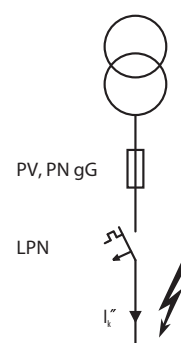
x - without selectivity

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 LPN 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:

Circuit breaker LPN-16B-... actuates earlier than back-up fuse-link with rated current 50 A up to short-circuit current 2.5 kA.



MINIATURE CIRCUIT BREAKERS LPN UP TO 63 A (10 kA)

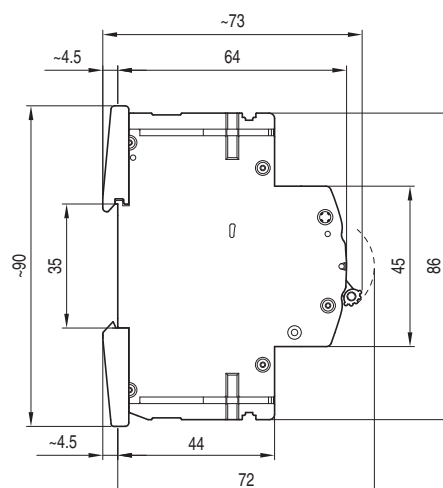
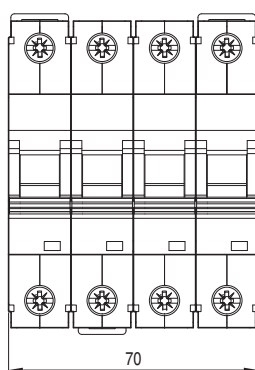
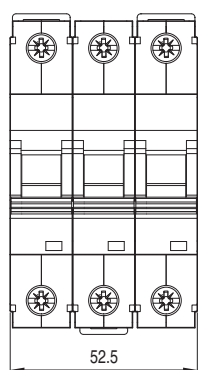
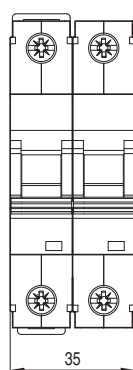
Dimensions

LPN-...1
LPN-DC-...1

LPN-...1N
LPN-...2
LPN-DC-...2

LPN-...3

LPN-...3N



Diagram

LPN-...1

LPN-...1N

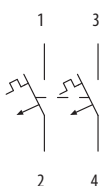
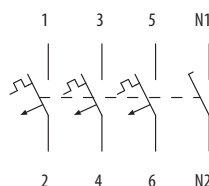
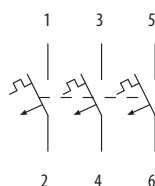
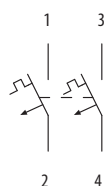
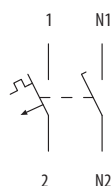
LPN-...2

LPN-...3

LPN-...3N

LPN-DC-...1

LPN-DC-...2



Protection of DC circuits

For protection of d.c. circuits it is possible to use LPE, LPN circuit breakers and LPN-DC circuit breakers depending on voltage.

Protection of DC circuits

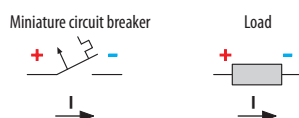
Type of miniature circuit breaker	Rated voltage U_n		
	≤ 60 V d.c.	≤ 220 V d.c.	≤ 440 V d.c.
LPE, LPN-...1	●	-	-
LPE, LPN-...2	●	●	-
LPN-DC-...1 ¹⁾	●	●	-
LPN-DC-...2 ¹⁾	●	●	●

¹⁾ It is necessary to keep the polarity marked on the circuit breaker

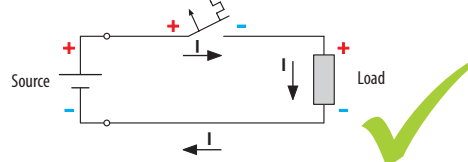
● Possible to use

Correct polarity connection of DC circuit breakers, loads etc. in the circuit has to follow the direction of current flow in DC circuit that is from (+) to (-).

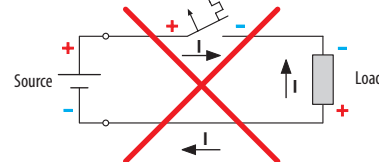
Example of current flow according to polarity is shown by the arrow:



1) Correct connection of devices
= equal direction of current flow on the devices



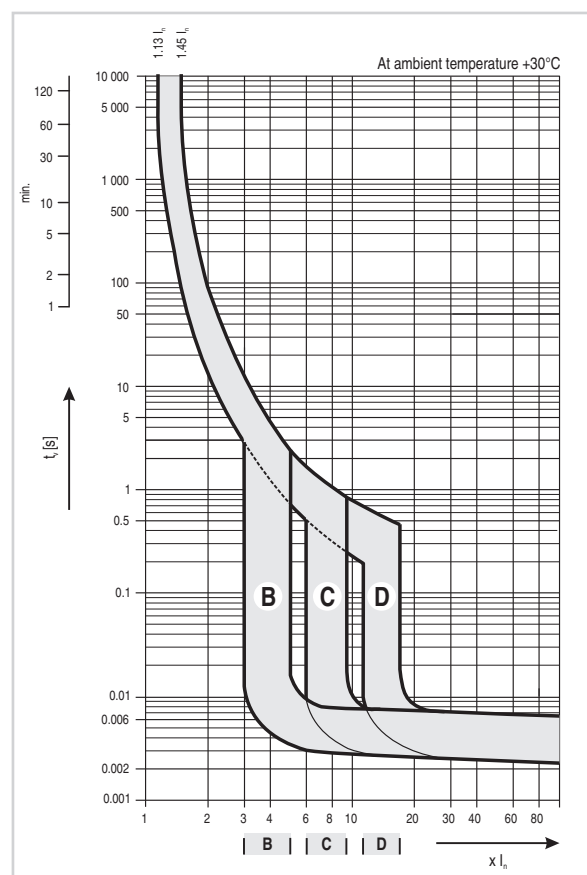
2) Wrong connection of devices
= contradictory current flow on the devices



The correct connection of devices (point 1) seems to be illogical due to connection of load terminal (+) and circuit breaker terminal (-). However, it is correct connection!!!

