

MINIATURE CIRCUIT BREAKERS LSN 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 cable and conductor overload and short-circuit protection
- Tripping characteristics B, C, D according to EN 60 898
- Current-limiting circuit breakers
- Optical position indicator - indicates ON/OFF position
- Colours of control levers in accordance with the colours of fuses with screw base
- Wide range of accessories - auxiliary and relative switches, undervoltage releases and shunt trips, busbars, labels etc.
- Rated short-circuit breaking capacity I_{cn} up to 20 kA - to achieve higher I_{cn} (up to 120 kA), it is recommended to use cylindrical fuse-links PV in fuse switch-disconnectors OPV mounted on DIN rail before the miniature circuit breaker
- Possible interconnection with switch-disconnectors OPV10 (up to 32 A) by means of busbars
- Possible interconnection with residual current circuit breakers OFI (OFE) and LFI (LFE) by means of busbars
- Possible locking and sealing in OFF or ON position



Miniature circuit breakers 1-pole

I_n [A]	Characteristic B		Characteristic C		Characteristic D		Weight [kg]	Packing [pcs]
	Type	Product code	Type	Product code	Type	Product code		
0.2			LSN 0.2C/1	01346	LSN 0.2D/1	01429	0.15	12
0.4			LSN 0.4C/1	01347	LSN 0.4D/1	01430	0.15	12
0.5			LSN 0.5C/1	01348	LSN 0.5D/1	01431	0.15	12
0.6	LSN 0.6B/1	01292	LSN 0.6C/1	01349	LSN 0.6D/1	01432	0.15	12
0.8	LSN 0.8B/1	01293	LSN 0.8C/1	01350	LSN 0.8D/1	01433	0.15	12
1	LSN 1B/1	01294	LSN 1C/1	01351	LSN 1D/1	01434	0.15	12
1.2	LSN 1.2B/1	01295	LSN 1.2C/1	01352	LSN 1.2D/1	01435	0.15	12
1.6	LSN 1.6B/1	01296	LSN 1.6C/1	01353	LSN 1.6D/1	01436	0.15	12
2	LSN 2B/1	01297	LSN 2C/1	01354	LSN 2D/1	01437	0.15	12
4	LSN 4B/1	01298	LSN 4C/1	01355	LSN 4D/1	01438	0.15	12
6	LSN 6B/1	01299	LSN 6C/1	01356	LSN 6D/1	01439	0.15	12
8	LSN 8B/1	01300	LSN 8C/1	01357	LSN 8D/1	01440	0.15	12
10	LSN 10B/1	01301	LSN 10C/1	01358	LSN 10D/1	01441	0.15	12
13	LSN 13B/1	01302	LSN 13C/1	01359	LSN 13D/1	01442	0.15	12
16	LSN 16B/1	01303	LSN 16C/1	01360	LSN 16D/1	01443	0.15	12
20	LSN 20B/1	01304	LSN 20C/1	01361	LSN 20D/1	01444	0.15	12
25	LSN 25B/1	01305	LSN 25C/1	01362	LSN 25D/1	01445	0.15	12
32	LSN 32B/1	01306	LSN 32C/1	01363	LSN 32D/1	01446	0.15	12
40	LSN 40B/1	01307	LSN 40C/1	01364	LSN 40D/1	01447	0.15	12
50	LSN 50B/1	01308	LSN 50C/1	01365	LSN 50D/1	01448	0.15	12
63	LSN 63B/1	01309	LSN 63C/1	01366	LSN 63D/1	01449	0.15	12



Miniature circuit breakers 1+N-pole

I_n [A]	Characteristic B		Characteristic C		Characteristic D		Weight [kg]	Packing [pcs]
	Type	Product code	Type	Product code	Type	Product code		
2			LSN 2C/1N	01375			0.28	6
4			LSN 4C/1N	01376			0.28	6
6	LSN 6B/1N	01317	LSN 6C/1N	01377	LSN 6D/1N	01460	0.28	6
8	LSN 8B/1N	01318	LSN 8C/1N	01378	LSN 8D/1N	01461	0.28	6
10	LSN 10B/1N	01319	LSN 10C/1N	01379	LSN 10D/1N	01462	0.28	6
13	LSN 13B/1N	01320	LSN 13C/1N	01380	LSN 13D/1N	01463	0.28	6
16	LSN 16B/1N	01321	LSN 16C/1N	01381	LSN 16D/1N	01464	0.28	6
20	LSN 20B/1N	01322	LSN 20C/1N	01382	LSN 20D/1N	01465	0.28	6
25	LSN 25B/1N	01323	LSN 25C/1N	01383	LSN 25D/1N	01466	0.28	6
32	LSN 32B/1N	01324	LSN 32C/1N	01384	LSN 32D/1N	01467	0.28	6
40	LSN 40B/1N	01325	LSN 40C/1N	01385	LSN 40D/1N	01468	0.28	6

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



Miniature circuit breakers 2-pole

I _n [A]	Characteristic B		Characteristic C		Characteristic D		Weight [kg]	Packing [pcs]
	Type	Product code	Type	Product code	Type	Product code		
0.2			LSN 0.2C/2	01695	LSN 0.2D/2	01821	0.29	6
0.4			LSN 0.4C/2	01696	LSN 0.4D/2	01822	0.29	6
0.5			LSN 0.5C/2	01697	LSN 0.5D/2	01823	0.29	6
0.6			LSN 0.6C/2	01698	LSN 0.6D/2	01824	0.29	6
0.8			LSN 0.8C/2	01699	LSN 0.8D/2	01825	0.29	6
1			LSN 1C/2	01700	LSN 1D/2	01826	0.29	6
1.2			LSN 1.2C/2	01701	LSN 1.2D/2	01827	0.29	6
1.6			LSN 1.6C/2	01702	LSN 1.6D/2	01828	0.29	6
2			LSN 2C/2	01703	LSN 2D/2	01829	0.29	6
4			LSN 4C/2	01704	LSN 4D/2	01830	0.29	6
6	LSN 6B/2	01612	LSN 6C/2	01705	LSN 6D/2	01831	0.29	6
8	LSN 8B/2	01613	LSN 8C/2	01706	LSN 8D/2	01832	0.29	6
10	LSN 10B/2	01614	LSN 10C/2	01707	LSN 10D/2	01833	0.29	6
13	LSN 13B/2	01615	LSN 13C/2	01708	LSN 13D/2	01834	0.29	6
16	LSN 16B/2	01616	LSN 16C/2	01709	LSN 16D/2	01835	0.29	6
20	LSN 20B/2	01617	LSN 20C/2	01710	LSN 20D/2	01836	0.29	6
25	LSN 25B/2	01618	LSN 25C/2	01711	LSN 25D/2	01837	0.29	6
32	LSN 32B/2	01619	LSN 32C/2	01712	LSN 32D/2	01838	0.29	6
40	LSN 40B/2	01620	LSN 40C/2	01713	LSN 40D/2	01839	0.29	6
50	LSN 50B/2	01621	LSN 50C/2	01714			0.29	6
63	LSN 63B/2	01622	LSN 63C/2	01715			0.29	6



