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Modular devices

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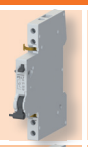
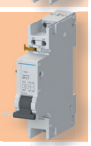
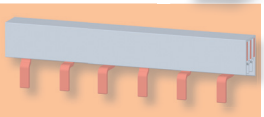
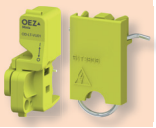
SUMMARY OF MODELS AND DESCRIPTION

	 page B5	 page B10	 page B13	 page B20	 page B23
Type	**LTP**	**LTK**	**LTS**	**LTN**	**LTN-UC**
Rated short-circuit breaking capacity I_{cn} (EN 60898-1)[1]	6 kA	6 kA	10 kA	10 kA	10 kA
Rated current I_n	2 ÷ 63 A	2 ÷ 40 A	0.5 ÷ 63 A	0.3 ÷ 80 A	1 ÷ 63 A
Rated operating voltage U_e	AC 230/400 V	AC 230 V	AC 230/400 V	AC 230/400 V	AC 230/400 V DC 220 V (1-pole) DC 440 V (2-pole)
Number of poles	1, 2, 3	1N (1 module)	1, 1N, 2, 3, 3N	1, 1N, 2, 3, 3N	1, 2
Characteristics	B, C	B, C	B, C, D	B, C, D	C

[1] The standard EN 60898-2 is valid for LTN-UC.

Accessories					
Auxiliary switches 	PS-LT				
Signal switches 	SS-LT				
Shunt trips 	-		SV-LT		
Undervoltage releases 	-		SP-LT		
Remote control 	RC-LT				
Interconnecting busbars 	S1L, S2L, S3L, S4L				
Locking inserts 	OD-LT-VU02	OD-LT-VU01	OD-LT-VU02	OD-LT-VU01	OD-LT-VU01
Sealing insert 	OD-LT-VP01	-	OD-LT-VP01		

SUMMARY OF MODELS AND DESCRIPTION

Description of LTS, LTP

Connection

- **Simple terminal** with secure screw. Enables connection of conductor and interconnecting busbars from both sides of the device.
- **Safety:** the terminals are equipped with sliding plastic caps, which increase protection against dangerous contact.
- **Interconnection of circuit breakers** by interconnecting busbar both at the top and at the bottom.
- **Interconnection of circuit breakers with residual current circuit breakers** by interconnecting busbar both at the top and at the bottom.

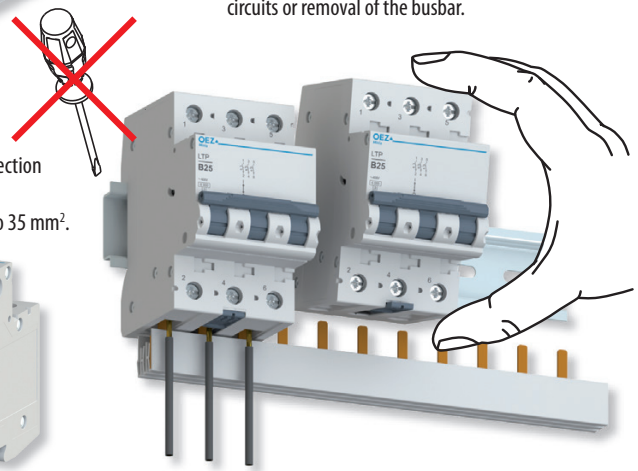
Sealing

- The circuit breaker can be sealed in on or off position.

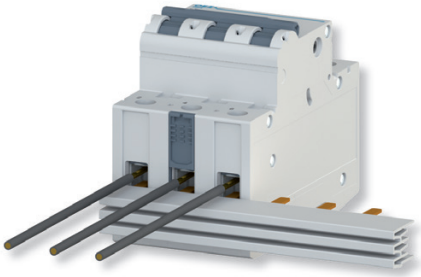
Mounting/demounting on/from "U" rails

The latches enable:

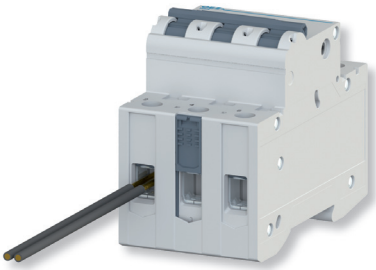
- very quick mounting and demounting by hand, without any tool needed.
- withdrawal/replacement of the circuit breaker from the row of devices interconnected by interconnecting busbar at the bottom, without interruption of adjacent circuits or removal of the busbar.