MINIATURE CIRCUIT BREAKERS LPN UP TO 63 A (10 kA)

Characteristics



- **Characteristic B:** for protection of line of electrical circuits with equipment, which does not cause current surges (lighting and socket circuits etc.). 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 (light bulb groups, motors etc.). The short-circuit release is set to $(6 \div 9) I_n$.
- **Characteristic D:** for protection of line of electrical circuits with equipment, which causes high current surges (transformers, 2-pole motors etc.). The short-circuit release is set to $(12 \div 16) I_n$.

Tripping characteristics of circuit breakers according to EN 60898-1

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

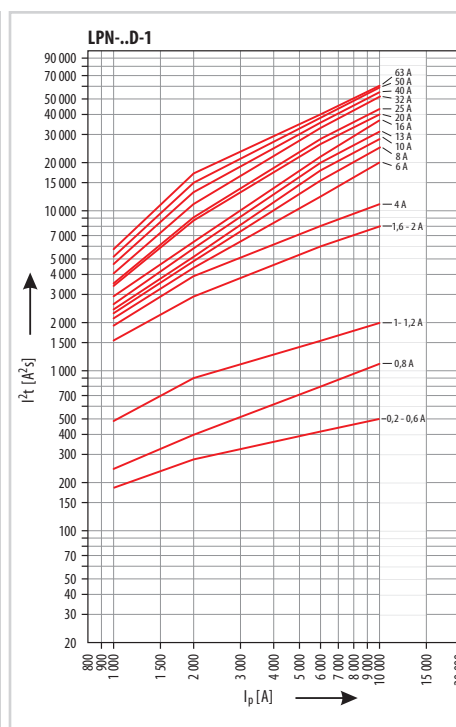
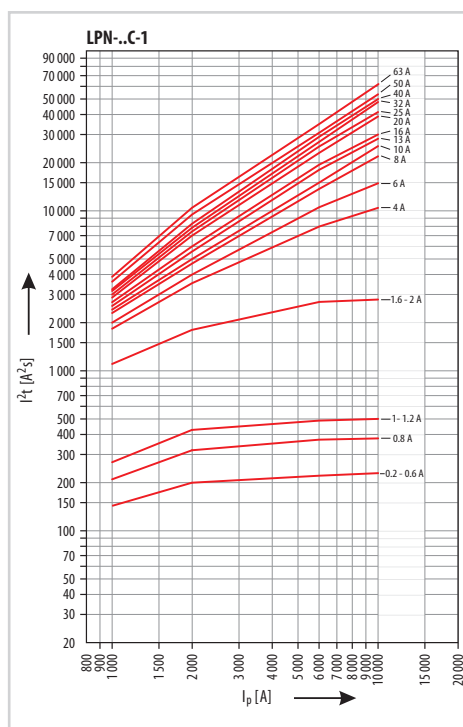
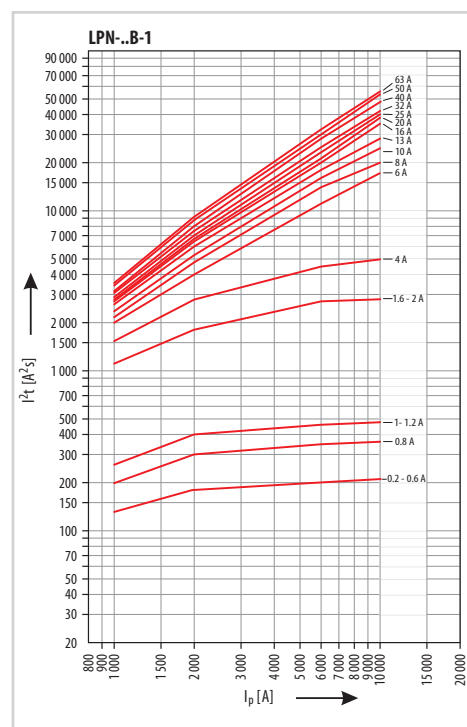
t - break time of the circuit breaker

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

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

t - break time of the circuit breaker

Characteristics I^2t



AUXILIARY AND RELATIVE SWITCHES



Auxiliary and relative switches PS-LP

- Accessories to: LPE, LPN, APN.
- Auxiliary and relative switches are designed for signalling the position of the main contacts of circuit breakers LPE, LPN and tumbler power switches APN in tripping:
 - *by releases or manually* – i.e. in switching off by overload, short-circuit, shunt trip or undervoltage release and control lever. It is possible to use contacts with this function (auxiliary contact) to set switch SEL to position „A+A“ (resp. „A“ for switching contact)
 - *only by releases* – i.e. only in tripping by short-circuit, overload, shunt trip or undervoltage release. It is possible to use one contact with this function (relative contact) to set switch SEL to position „A+R“ (resp. „R“ for switching contact).

- Selection of auxiliary/relative contact function is performed by the rotary switch SEL on the side of the device.
- 2 auxiliary and relative switches can be connected to one miniature circuit breakers (tumbler power switch).
- They are suitable for application in SELV and PELV circuits – sufficient insulation is provided between the circuit breaker (power tumbler switch) and auxiliary and relative switches.