Miniature circuit breakers 3-pole

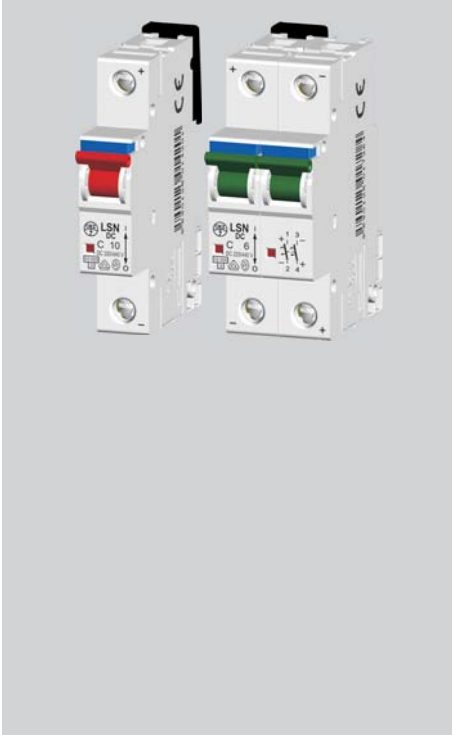
I _n [A]	Characteristic B		Characteristic C		Characteristic D		Weight [kg]	Packing [pcs]
	Type	Product code	Type	Product code	Type	Product code		
0.2			LSN 0.2C/3	01737	LSN 0.2D/3	01842	0.44	4
0.4			LSN 0.4C/3	01738	LSN 0.4D/3	01843	0.44	4
0.5			LSN 0.5C/3	01739	LSN 0.5D/3	01844	0.44	4
0.6	LSN 0.6B/3	01623	LSN 0.6C/3	01740	LSN 0.6D/3	01845	0.44	4
0.8	LSN 0.8B/3	01624	LSN 0.8C/3	01741	LSN 0.8D/3	01846	0.44	4
1	LSN 1B/3	01625	LSN 1C/3	01742	LSN 1D/3	01847	0.44	4
1.2	LSN 1.2B/3	01626	LSN 1.2C/3	01743	LSN 1.2D/3	01848	0.44	4
1.6	LSN 1.6B/3	01627	LSN 1.6C/3	01744	LSN 1.6D/3	01849	0.44	4
2	LSN 2B/3	01628	LSN 2C/3	01745	LSN 2D/3	01850	0.44	4
4	LSN 4B/3	01629	LSN 4C/3	01746	LSN 4D/3	01851	0.44	4
6	LSN 6B/3	01630	LSN 6C/3	01747	LSN 6D/3	01852	0.44	4
8	LSN 8B/3	01631	LSN 8C/3	01748	LSN 8D/3	01853	0.44	4
10	LSN 10B/3	01632	LSN 10C/3	01749	LSN 10D/3	01854	0.44	4
13	LSN 13B/3	01633	LSN 13C/3	01750	LSN 13D/3	01855	0.44	4
16	LSN 16B/3	01634	LSN 16C/3	01751	LSN 16D/3	01856	0.44	4
20	LSN 20B/3	01635	LSN 20C/3	01752	LSN 20D/3	01857	0.44	4
25	LSN 25B/3	01636	LSN 25C/3	01753	LSN 25D/3	01858	0.44	4
32	LSN 32B/3	01637	LSN 32C/3	01754	LSN 32D/3	01859	0.44	4
40	LSN 40B/3	01638	LSN 40C/3	01755	LSN 40D/3	01860	0.44	4
50	LSN 50B/3	01639	LSN 50C/3	01756	LSN 50D/3	01861	0.44	4
63	LSN 63B/3	01640	LSN 63C/3	01757	LSN 63D/3	01862	0.44	4



Miniature circuit breakers 3+N-pole

I _n [A]	Characteristic B		Characteristic C		Characteristic D		Weight [kg]	Packing [pcs]
	Type	Product code	Type	Product code	Type	Product code		
2	LSN 2B/3N	01646					0.58	3
4	LSN 4B/3N	01647					0.58	3
6	LSN 6B/3N	01648	LSN 6C/3N	01768	LSN 6D/3N	01873	0.58	3
8	LSN 8B/3N	01649	LSN 8C/3N	01769	LSN 8D/3N	01874	0.58	3
10	LSN 10B/3N	01650	LSN 10C/3N	01770	LSN 10D/3N	01875	0.58	3
13	LSN 13B/3N	01651	LSN 13C/3N	01771	LSN 13D/3N	01876	0.58	3
16	LSN 16B/3N	01652	LSN 16C/3N	01772	LSN 16D/3N	01877	0.58	3
20	LSN 20B/3N	01653	LSN 20C/3N	01773	LSN 20D/3N	01878	0.58	3
25	LSN 25B/3N	01654	LSN 25C/3N	01774	LSN 25D/3N	01879	0.58	3
32	LSN 32B/3N	01655	LSN 32C/3N	01775	LSN 32D/3N	01880	0.58	3
40	LSN 40B/3N	01656	LSN 40C/3N	01776	LSN 40D/3N	01881	0.58	3
50	LSN 50B/3N	01657	LSN 50C/3N	01777			0.58	3
63	LSN 63B/3N	01658	LSN 63C/3N	01778			0.58	3

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



DC miniature circuit breakers

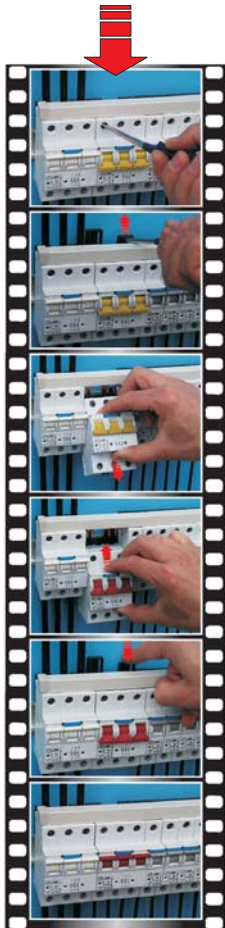
I _n [A]	1-pole				2-pole			
	Type	Product code	Weight [kg]	Packing [pcs]	Type	Product code	Weight [kg]	Packing [pcs]
2	LSN-DC 2C/1	01416	0.15	12	LSN-DC 2C/2	01724	0.29	6
4	LSN-DC 4C/1	01417	0.15	12	LSN-DC 4C/2	01725	0.29	6
6	LSN-DC 6C/1	01418	0.15	12	LSN-DC 6C/2	01726	0.29	6
8	LSN-DC 8C/1	01419	0.15	12	LSN-DC 8C/2	01727	0.29	6
10	LSN-DC 10C/1	01420	0.15	12	LSN-DC 10C/2	01728	0.29	6
13	LSN-DC 13C/1	01421	0.15	12	LSN-DC 13C/2	01729	0.29	6
16	LSN-DC 16C/1	01422	0.15	12	LSN-DC 16C/2	01730	0.29	6
20	LSN-DC 20C/1	01423	0.15	12	LSN-DC 20C/2	01731	0.29	6
25	LSN-DC 25C/1	01424	0.15	12	LSN-DC 25C/2	01732	0.29	6
32	LSN-DC 32C/1	01425	0.15	12	LSN-DC 32C/2	01733	0.29	6
40	LSN-DC 40C/1	01426	0.15	12	LSN-DC 40C/2	01734	0.29	6
50	LSN-DC 50C/1	01427	0.15	12	LSN-DC 50C/2	01735	0.29	6
63	LSN-DC 63C/1	01428	0.15	12	LSN-DC 63C/2	01736	0.29	6

LSN accessories

Auxiliary and relative switches	S-LSN	page 19
Shunt trips	V...-LSN	page 21
Undervoltage releases	N...-LSN	page 23
Labels	P...-LSN	page 25
Locking insert	VU-LSN	page 25
Interconnecting busbars	G..., S...	page 93
Connecting adapters	AS/25-GN, AS/25-SN, AS-AL/Cu-16-50	page 95
Interconnecting module	PSN	page 97

Description

- **Upper sliding latch** makes it possible to withdraw a miniature circuit breaker from a row of devices interconnected on the top by a busbar without interruption of adjacent current circuits.



- **Combined terminal** with a secured screw on both sides of the miniature circuit breaker makes it possible to connect the busbar and conductor. The busbar and conductor can be connected by a single screw.
- **Control lever colour** unambiguously indicates the rated current I_n of the device (the control lever colours are in accordance with the colours of the fuses with screw base)

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)

- **Position indicator** indicates optically the operating status of the device. It is directly connected with the contact system of the device and is independent on the control lever position (the device trips and indicates operating status even at the control lever locking. So it meets the requirement for safe disconnection.
- **Lower latch** enables mounting on the rail DIN EN 50 022, width 35 mm. In the fixed withdrawn position it facilitates the side shift on the instrument board.