- **Easy connection and check of conductors** at simultaneous connection of interconnecting busbar and conductors.



- **Connection possibility:**
  – of two conductors of the same cross-section to one terminal
  – of one conductor of cross-section up to 35 mm².



Description of LTK

Connection

- **Range:** terminals for Cu conductors connection 0.75 ÷ 16 mm².
- **Safety:** the terminals are equipped with sliding plastic caps, which increase protection against dangerous contact.

Width

The width of the 1+N pole circuit breaker is only 1 module (17.5 mm).

Mounting/demounting on/from "U" rails

The device is equipped with latches at the top and at the bottom.
In demounting the latch must be released by a tool.

Sealing

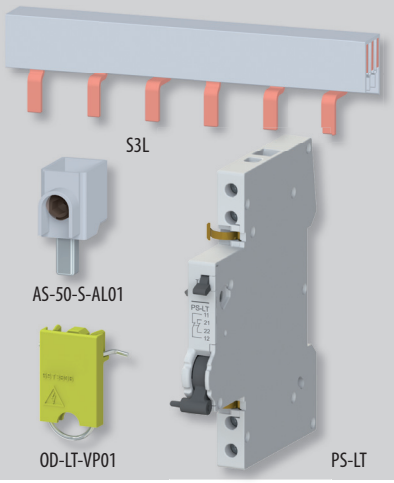
- The circuit breaker can be sealed in on or off position.

MINIATURE CIRCUIT BREAKERS LTP


LTP-10B-1


LTP-16B-2


LTP-25B-3



- Series of miniature circuit breakers up to 63 A, AC 230/400 V a DC 60 V / pole.
- For protection of cables and conductors against overload and short-circuit.
- Tripping characteristics B, C according to EN 60898-1.
- Breaking capacity 6 kA.

Miniature circuit breakers 1-pole

I_n [A]	Characteristic B Type	Order code	Characteristic C Type	Order code	Number of modules	Weight [kg]	Package [pcs]
2	**LTP-2B-1**	OEZ:42190	**LTP-2C-1**	OEZ:42202	1	0.178	12
4	**LTP-4B-1**	OEZ:42191	**LTP-4C-1**	OEZ:42203	1	0.152	12
6	**LTP-6B-1**	OEZ:42192	**LTP-6C-1**	OEZ:42204	1	0.128	12
10	**LTP-10B-1**	OEZ:42193	**LTP-10C-1**	OEZ:42205	1	0.144	12
13	**LTP-13B-1**	OEZ:42194	**LTP-13C-1**	OEZ:42206	1	0.149	12
16	**LTP-16B-1**	OEZ:42195	**LTP-16C-1**	OEZ:42207	1	0.132	12
20	**LTP-20B-1**	OEZ:42196	**LTP-20C-1**	OEZ:42208	1	0.134	12
25	**LTP-25B-1**	OEZ:42197	**LTP-25C-1**	OEZ:42209	1	0.137	12
32	**LTP-32B-1**	OEZ:42198	**LTP-32C-1**	OEZ:42210	1	0.178	12
40	**LTP-40B-1**	OEZ:42199	**LTP-40C-1**	OEZ:42211	1	0.160	12
50	**LTP-50B-1**	OEZ:42200	**LTP-50C-1**	OEZ:42212	1	0.187	12
63	**LTP-63B-1**	OEZ:42201	**LTP-63C-1**	OEZ:42213	1	0.181	12