Arrangement of contacts ¹⁾ - position of switch SEL		Type	Product code	Number of modules	Weight [kg]	Package [pcs]
A+A ²⁾	A+R ²⁾					
A 11	A 10 + R 10	PS-LP-110S	34260	0.5	0.05	1
A 11	A 10 + R 10	PS-LP-110S-Au ³⁾	34261	0.5	0.05	1
A 11	A 01 + R 01	PS-LP-110S-Y	34262	0.5	0.05	1
A 20	A 10 + R 01	PS-LP-200S	34263	0.5	0.05	1
A 02	A 01 + R 10	PS-LP-020S	34264	0.5	0.05	1
A 001	R 001	PS-LP-001S	34265	0.5	0.045	1

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

²⁾ Position A+A = contacts function in „auxiliary“ mode; position A+R = one contact is switched to „relative“ mode“
The choice of mode is done by rotary switch SEL on the side of the auxiliary switch

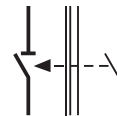
³⁾ Gold-plated contacts – suitable for switching of low output loads



Auxiliary switches PS-LS

- Accessories to: LST, AST.
- Can be used also with formerly produced types of circuit breakers LSE, LSN.
- Auxiliary switches are used for position signalling of main contacts of circuit breaker LST and tumbler power switches AST in switching off by releases or manually – i.e. in switching off by overload, short-circuit, shunt trip or undervoltage release and control lever.

- They are suitable for application in SELV and PELV circuits – sufficient insulation is provided between the circuit breaker (power tumbler switch) and auxiliary and relative switches.



Arrangement of contacts ¹⁾	Type	Product code	Number of modules	Weight [kg]	Package [pcs]
11	PS-LS-1100	35664	0.5	0.043	1
11	PS-LS-1100-Au ²⁾	35665	0.5	0.043	1
21	PS-LS-2100	35666	0.5	0.049	1
21	PS-LS-2100-Au ²⁾	35667	0.5	0.049	1

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

²⁾ Gold-plated contacts – suitable for switching of low output loads

AUXILIARY AND RELATIVE SWITCHES

Specifications

Type		PS-LP-..	PS-LS-..
Standards		EN 60947-5-1, EN 62019	EN 60947-5-1
Approval marks			
Arrangement of contacts ^{1) 2)}		A11/A10+R10, A11/A01+R01, A20/A10+R01, A02/A01+R10, A001/R001	11, 21
Rated operating voltage / current	U_e / I_e	AC-12	230 V a.c. / 6 A
		AC-13	230 V a.c. / 4 A or 400 V a.c. / 2
		AC-15	230 V a.c. / 3 A
		DC-13	220 V d.c. / 0.55 A
			230 V a.c. / 4 A or 400 V a.c. / 2 A
Rated impulse withstand voltage (1.2/50 μ s)	U_{imp}	4 kV	4 kV
Mechanical endurance		20 000 operating cycles	10 000 operating cycles
Electrical endurance		4 000 operating cycles	4 000 operating cycles
Mounting		on the right side of the device	on the right side of the device
Degree of protection		IP20	IP20
Connection			
Conductor rigid (solid, stranded)		0.75 ÷ 4 mm ²	0.75 ÷ 4 mm ²
Conductor flexible		0.75 ÷ 2.5 mm ²	0.75 ÷ 2.5 mm ²
Torque		0.8 Nm	0.8 Nm
Top or bottom connection		yes	yes
Operating conditions			
Ambient temperature		-30 ÷ 55 °C	-30 ÷ 55 °C
Working position		arbitrary	arbitrary
Seismic resistance		IEC 980:1993 ³⁾	IEC 980:1993 ³⁾

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

²⁾ A=auxiliary contact, R=relative contact

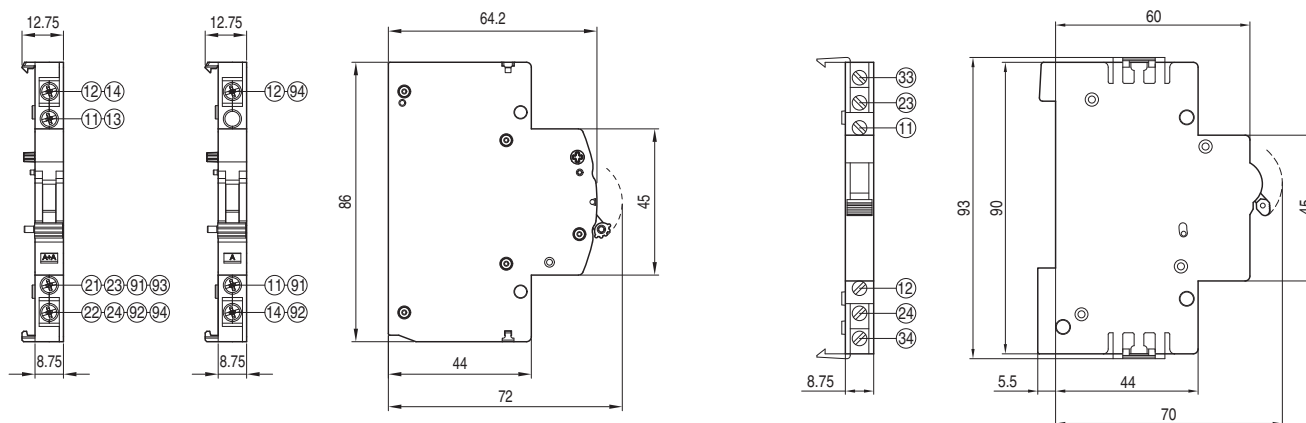
³⁾ It passed the seismic tests for NPP Dukovany and Temelin

Dimensions

PS-LP-110S
PS-LP-110S-..
PS-LP-200S
PS-LP-020S

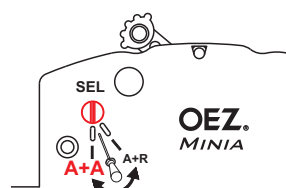
PS-LP-001S

PS-LS-..