Indicator colour	Device status
■ (red)	ON
■ (green)	OFF

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

Specification

Type		LSN	LSN-DC
Standards		EN 60 898	EN 60 898
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. / 48 V d.c.	220/440 V d.c.
Max. operating voltage	U_{max}	253/440 V a.c. / 52 V d.c.	242/484 V d.c.
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 60 898)	for $I_n = 0.2 \text{ A} \div 2 \text{ A}$	I_{cn} 20 kA	-
	for $I_n = 4 \text{ A}$ and 6 A	I_{cn} 15 kA	-
	for $I_n = 8 \text{ A} \div 40 \text{ A}$	I_{cn} 10 kA	-
	for $I_n = 50 \text{ A}$ and 63 A	I_{cn} 6 kA	-
Rated short-circuit service breaking capacity (EN 60 947-2)	$I_{CS}=100\% I_{CU}$	-	10 kA ($\tau \leq 5 \text{ ms}$)
Endurance		10 000 operating cycles	10 000 operating cycles
Class of discrimination		3	3
Rated impulse withstand voltage (1.2/50 μs)	U_{imp}	6 kV	6 kV
Overvoltage category (IEC 664-1)		IV	IV
Mounting on the rail DIN EN 50 022 - width		35 mm	35 mm
Degree of protection		IP20	IP20
Connection	Cu conductor - 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
	Cu conductor - flexible	0.5 ÷ 16 mm ²	0.5 ÷ 16 mm ²
	rail – thickness	2 mm	2 mm
	tightening torque	2 Nm	2 Nm
	opposite	yes	yes
Operating conditions	ambient temperature	-20 ÷ +55 °C	-20 ÷ +55 °C
	operating position	arbitrary	arbitrary
	seismic immunity (8 ÷ 50 Hz)	5 g	5 g
	climatic resistance (IEC 721-2-1)	group G	group G

Internal impedance Z, power losses P, impedance Z_s

I_n [A]	Z ¹⁾ [mΩ/pól]	P ¹⁾ [VA/pól]	Max. impedance of fault loop Z_s [Ω] ²⁾		
			Characteristic B	Characteristic C	Characteristic D
0.2	30500	1.2		128.3	72.2
0.4	7250	1.2		64.2	36.1
0.5	5000	1.25		51.3	28.9
0.6	3650	1.3	77.0	42.8	24.1
0.8	2200	1.4	57.8	32.1	18.0
1	1400	1.4	46.2	25.7	14.4
1.2	1000	1.45	38.5	21.4	12.0
1.6	560	1.45	28.9	16.0	9.0
2	375	1.5	23.1	12.8	7.2
4	98	1.55	11.6	6.4	3.6
6	27	1.0	7.7	4.3	2.4
8	19	1.2	5.8	3.2	1.8
10	12	1.2	4.6	2.6	1.4
13	12	2.0	3.6	2.0	1.1
16	7.8	2.0	2.9	1.6	0.9
20	5.3	2.1	2.3	1.3	0.7
25	4.2	2.6	1.8	1.0	0.6
32	2.7	2.75	1.4	0.8	0.5
40	1.8	2.9	1.2	0.6	0.4
50	1.3	3.25	0.9	0.5	0.3
63	1.1	4.45	0.7	0.4	0.2

¹⁾ Mean values

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

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

Correction of rated currents of miniature circuit breakers LSN

I_n [A]	Correction of rated currents for ambient temperature -20 °C to +60 °C [A] ¹⁾								
	-20 °C	-10 °C	0 °C	10 °C	20 °C	30 °C	40 °C	50 °C	60 °C
0.2	0.25	0.24	0.23	0.22	0.21	0.2	0.19	0.18	0.17
0.4	0.50	0.48	0.46	0.44	0.42	0.4	0.37	0.35	0.34
0.5	0.63	0.60	0.58	0.55	0.53	0.5	0.47	0.44	0.42
0.6	0.75	0.72	0.69	0.66	0.63	0.6	0.56	0.53	0.5
0.8	1.00	0.96	0.92	0.88	0.84	0.8	0.74	0.7	0.67
1	1.25	1.20	1.15	1.10	1.05	1	0.93	0.88	0.84
1.2	1.50	1.44	1.38	1.32	1.26	1.2	1.12	1.06	1.01
1.6	2.00	1.92	1.84	1.76	1.68	1.6	1.49	1.41	1.34
2	2.5	2.4	2.3	2.2	2.1	2	1.9	1.8	1.7
4	5.0	4.8	4.6	4.4	4.2	4	3.7	3.5	3.4
6	7.5	7.2	6.9	6.6	6.3	6	5.6	5.3	5.0
8	10.0	9.6	9.2	8.8	8.4	8	7.4	7.0	6.7
10	12.5	12.0	11.5	11.0	10.5	10	9.3	8.8	8.4
13	16.3	15.6	15.0	14.3	13.7	13	12.1	11.4	10.9
16	20.0	19.2	18.4	17.6	16.8	16	14.9	14.1	13.4
20	25.0	24.0	23.0	22.0	21.0	20	18.6	17.6	16.8
25	31.3	30.0	28.8	27.5	26.3	25	23.3	22.0	21.0
32	40.0	38.4	36.8	35.2	33.6	32	29.8	28.2	26.9
40	50.0	48.0	46.0	44.0	42.0	40	37.2	35.2	33.6
50	62.5	60.0	57.5	55.0	52.5	50	46.5	44.0	42.0
63	78.8	75.6	72.5	69.3	66.2	63	58.6	55.4	52.9

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

Correction of rated currents of miniature circuit breakers installed side by side [A]²⁾

I_n [A]	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	0.17	0.17	0.17	0.17	0.17
0.4	0.38	0.37	0.36	0.35	0.34	0.34	0.34	0.34
0.5	0.48	0.46	0.45	0.43	0.43	0.43	0.43	0.43
0.6	0.57	0.55	0.53	0.52	0.51	0.51	0.51	0.51
0.8	0.76	0.73	0.71	0.69	0.68	0.68	0.68	0.68
1	0.95	0.92	0.89	0.87	0.85	0.85	0.85	0.85
1.2	1.14	1.10	1.07	1.04	1.02	1.02	1.02	1.02
1.6	1.52	1.47	1.42	1.39	1.36	1.36	1.36	1.36
2	1.9	1.8	1.8	1.7	1.7	1.7	1.7	1.7
4	3.8	3.7	3.6	3.5	3.4	3.4	3.4	3.4
6	5.7	5.5	5.3	5.2	5.1	5.1	5.1	5.1
8	7.6	7.3	7.1	6.9	6.8	6.8	6.8	6.8
10	9.5	9.2	8.9	8.7	8.5	8.5	8.5	8.5
13	12.4	11.9	11.6	11.3	11.1	11.1	11.1	11.1
16	15.2	14.7	14.2	13.9	13.6	13.6	13.6	13.6
20	19.0	18.3	17.8	17.3	17.1	17.0	17.0	17.0
25	23.8	22.9	22.3	21.7	21.3	21.3	21.3	21.3
32	30.4	29.3	28.5	27.7	27.3	27.2	27.2	27.2
40	38.0	36.6	35.6	34.7	34.1	34.0	34.0	34.0
50	47.5	45.8	44.5	43.4	42.7	42.5	42.5	42.5
63	59.9	57.7	56.1	54.6	53.7	53.6	53.6	53.6

²⁾ Valid for reference temperature: 30 °C

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

LSN I_n [A]	PN, PNB, 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		1	6	10	10	10	10	10	
4		1	1.5	6	10	10	10	10	
6		1	1.5	2	6	10	10	10	
8		1	1.5	2	6	10	10	10	
10		1	1.5	2	5	10	10	10	
13			1.5	2	2.5	6	10	10	
16			1.5	2	2.5	6	10	10	
20				2	2.5	5	10	10	
25					2.5	5	10	10	
32						3.5	6	10	
40							1	5	10
50								3	6
63								3	6

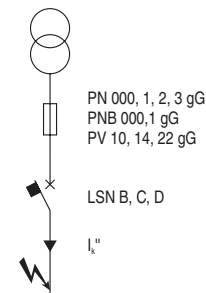
Selectivity of miniature circuit breakers LSN of characteristic C with backup fuses [kA]

LSN I_n [A]	PN, PNB, 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		1	6	10	10	10	10	10	
4		1	1.5	6	10	10	10	10	
6		1	1.5	2	6	10	10	10	
8		1	1.5	2	6	10	10	10	
10		1	1.5	2	5	10	10	10	
13			1.5	2	2.5	6	10	10	
16			1.5	2	2.5	6	10	10	
20					2.5	5	10	10	
25						2.5	5	10	10
32							3.5	6	10
40								5	10
50								3	6
63									6

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

LSN I_n [A]	PN, PNB, 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		1	6	10	10	10	10	10	
4		1	1.5	6	10	10	10	10	
6		1	1.5	2	6	10	10	10	
8			1.5	2	6	10	10	10	
10				2	5	10	10	10	
13					2.5	6	10	10	
16					2.5	6	10	10	
20						5	10	10	
25							10	10	
32							6	10	
40								10	
50									
63									

In case of short-circuit after the circuit breaker LSN with backup fuse, selectivity of particular combination is guaranteed up to the value of the short-circuit current I_k'' stated in the tables

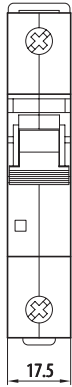


I_k'' - initial peak short-circuit current (rms value)