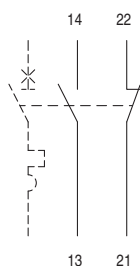


Diagram

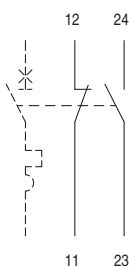
Change-over switch SEL in position A+A



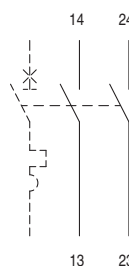
PS-LP-110S
PS-LP-110S-Au
SEL □ A+A



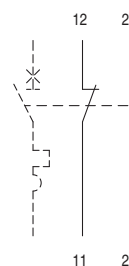
PS-LP-110S-Y
SEL □ A+A



PS-LP-200S
SEL □ A+A



PS-LP-020S
SEL □ A+A



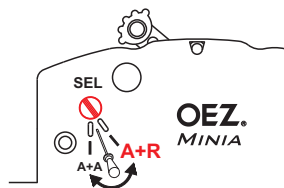
PS-LP-001S
SEL □ A



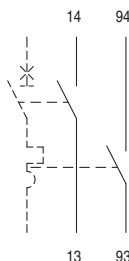
AUXILIARY AND RELATIVE SWITCHES

Diagram

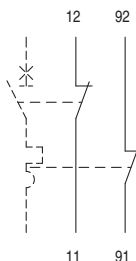
Change-over switch SEL in position A+R



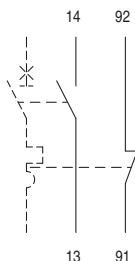
PS-LP-110S
PS-LP-110S-Au
SEL □ A+R



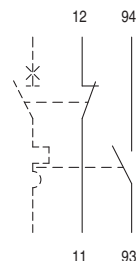
PS-LP-110S-Y
SEL □ A+R



PS-LP-200S
SEL □ A+R



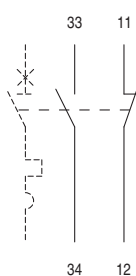
PS-LP-020S
SEL □ A+R



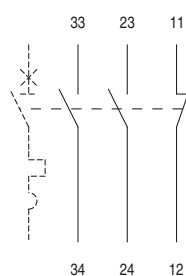
PS-LP-001S
SEL □ R



PS-LS-1100



PS-LS-2100



Installation of auxiliary switch on miniature circuit breaker (tumbler switch)



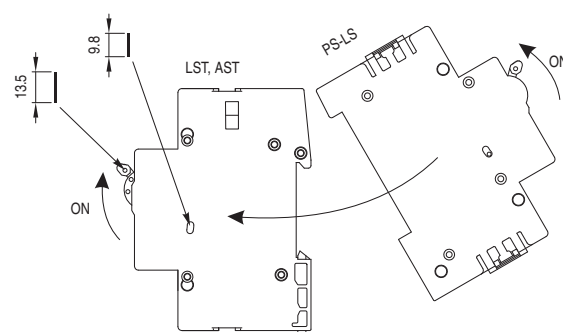
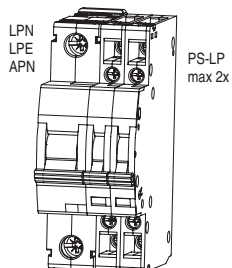
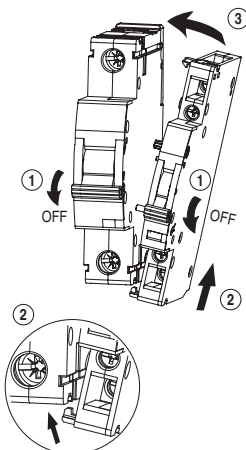
PS-LP-..

1. At mounting the levers of auxiliary switch and of the device are in OFF position.
2. Insert the lower fastening catch in the device recess.
3. Press the auxiliary switch to the device so that the upper fastening latch of the auxiliary switch snaps in the device recess.
4. Check correct function by switching.

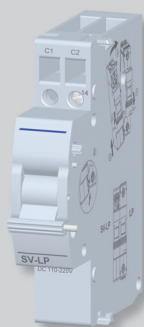


PS-LS-..

1. At mounting the levers of auxiliary switch and of the device are in ON position.
2. From the right slide the longer shaft in the control lever of the device and shorter one in the hole of the switching system of the device
3. From the right slide the auxiliary switch on the device so that one shaft interconnects control levers and the other the switching systems.
4. Press the auxiliary switch to the device and snap the side fastening clamps of the auxiliary switch in the device recess.
5. Check correct function by switching.



SHUNT TRIPS

**Shunt trips SV-LP**

- Accessories to: LPE, LPN, APN.
- For tripping the circuit breaker LPE, LPN and tumbler power switch APN by applied voltage.
- It contains auxiliary make contact, which can be used for position signalling of the main contacts of circuit breaker LPE, LPN and tumbler power switch APN.

Rated voltage U_c	Type	Product code	Number of modules	Weight [kg]	Package [pcs]
12 ÷ 60 V a.c. / d.c.	SV-LP-X060	34325	1	0.125	1
110 ÷ 415 V a.c. / 110 ÷ 220 V d.c.	SV-LP-X400	34326	1	0.125	1

Shunt trips SV-LS

- Accessories to: LST, AST.
- Can be used also with formerly produced types of circuit breakers LSE, LSN.
- For tripping the circuit breaker LST and tumbler power switch AST by applied voltage between 70 % and 110 % U_c .
- It contains make contact (version SV-LS-.....-1010 make and break), which can be used for position signalling of the main contacts of circuit breaker LST and tumbler power switch AST.

Rated voltage U_c	Arrangement of contacts ¹⁾	Type	Product code	Number of modules	Weight [kg]	Package [pcs]
24 V a.c. / d.c.	10	SV-LS-X024-1000	35695	1	0.12	1
	101	SV-LS-X024-1010	35696	1	0.12	1
48 V a.c. / d.c.	10	SV-LS-X048-1000	35697	1	0.12	1
	101	SV-LS-X048-1010	35698	1	0.12	1
110 V a.c. / d.c.	10	SV-LS-X110-1000	35699	1	0.12	1
	101	SV-LS-X110-1010	35700	1	0.12	1
230 V a.c. / 220 V d.c.	10	SV-LS-X230-1000	35701	1	0.12	1
	101	SV-LS-X230-1010	35702	1	0.12	1
400 V a.c. / 440 V d.c.	10	SV-LS-X400-1000	35703	1	0.12	1
	101	SV-LS-X400-1010	35704	1	0.12	1

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

SHUNT TRIPS

Specifications

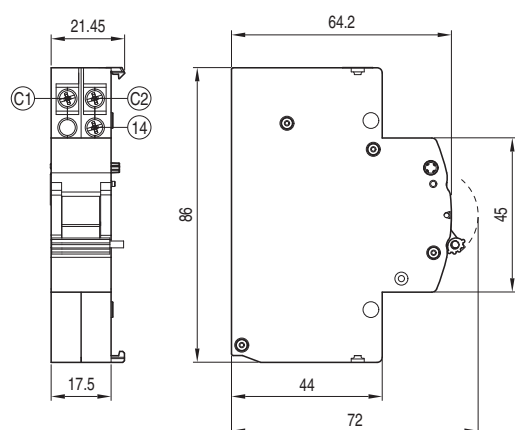
Type		SV-LP-..	SV-LS-..
Standards		EN 60947-1	EN 60947-1
Approval marks			
Mounting		on the left side of the device	on the left side of the device
Degree of protection		IP20	IP20
Control circuit (coil)			
Rated voltage	U_c	12 ÷ 60 V a.c. / d.c.	24, 48, 110, 230, 400 V a.c.
		110 ÷ 415 V a.c. / 110 ÷ 220 V d.c.	24, 48, 110, 220, 440 V d.c.
Rated frequency	f_n	40 ÷ 60 Hz	40 ÷ 60 Hz
Break time		max. 15 ms	10 ms
Contact			
Arrangement of contacts ¹⁾		10	10, 101
Rated operating voltage / current	U_e / I_e	AC-1	230 V a.c. / 4 A or 400 V a.c. / 2 A
		AC-15	230 V a.c. / 2 A
		DC-1	220 V d.c. / 0.5 A
Mechanical endurance		20 000 operating cycles	10 000 operating cycles
Electrical endurance		4 000 operating cycles	4 000 operating cycles
Connection			
Conductor – rigid (solid, stranded)		0.75 ÷ 4 mm ²	0.75 ÷ 4 mm ²
Conductor – flexible		0.75 ÷ 2.5 mm ²	0.75 ÷ 2.5 mm ²
Torque		0.8 Nm	0.8 Nm
Top or bottom connection		yes	yes
Operating conditions			
Ambient temperature		-30 ÷ 55 °C	-30 ÷ 55 °C
Working position		arbitrary	arbitrary
Seismic resistance		IEC 980:1993 ²⁾	IEC 980:1993 ²⁾

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

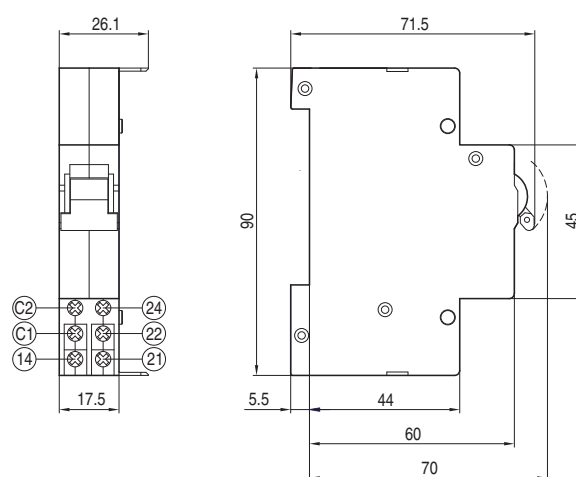
²⁾ It passed the seismic tests for NPP Dukovany and Temelin

Dimensions

SV-LP-..

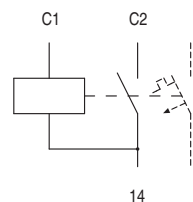


SV-LS-..

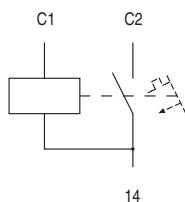


Diagram

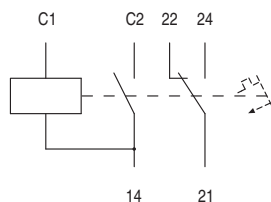
SV-LP-..



SV-LS-..-1000

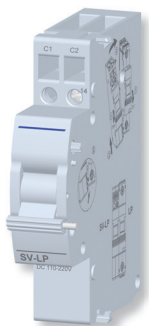


SV-LS-..-1010



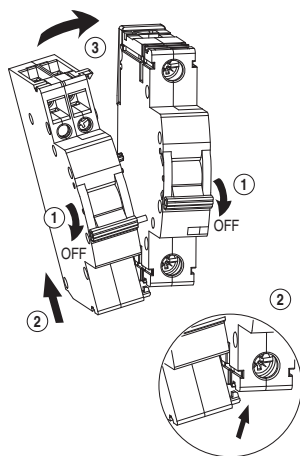
SHUNT TRIPS

Installation of shunt trip on circuit breaker (tumbler switch)



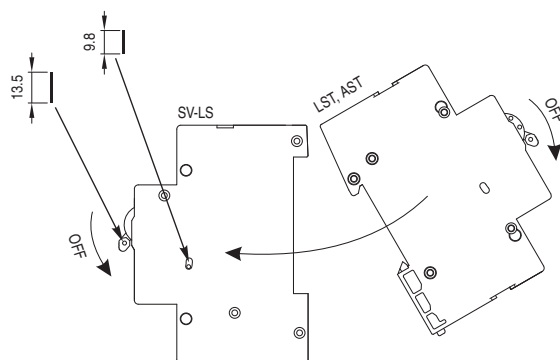
SV-LP-..