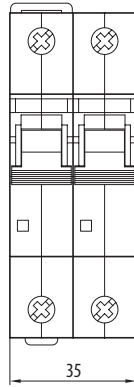
MINIATURE CIRCUIT BREAKERS LSN UP TO 63 A (10 kA)

Dimensions

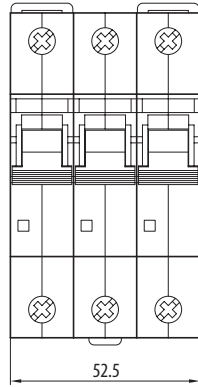
LSN-DC.../1



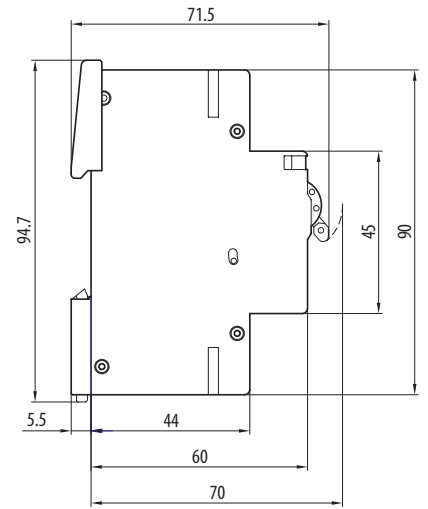
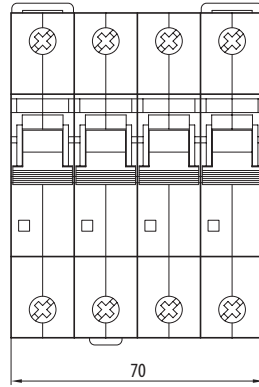
LSN.../1N
LSN.../2
LSN-DC.../2



LSN.../3



LSN.../3N

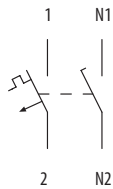


Diagram

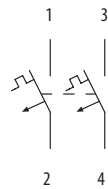
LSN.../1



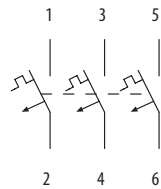
LSN.../1N



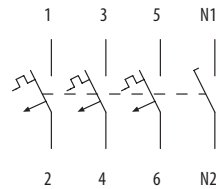
LSN.../2



LSN.../3



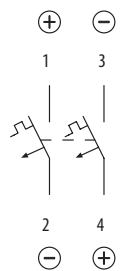
LSN.../3N



LSN-DC.../1



LSN-DC.../2

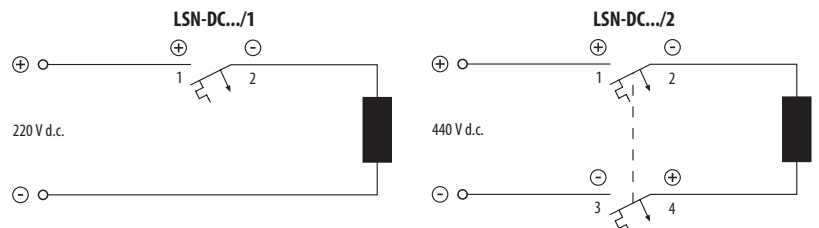


Protection of DC circuits

It is possible to use both LSN and LSN-DC miniature circuit breakers for protection of DC circuits depending on voltage.

For voltage U_n up to:

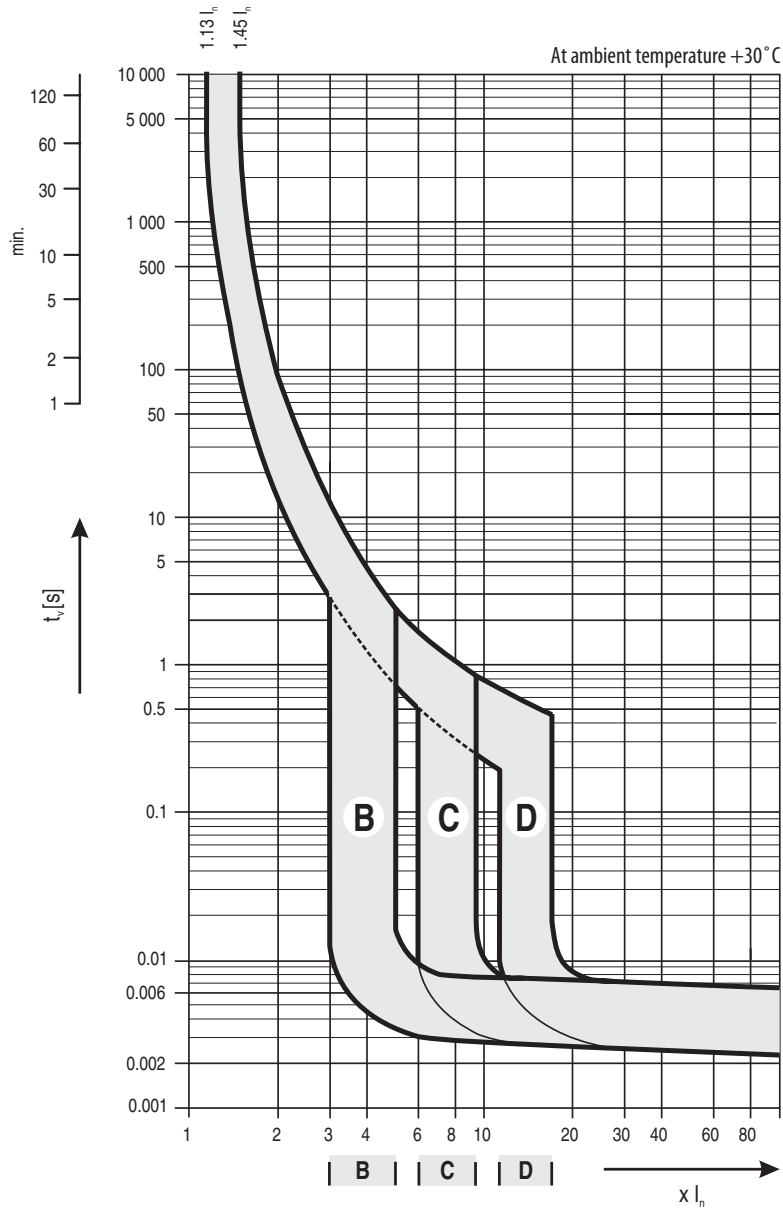
- 48 V d.c. use miniature circuit breakers LSN.../1. Source poles (+) and (-) can be connected to the circuit breaker terminals arbitrarily.
- 220 V d.c. or 440 V d.c., use miniature circuit breakers LSN-DC.../1 or LSN-DC.../2. As these miniature circuit breakers are equipped with permanent magnets, source poles (+) and (-) must be connected to identically marked terminals of the circuit breakers (see connection example).



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

Tripping characteristics

- **Characteristic B:** for protection of electric circuits with equipment that does not cause current surges (lighting or socket outlet circuits etc.); the short-circuit release is set to $(3 \div 5) I_n$
- **Characteristic C:** for protection of electric circuits with equipment that 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 electric circuits with equipment that causes high current surges (transformers, 2-pole motors etc.); the short-circuit release is set to $(12 \div 16) I_n$



Tripping characteristics of miniature circuit breakers according to EN 60 898

Thermal release	Tripping characteristic type
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 for $0.1 s < t < 45 s$ (for $I_n \leq 32 A$) $0.1 s < t < 90 s$ (for $I_n > 32 A$)	$I_4 = 3 I_n$		
$0.1 s < t < 15 s$ (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 $I_n \leq 10 A$, it is permissible that $t < 8 s$

t - break time of the circuit breaker

AUXILIARY AND RELATIVE SWITCHES



Auxiliary switches S-LSN11, S-LSN21

- Accessories to: LSN, LSE, LST, ASN, AST
- The auxiliary switches are designed for signalling the position of the main contacts of miniature circuit breakers and tumbler power switches in tripping by releases or manually – i.e. in tripping by overload, short-circuit, shunt trip, overvoltage release or control lever
- At correct connection of S-LSN11 or S-LSN21 with a miniature circuit breaker or tumbler power switch electric isolation is provided like between the input and output circuits of a protective transformer
- The auxiliary switch function can be tested by the test push-button on the front panel of the device

Auxiliary and relative switch S-LSN2001

- Accessories to: LSN, LSE, ASN
- The auxiliary and relative switch is designed for signalling the position of the main contacts of miniature circuit breakers and tumbler power switches in tripping:
 - by releases or manually – i.e. in tripping by overload, short-circuit, shunt trip, overvoltage release or control lever. This is signalled by auxiliary switches – terminals 33-34, 23-24
 - only by releases – i.e. only in tripping by overload, short-circuit, shunt trip or overvoltage release. This is signalled by so called relative switch – terminals 95-96
- The auxiliary switch function can be tested by the test push-button on the front panel of the device

Auxiliary and relative switches

Contact sequence ¹⁾	Type	Product code	Weight [kg]	Packing [pcs]
11	S-LSN11	01494	0.05	1
21	S-LSN21	01495	0.05	1
2001	S-LSN2001	01498	0.05	1

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

Specification

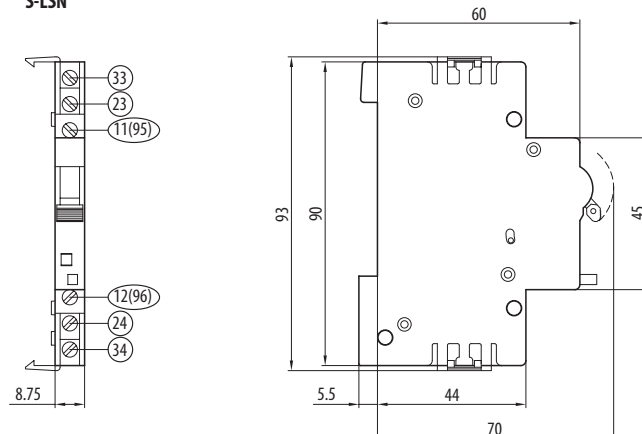
Type	S-LSN11, S-LSN21		S-LSN2001
Standards	EN 60 947-5-1		EN 60 947-5-1
Approval marks			
Contact sequence ^{1) 2)}	11, 21		2001
Rated operating voltage / current	AC-1	U_e/I_e	230 V/6 A
	AC-15	U_e/I_e	230 V/4 A or 400 V/2 A
	DC-1	U_e/I_e	220 V/1 A
	DC-13	U_e/I_e	220 V/1 A
Rated impulse withstand voltage	U_{imp}	4 kV	2.5 kV
Endurance	10 000 operating cycles		10 000 operating cycles
Degree of protection	IP20		IP20
Mounting	on right side		on right side
Connection - conductor	rigid	0.75 ÷ 4 mm ²	0.75 ÷ 4 mm ²
	flexible	0.75 ÷ 2.5 mm ²	0.75 ÷ 2.5 mm ²
Seismic immunity (8 ÷ 50 Hz)	3 g		3 g

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

²⁾ Another possibility to achieve a higher number or a different sequence of contacts: install V101-LSN... shunt trip on the left side of the device and use only the auxiliary switch function

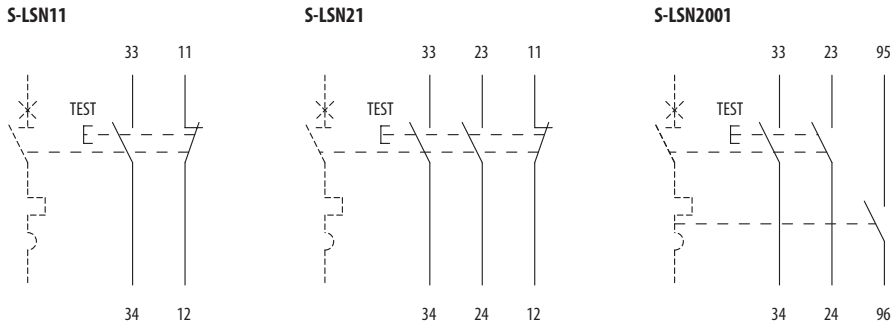
Dimensions

S-LSN



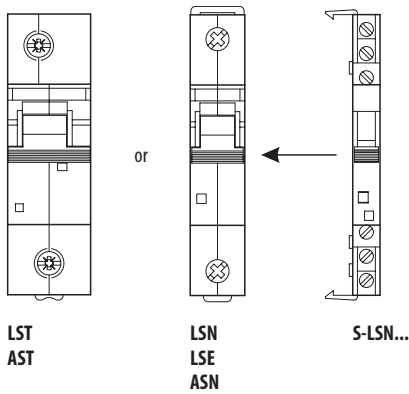
AUXILIARY AND RELATIVE SWITCHES

Diagram



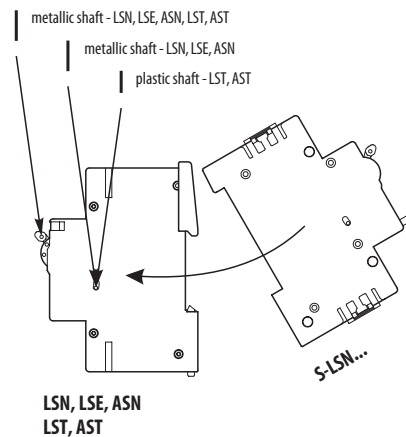
Assembly and installation of auxiliary switches

Assembly



Installation of an auxiliary switch on a miniature circuit breaker or tumbler power switch (hereinafter only the device):

1. Switch on both the auxiliary switch and the device.
2. Insert one shaft into the control lever of the device and the second shaft (for LST, AST the shaft is plastic) into the hole in the switching system of the device.
3. Slide the auxiliary switch from the right onto the device in such a way that one shaft interconnects control levers and the other interconnects the switching systems.
4. Press the auxiliary switch to the device and click the side fixing latches of the auxiliary switch into the device recess.
5. Check correct function by switching.



SHUNT TRIPS



- Accessories to: LSN, LST, LSE, ASN, AST
- For tripping the miniature circuit breakers or tumbler power switch by applied voltage between 70 % and 110 % U_e
- For signalling the position of the main contacts of the miniature circuit breaker or tumbler power switch by make or break-make contact
- The shunt trip coil is connected to terminals A1 and A2 to ensure its disconnection from the control voltage in the device trip. So the coil is powered for a required time. The disconnection is provided by the contact in the circuit between the terminals A1 and A2.
- Shunt trips V101-LSN contains additionally an auxiliary switch with break-make contact

Shunt trips

U_n AC/DC [V]	Contact sequence - 10 ¹⁾		Contact sequence - 101 ¹⁾		Weight [kg]	Packing [pcs]
	Type	Product code	Type	Product code		
24 / 24	V10-LSN-X024	08487	V101-LSN-X024	08497	0.12	1
48 / 48	V10-LSN-X048	08488	V101-LSN-X048	08755	0.12	1
110 / 110	V10-LSN-X110	08489	V101-LSN-X110	08926	0.12	1
230 / 220	V10-LSN-X230	08490	V101-LSN-X230	08498	0.12	1
400 / 440	V10-LSN-X400	08491	V101-LSN-X400	08499	0.12	1

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

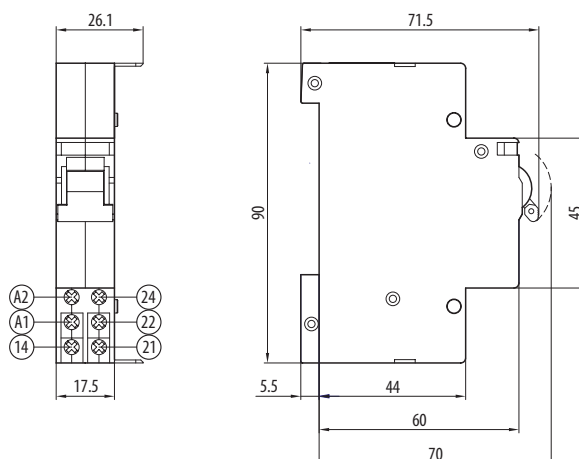
Specification

Type	V...-LSN	
Standards	EN 60 947-1	
Coil		
Rated operating voltage	U_e	24, 48, 110, 230, 400 V a.c. 24, 48, 110, 220, 440 V d.c.
Rated frequency	f_n	40 ÷ 60 Hz
Max. starting input power	90 VA	
Break time	10 ms	
Contact		
Sequence ¹⁾	10, 101	
Rated operating voltage / current	AC-1	U_e/I_e 230 V / 4 A or 400 V / 2 A
	DC-1	U_e/I_e 220 V / 0.5 A
	AC-15	U_e/I_e 230 V / 2 A
Endurance	10 000 operating cycles	
Other data		
Mounting	on the left side	
Connection - conductor rigid and flexible	0.75 ÷ 2.5 mm ²	
Degree of protection	IP20	
Seismic immunity (8÷50 Hz)	1.5 g	