1. At mounting the levers of the shunt trip and of the device are in OFF position.
2. Insert the lower fastening catch in the device recess.
3. Press the shunt trip to the device so that the upper fastening latch of the shunt trip snaps in the device recess.
4. Check correct function by switching.

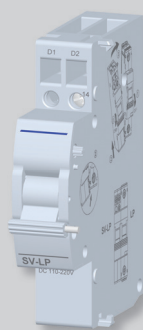


SV-LS-..

1. At mounting the levers of the shunt trip and of the device are in OFF position.
2. From the right slide the longer shaft in the control lever of the shunt trip and shorter one in the hole of the switching system of the shunt trip.
3. From the right slide the device on the shunt trip so that one shaft interconnects control levers and the other the switching systems.
4. Press the device to the shunt trip and snap the side fastening clamps of the shunt trip in the device recess.
5. Check correct function by switching.



UNDervOLTAGE RELEASES

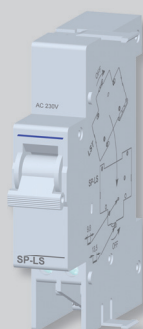


Undervoltage releases SP-LP

- Accessories to: LPE, LPN, APN.
- For tripping the circuit breaker LPE, LPN and tumbler power switch APN at loss of voltage as well as at gradual decrease of voltage between 70 % and 35 % U_c .
- For elimination of closing of circuit breaker LPE, LPN and tumbler power switch APN, 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 power blackout.
- Design with 0.2 s, resp. 0.4 s delay for prevention of unwanted tripping at short-time power blackout.

Rated voltage U_c	Delay	Type	Product code	Number of modules	Weight [kg]	Package [pcs]
24 V a.c.	-	SP-LP-A024	34327	1	0.125	1
48 V a.c.	-	SP-LP-A048	34328	1	0.125	1
110 V a.c.	-	SP-LP-A110	34329	1	0.130	1
230 V a.c.	-	SP-LP-A230	34330	1	0.125	1
230 V a.c.	0.4 s	SP-LP-A230-T004	34331	1	0.130	1
400 V a.c.	-	SP-LP-A400	34332	1	0.130	1
24 V d.c.	0 s or 0.2 s ¹⁾	SP-LP-D024-Y004	34333	1	0.130	1
48 V d.c.	0 s or 0.2 s ¹⁾	SP-LP-D048-Y004	34334	1	0.130	1
110 V d.c.	0 s or 0.2 s ¹⁾	SP-LP-D110-Y004	34335	1	0.130	1
220 V d.c.	0 s or 0.2 s ¹⁾	SP-LP-D220-Y004	34336	1	0.125	1
400 V d.c.	0 s or 0.2 s ¹⁾	SP-LP-D400-Y004	34337	1	0.125	1

¹⁾ Delay is activated by interconnection of terminals 1, 2



Undervoltage releases SP-LS

- Accessories to: LST, AST.
- Can be used also with formerly produced types of circuit breakers LSE, LSN.
- For tripping the circuit breaker LST and tumbler power switch AST at loss of voltage as well as at gradual decrease of voltage between 70 % and 35 % U_c .
- For elimination of circuit breaker LST and tumbler power switch AST, 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 power blackout.
- Undervoltage releases SP-LS-....-1010 contain in addition an auxiliary switch with make and break-make contact for position signalling of the main contacts of circuit breaker LST or tumbler power switch AST.

Rated voltage U_c	Arrangement of contacts ¹⁾	Type	Product code	Number of modules	Weight [kg]	Package [pcs]
24 V a.c.	-	SP-LS-A024	35944	1	0.12	1
	101	SP-LS-A024-1010	35945	1	0.12	1
48 V a.c.	-	SP-LS-A048	35946	1	0.12	1
	101	SP-LS-A048-1010	35947	1	0.12	1
110 V a.c.	-	SP-LS-A110	35948	1	0.12	1
	101	SP-LS-A110-1010	35949	1	0.12	1
230 V a.c.	-	SP-LS-A230	35950	1	0.12	1
	101	SP-LS-A230-1010	35951	1	0.12	1
400 V a.c.	-	SP-LS-A400	35952	1	0.12	1
	101	SP-LS-A400-1010	35953	1	0.12	1

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

UNDervoltage RELEASES

Specifications

Type		SP-LP-..	SP-LS-..
Standards		EN 60947-1	EN 60947-1
Approval marks			
Mounting		on the left side of the device	on the left side of the device
Degree of protection		IP20	IP20
Control circuit (coil)			
Rated voltage	U_c	24, 48, 110, 230, 400 V a.c. 24, 48, 110, 220, 400 V d.c.	24, 48, 110, 230, 400 V a.c.
Consumption		2.6 W	2.5 W
Rated frequency	f_n	40 ÷ 60 Hz	40 ÷ 60 Hz
Break time		max. 45 ms ²⁾	25 ms
Contact			
Arrangement of contacts ¹⁾		-	10, 101
Rated operating voltage / current	U_e / I_e	AC-1	230 V a.c. / 4 A or 400 V a.c. / 2 A
		AC-15	230 V a.c. / 2 A
		DC-1	220 V d.c. / 0,5 A
Mechanical endurance		-	10 000 operating cycles
Electrical endurance		-	4 000 operating cycles
Connection			
Conductor rigid (solid, stranded)		0.75 ÷ 4 mm ²	0.75 ÷ 4 mm ²
Conductor flexible		0.75 ÷ 2.5 mm ²	0.75 ÷ 2.5 mm ²
Torque		0.8 Nm	0.8 Nm
Top or bottom connection		yes	yes
Operating conditions			
Ambient temperature		-30 ÷ 55 °C	-30 ÷ 55 °C
Working position		arbitrary	arbitrary
Seismic resistance		IEC 980:1993 ³⁾	IEC 980:1993 ³⁾