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

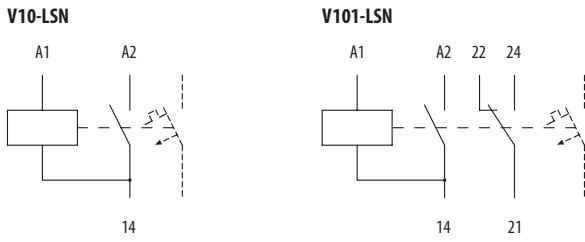
Dimensions

V...-LSN



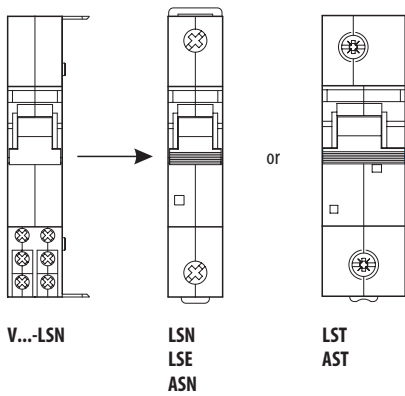
SHUNT TRIPS

Diagram



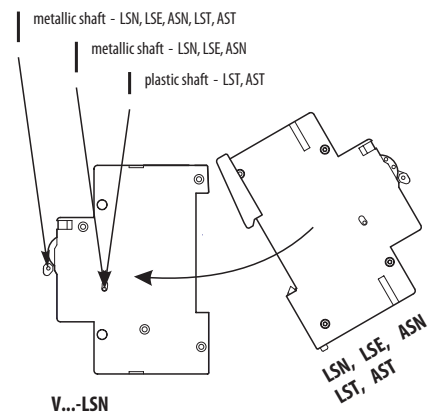
Assembly and installation of shunt trips

Assembly



Installation of a shunt trip on a miniature circuit breaker or tumbler power switch (hereinafter only the device):

1. Switch off both the shunt trip and the device.
2. Insert one shaft into the control lever of the shunt trip and the second shaft (for LST, AST the shaft is plastic) into the hole in the switching system of the shunt trip.
3. Slide the device from the right onto the shunt trip in such a way that one shaft interconnects control levers and the other interconnects the switching systems.
4. Press the device to the shunt trip and click the side fixing latches of the shunt trip into the device recess.
5. Check correct function by switching



UNDervOLTAGE RELEASES



- Accessories to: LSN, LST, LSE, ASN, AST
- For tripping the miniature circuit breaker or tumbler power switch at voltage drop between 70 % and 35 % U_e
- For tripping the miniature circuit breaker or tumbler power switch on pressing the switch-off push-button
- For elimination of miniature circuit breakers or tumbler power switch closing at voltage lower than 35 % on the undervoltage release (the closing is possible at $U \geq 85 \% U_e$)
- It is frequently used for protection against motor restart after the mains failure
- Undervoltage releases N101-LSN contain in addition an auxiliary switch with make and break-make contact for signalling the position of main contacts of the miniature circuit breaker or tumbler power switch

Undervoltage releases

U_n AC [V]	Without contacts		Contact sequence - 101 ¹⁾		Weight [kg]	Packing [pcs]
	Type	Product code	Type	Product code		
24	N-LSN-A024	08475	N101-LSN-A024	08485	0.12	1
48	N-LSN-A048	08476	N101-LSN-A048	09053	0.12	1
110	N-LSN-A110	08477	N101-LSN-A110	09055	0.12	1
230	N-LSN-A230	08478	N101-LSN-A230	08486	0.12	1
400	N-LSN-A400	08479	N101-LSN-A400	08927	0.12	1

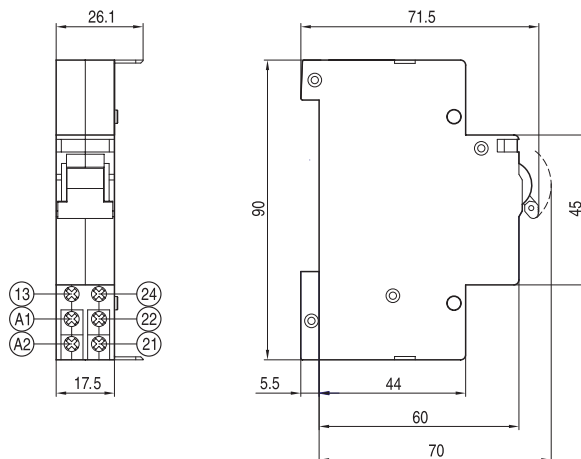
Specification

Type	N...-LSN		
Standards	EN 60 947-1		
Coil			
Rated operating voltage	U_e 24, 48, 110, 230, 400 V a.c.		
Rated frequency	f_n 40 ÷ 60 Hz		
Consumption	2.5 W		
Max. starting input power	90 VA		
Break time	25 ms		
Contact			
Sequence ¹⁾	0, 101		
Rated operating voltage/current	AC-1	U_e/I_e	230 V / 4 A or 400 V / 2 A
	DC-1	U_e/I_e	220 V / 0.5 A
	AC-15	U_e/I_e	230 V / 2 A
Endurance	10 000 operating cycles		
Other data			
Mounting	on the left side		
Connection	0.75 ÷ 2.5 mm ²		
Degree of protection	IP20		
Operating position	vertical		
Seismic immunity (8÷50 Hz)	3 g		

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

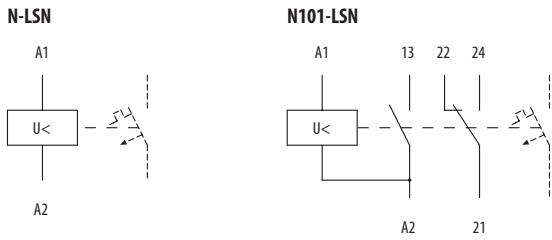
Dimensions

N...-LSN



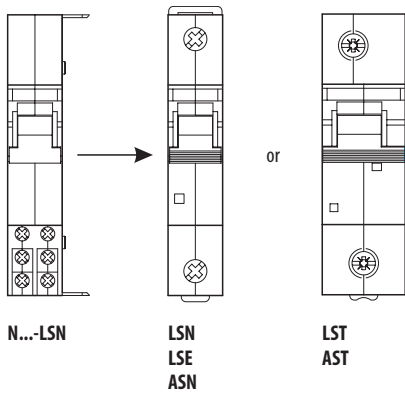
UNDERVOLTAGE RELEASES

Diagram



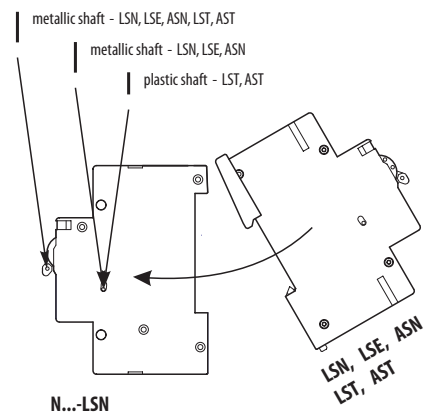
Assembly and installation of undervoltage releases

Assembly



Installation of an undervoltage release on a miniature circuit breaker or tumbler power switch (hereinafter only the device):

1. Switch off both the undervoltage release and the device.
2. Insert one shaft into the control lever of the undervoltage release and the second shaft (for LST, AST the shaft is plastic) into the hole in the switching system of the undervoltage release.
3. Slide the device from the right onto the undervoltage release in such a way that one shaft interconnects control levers and the other interconnects the switching systems.
4. Press the device to the undervoltage release and click the side fixing latches of the undervoltage release into the device recess.
5. Check correct function by switching



LOCKING INSERT, LABELS



Locking insert VU-LSN

- Accessories to: LSN, LSE, ASN, MS
- For reliable locking in both closed and open positions
- The breaking function of miniature circuit breakers is possible also in the locked position
- Max. diameter of the lock shank – 4.5 mm
- The padlock is not a part of delivery

Label P...-LSN

- Accessories to: LSN, ASN, MS, MT, MK, M2T, MCR, IR116K, C-IR, D-IR, PR116, PR208, ...
- For better orientation in the switchboard
- Use spirit marker for description of blank labels

Locking insert

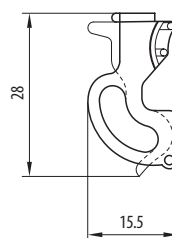
Type	Product code	Weight [kg]	Packing [pcs]
VU-LSN	09087	0.002	1

Labels

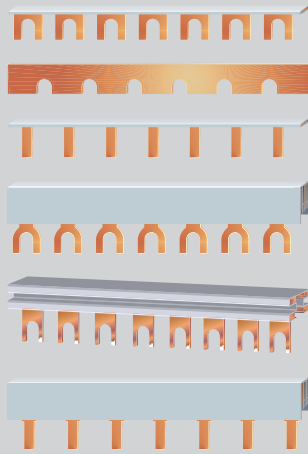
Description	Colour	Type	Product code	Weight [kg]	Packing [pcs]
	■	PB-LSN	01499	0.001	20
L1	■	PB07-LSN	01506	0.001	20
L2	■	PB08-LSN	01507	0.001	20
L3	■	PB09-LSN	01508	0.001	20
	□	PW-LSN	01509	0.001	20

Dimensions

VU-LSN



INTERCONNECTING BUSBARS AND END CAPS



Interconnecting busbars

- For interconnection of 1 to 4-pole circuit breakers, tumbler power switches, residual current circuit breakers, lightning current arresters and surge voltage arresters
- For interconnection of a series of single-phase or three-phase circuit breakers and tumbler power switches, on which an auxiliary switch is mounted
- Busbars G-... with forks into the head part of the device
Busbars S-... with pins into the clip part of the device

End cap EK-C-2+3:

- To cover end of busbar G-2L-1000/16, G-3L-1000/16C, S-3L-27-1000/16

End cap EK-C-3/36:

- To cover end of busbar S-3L-27-1000/25

End cap EK-C-4/16:

- To cover end of busbar G-4L-1000/16

End cap EK-C-3:

- To cover end of busbar G-3L-1000/10C

Interconnecting busbars

Phase	Cross-section [mm ²]	Max. current at power supply of [A/phase] end middle	Length [mm]	Type	Product code	Accessories to	Weight [kg]	Packing [pcs]
1	12	65	110	G-1L-1000/12	00171	LSN, LSE, ASN	0.22	50
				G-1L-1000/12g ¹⁾	00170	LSN, LSE, ASN	0.1	50
	16	80	130	S-1L-210/16iso	13012	LSN, LSE, SVL, SJL, ASN	0.045	50
	20	90	150	G-1L-1000/20	00172	LSN, LSE, SJB, SVM, ASN	0.36	50
	24	100	180	G-1L-27-1000/24 ²⁾	11001	LSN, LSE, ASN	0.3	50
	16	80	130	G-2L-1000/16	11179	LSN, LSE, LFI, LFE, OFI, OFE, ASN	0.46	20
3	10	63	100	G-3L-1000/10C	00173	LSN, LSE, ASN	0.44	20
	16	80	130	G-3L-1000/16C	00174	LSN, LSE, OFI, OFE, SJB, SVM, ASN	0.72	20
				G-3L+9-1000/16 ²⁾	11002	LSN, LSE, ASN	0.66	10
				S-3L-27-1000/16 ³⁾	11864	LSN, LST, LSE, ASN, AST	0.52	20
	25	100	180	S-3L-27-1000/25 ³⁾	11865	LSN, LST, LSE, ASN, AST	0.96	10
4	16	80	130	G-4L-1000/16	11180	LSN, LSE, OFI, OFE, ASN	0.96	15

¹⁾ The busbar is uninsulated

²⁾ For 1-pole or 3-pole devices with an auxiliary switch

³⁾ For 3-pole LST; for 1-pole LSN, LSE, ASN with an auxiliary switch

End caps

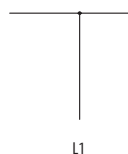
Type	Product code	Accessories to	Weight [kg]	Packing [pcs]
EK-C-3	00178	G-3L-100/10C	0.001	10
EK-C-2+3	00181	G-2L-1000/16, G-3L-1000/16C, S-3L-27-1000/16	0.001	10
EK-C-3/36	11176	S-3L-1000/25	0.002	10
EK-C-4/16	11181	G-4L-1000/16	0.002	10

Specification

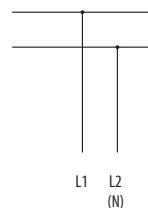
Type	G-1L, G-2L, G-3L, G-4L, S-1L, S-3L
Rated operating voltage	U_e 230/400 V a.c., 220/440 V d.c.
Load current	63 ÷ 180 A
Length	210, 1000 mm
Cross-section	10 ÷ 25 mm ²

Diagram

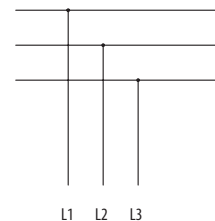
G-1L, S-1L



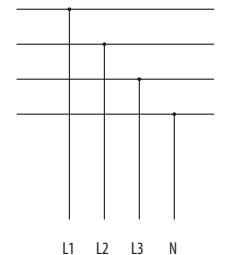
G-2L



G-3L, S-3L

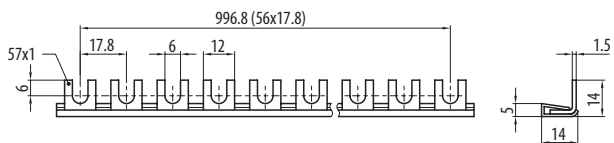
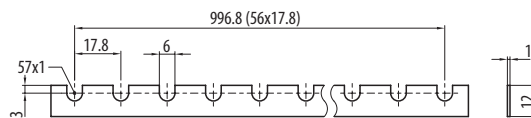
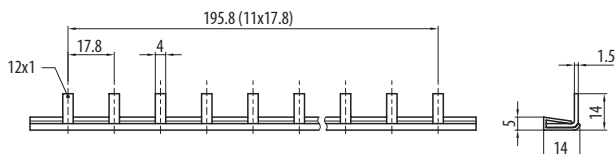
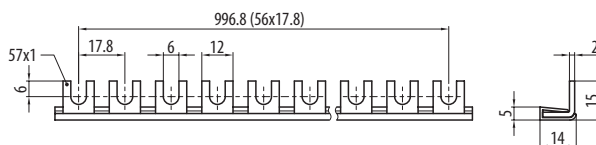
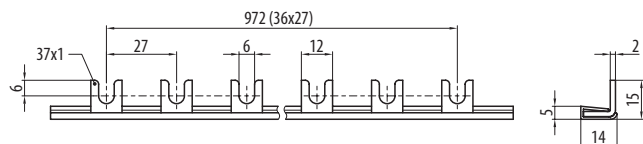
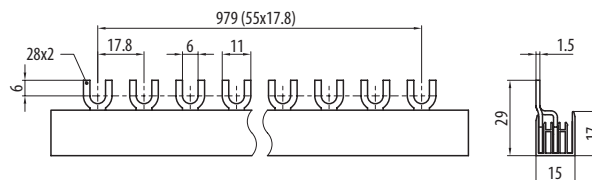
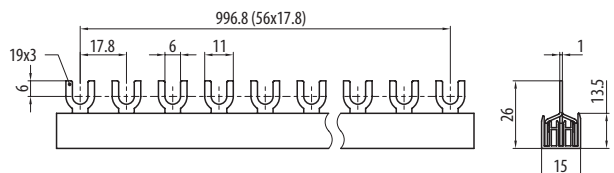
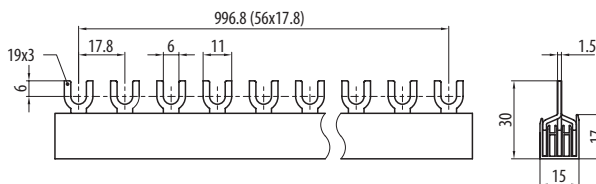
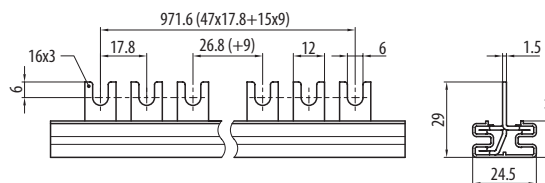
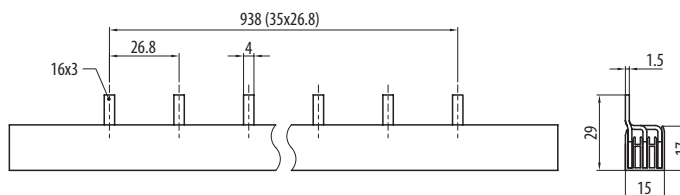
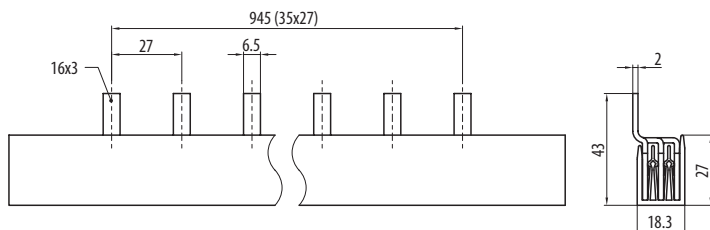
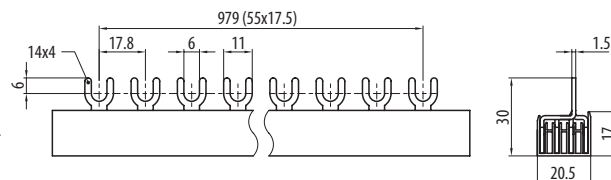