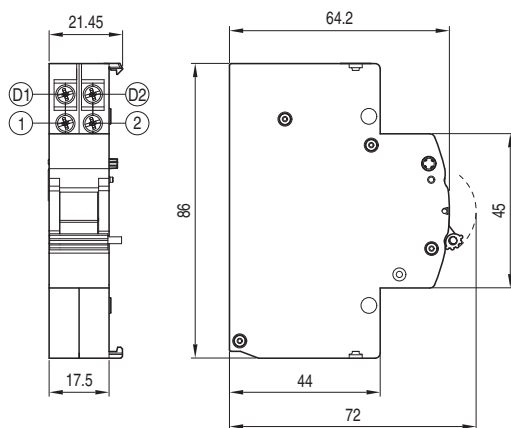
¹⁾ Each digit indicates successively the number of make, break and break-make contacts

²⁾ The stated time is valid for undelayed undervoltage releases

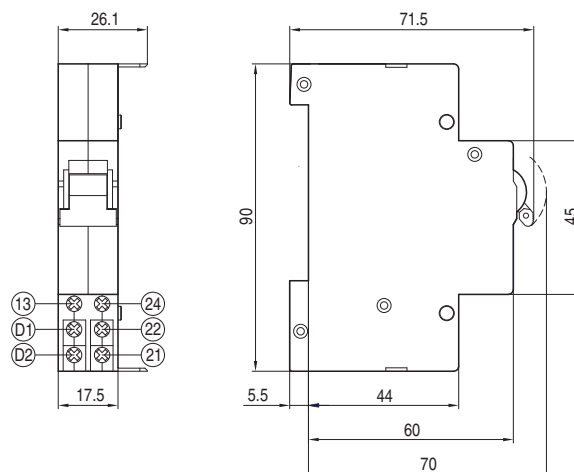
³⁾ It passed the seismic tests for NPP Dukovany and Temelin

Dimensions

SP-LP-..

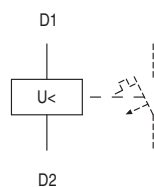


SP-LS-..

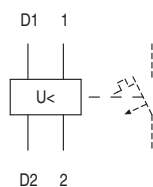


Diagram

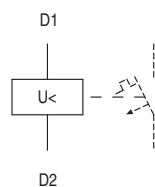
SP-LP-A-..



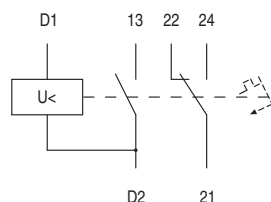
SP-LS-D-..



SP-LS-



SP-LS-..-1010



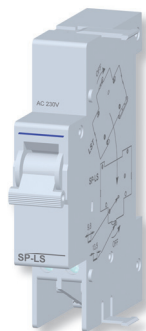
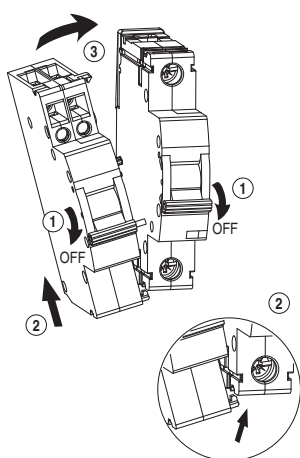
UNDervOLTAGE RELEASES

Installation of undervoltage release on circuit breaker (tumbler switch)



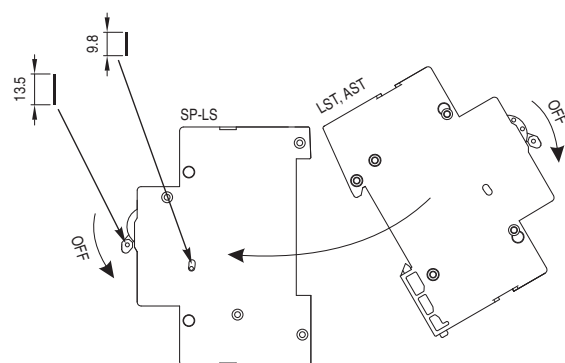
SP-LP-..

1. At mounting the levers of undervoltage release and of the device are in OFF position.
2. Insert the lower fastening catch in the device recess.
3. Press the undervoltage release to the device so that the upper fastening latch of the undervoltage release snaps in the device recess.
4. Check correct function by switching.



SP-LS-..

1. At mounting the levers of undervoltage release and of the device are in OFF position.
2. From the right slide the longer shaft in the control lever undervoltage releases and shorter one in the hole of the switching system of the undervoltage release.
3. From the right slide the device on the undervoltage release so that one shaft interconnects control levers and the other the switching systems.
4. Press the device to the undervoltage release and snap the side fastening latches of the undervoltage release in the device recess.
5. Check correct function by switching.



LOCKING INSERT

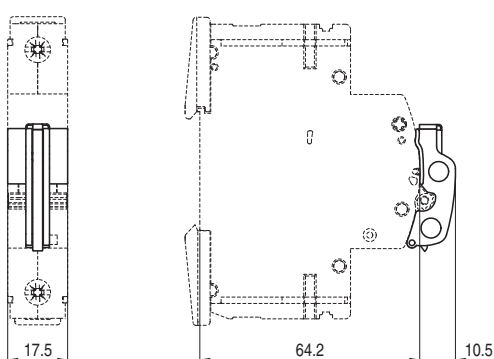


- Accessories to: LPE, LPN, APN.
- For safe locking of the control lever in off or on position.
- The protective function of the circuit breaker is functional even in locked position.
- Maximum diameter of lock rod – 5 mm.
- The lock is not included in the package.

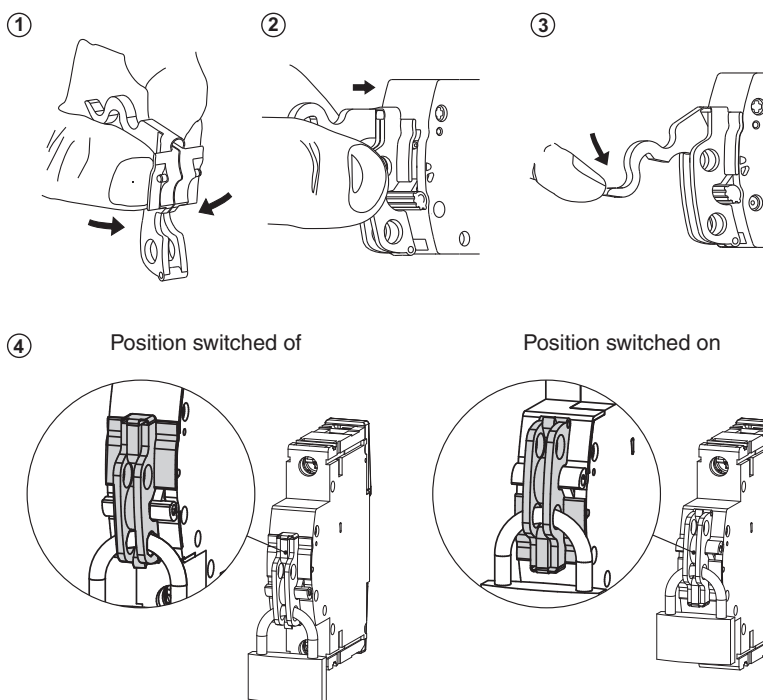
Type	Product code	Weight [kg]	Package [pcs]
OD-LP-VU01	37287	0.003	1

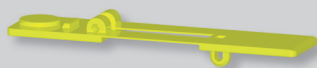
Dimensions

OD-LP-VU01



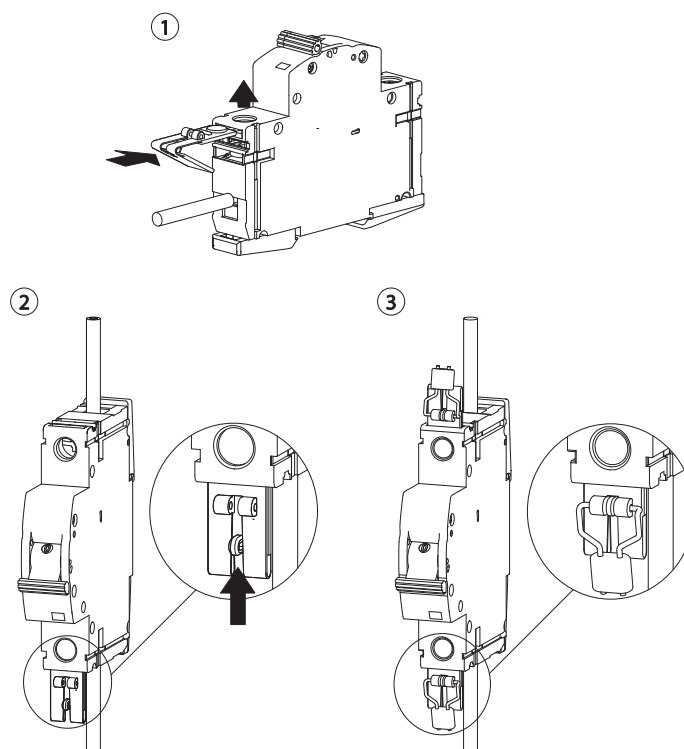
Mounting of locking insert on the circuit breaker (tumbler switch)



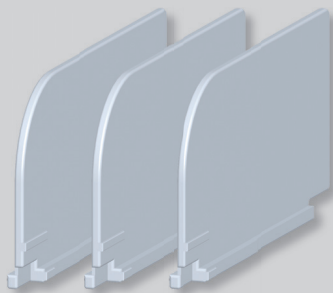
SEALING INSERT

- Accessories to: LPE, LPN, APN.
- For covering and sealing of terminal screws.

Type	Product code	Weight [kg]	Package [pcs]
OD-LP-VP01	37289	0.004	1

Mounting of sealing insert on the circuit breaker (tumbler switch)

INSULATING BARRIERS

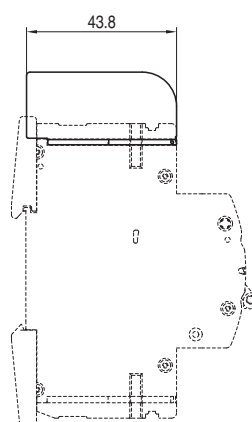
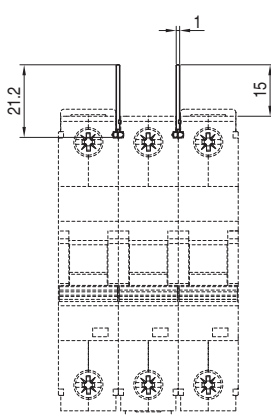


- Accessories to: LPE, LPN, APN.
- For additional increase of surface distances between individual poles of the circuit breaker LPE, LPN or tumbler power switch APN.
- 1 set contains 3 pieces.

Type	Product code	Weight [kg]	Package [number of sets]
OD-LP-MP01	37288	0.002	1

Dimensions

OD-LP-MP01



Mounting of insulation barrier on the circuit breaker (tumbler switch)