G-4L



INTERCONNECTING BUSBARS AND END CAPS

Dimensions

G-1L-1000/12

G-1L-1000/12g

S-1L-210/16iso

G-1L-1000/20

G-1L-27-1000/24

G-2L-1000/16

G-3L-1000/10C

G-3L-1000/16C

G-3L+9-1000/16C

S-3L-27-1000/16

S-3L-27-1000/25

G-4L-1000/16


CONNECTING ADAPTERS AND BLOCKS



Connecting adapter AS/25-GN

- Accessories to: LSN, LSE, LFI, LFE, OFI, OFE, SJB, SVM, ASN
- For connection of another conductor to the head part of the terminal of a circuit breaker or tumbler power switch
- For example, it the best solution is to connect a conductor for power supply of an electric meter in the clip part of the circuit breaker terminal, and another conductor through the connecting adapter AS/25-GN in the head part of the circuit breaker terminal
- Conductor cross-section: $6 \div 25 \text{ mm}^2$

Connecting adapter AS/25-SN

- Accessories to: OFI20, OFE20, SVL, SJL, RP1
- For connection of conductor to the clip part of the terminal of a circuit breaker or tumbler power switch
- Conductor cross-section: $6 \div 25 \text{ mm}^2$

Connecting adapter AS-AL/Cu-16-50

- Accessories to: LSN, LST, LSE, LFI, LFE, SJBplus, ASN, AST
- For connection of Al or Cu conductors
- Cross-section of Cu conductors: $2.5 \div 50 \text{ mm}^2$
- Cross-section of Al conductors: $16 \div 50 \text{ mm}^2$

Connecting adapter CS-FH000-...NP95

- Accessories to: LST, SJBplus, SJB100/NPE/1,5, AST
- For connection of Cu/Al conductors of cross-section $35 \div 95 \text{ mm}^2$
- Connecting adapter with straight terminal

Connecting adapter CS-FH000-3NV95

- Accessories to: LST, SJBplus, SJB100/NPE/1,5, AST
- For connection of Cu/Al conductors of cross-section $35 \div 95 \text{ mm}^2$
- Connecting adapter with outbowed terminal

Connecting adapter N3x10-FH000

- Accessories to: LST, SJB, SVM, AST
- For connection of 3 conductors/pole of the device of cross-section 10 mm^2

Connection block ES/35S/G

- Accessories to: G-1L, G-2L, G-3L, G-4L, S-1L, S-3L
- It enables power supply of interconnecting busbars of conductors of section up to 35 mm^2
- The blocks can be installed in series to create a multiple-pole connection block
- Degree of protection IP20

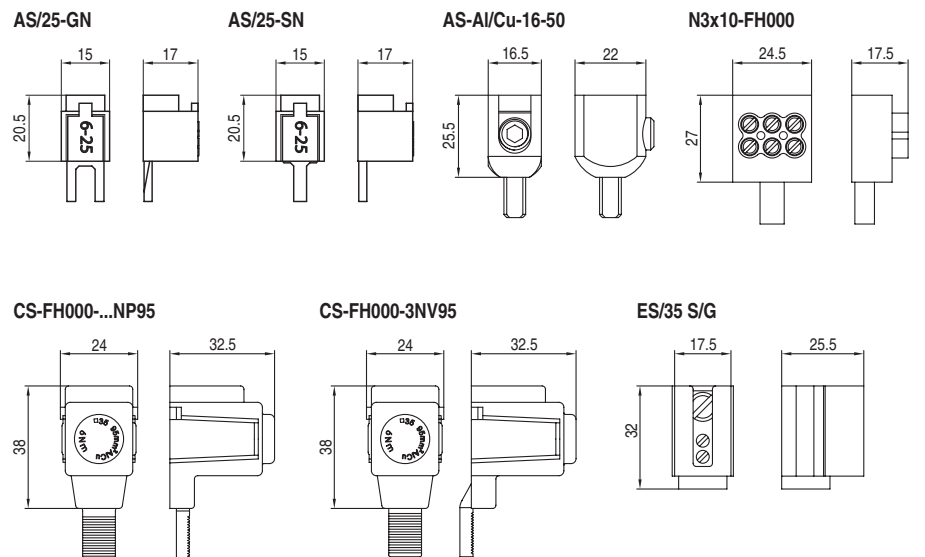
Connecting adapters

Type	Product code	Weight [kg]	Accessories to	Set [pcs]	Packing [pcs]
AS/25-GN	00177	0.012	LSN, LSE, LFI, LFE, OFI, OFE, SJB, SVM, ASN	1	10
AS/25-SN	00176	0.013	OFI20, OFE20, SVL, SJL, RP1	1	10
AS-AL/Cu-16-50	18351	0.016	LSN, LST, LSE, LFI, LFE, SJBplus, ASN, AST	1	15
CS-FH000-3NP95	13740	0.1	LST, SJBplus, SJB100/NPE/1,5, AST	3	1
CS-FH000-1NP95	14378	0.1	LST, SJBplus, SJB100/NPE/1,5, AST	1	1
CS-FH000-3NV95	13742	0.1	LST, SJBplus, SJB100/NPE/1,5, AST	3	1
N3x10-FH000	14127	0.02	LST, SJB, SVM, AST	3	1

Connection block

Type	Product code	Weight [kg]	Packing [pcs]
ES/35 S/G	00175	0.03	10

Dimensions



INTERCONNECTING MODULE



- Accessories to all modular devices
- It is used as a connecting element between input and output terminals in a series of modular devices
- It covers free spaces between individual devices in series
- Possibility of interconnection with LSN, LSE, ASN by means of busbars

Interconnecting module

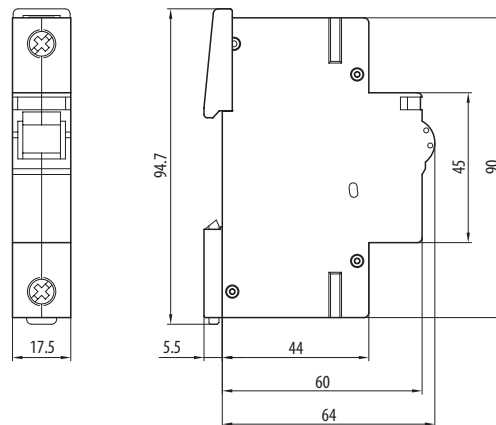
Type	Product code	Weight [kg]	Packing [pcs]
PSN	07450	0.08	12

Specification

Type	PSN	
Approval marks		
Number of poles	1	
Rated operating voltage	U_c	230/400 V a.c., 250/440 V d.c.
Rated current	I_n	80 A
Mounting on the rail DIN EN 50 022 width	35 mm	
Ambient temperature	$-25 \div +55 \text{ }^\circ\text{C}$	
Degree of protection	IP20	
Connection	Cu conductor - rigid (solid, stranded)	$0.5 \div 25 \text{ mm}^2$, $2x (0.5 \div 10) \text{ mm}^2$
	Cu conductor - flexible	$0.5 \div 16 \text{ mm}^2$
	rail – thickness	2 mm
	tightening torque	2 Nm
	opposite	yes
Seismic immunity (8 ÷ 50 Hz)	5 g	

Dimensions

PSN



Diagram

PSN