Miniature circuit breakers 2-pole

I_n [A]	Characteristic B Type	Order code	Characteristic C Type	Order code	Number of modules	Weight [kg]	Package [pcs]
2	-	-	**LTP-2C-2**	OEZ:42226	2	0.306	6
4	-	-	**LTP-4C-2**	OEZ:42227	2	0.301	6
6	**LTP-6B-2**	OEZ:42216	**LTP-6C-2**	OEZ:42228	2	0.248	6
10	**LTP-10B-2**	OEZ:42217	**LTP-10C-2**	OEZ:42229	2	0.347	6
13	**LTP-13B-2**	OEZ:42218	**LTP-13C-2**	OEZ:42230	2	0.282	6
16	**LTP-16B-2**	OEZ:42219	**LTP-16C-2**	OEZ:42231	2	0.273	6
20	**LTP-20B-2**	OEZ:42220	**LTP-20C-2**	OEZ:42232	2	0.261	6
25	**LTP-25B-2**	OEZ:42221	**LTP-25C-2**	OEZ:42233	2	0.259	6
32	**LTP-32B-2**	OEZ:42222	**LTP-32C-2**	OEZ:42234	2	0.320	6
40	**LTP-40B-2**	OEZ:42223	**LTP-40C-2**	OEZ:42235	2	0.340	6
50	**LTP-50B-2**	OEZ:42224	**LTP-50C-2**	OEZ:42236	2	0.338	6
63	**LTP-63B-2**	OEZ:42225	**LTP-63C-2**	OEZ:42237	2	0.343	6

Miniature circuit breakers 3-pole

I_n [A]	Characteristic B Type	Order code	Characteristic C Type	Order code	Number of modules	Weight [kg]	Package [pcs]
2	-	-	**LTP-2C-3**	OEZ:42250	3	0.491	4
4	-	-	**LTP-4C-3**	OEZ:42251	3	0.460	4
6	**LTP-6B-3**	OEZ:42240	**LTP-6C-3**	OEZ:42252	3	0.378	4
10	**LTP-10B-3**	OEZ:42241	**LTP-10C-3**	OEZ:42253	3	0.374	4
13	**LTP-13B-3**	OEZ:42242	**LTP-13C-3**	OEZ:42254	3	0.394	4
16	**LTP-16B-3**	OEZ:42243	**LTP-16C-3**	OEZ:42255	3	0.376	4
20	**LTP-20B-3**	OEZ:42244	**LTP-20C-3**	OEZ:42256	3	0.389	4
25	**LTP-25B-3**	OEZ:42245	**LTP-25C-3**	OEZ:42257	3	0.400	4
32	**LTP-32B-3**	OEZ:42246	**LTP-32C-3**	OEZ:42258	3	0.465	4
40	**LTP-40B-3**	OEZ:42247	**LTP-40C-3**	OEZ:42259	3	0.496	4
50	**LTP-50B-3**	OEZ:42248	**LTP-50C-3**	OEZ:42260	3	0.473	4
63	**LTP-63B-3**	OEZ:42249	**LTP-63C-3**	OEZ:42261	3	0.499	4

Accessories

Auxiliary and signal switches	**PS-LT, SS-LT**	page B44
Remote control	**RC-LT**	page B46
Locking insert	**OD-LT-VU02**	page B47
Sealing insert	**OD-LT-VP01**	page B47
Interconnecting busbars	**S1L, S2L, S3L**	page B55
Terminal extension	**AS-50-S-AL01**	page B57

MINIATURE CIRCUIT BREAKERS LTP

Specifications

Type		LTP
Standards		EN 60898-1
Approval marks		
Number of poles		1, 2, 3
Tripping characteristics		B, C
Rated current	I_n	2 ÷ 63 A
Rated operating voltage	U_e	AC 230/400 V
Max. operating voltage	U_{max}	AC 250/440 V, DC 60 V / protected pole
Min. operating voltage (1 pole)	U_{min}	AC/DC 24 V
Rated insulation voltage	U_i	AC 250/440 V
Rated frequency	f_n	50/60 Hz
Rated short-circuit breaking capacity (EN 60898-1)	I_{cn}	AC 6 kA
Rated short-circuit ultimate breaking capacity (EN 60947-2)	I_{cu}	AC 6 kA
Mechanical endurance		10 000 operating cycles
Electrical endurance		10 000 operating cycles
Mounting on "U" rail according to EN 60715 - type		TH 35
Degree of protection - with connected conductors		IP20
Connection		
Cu conductor		see table Connection range
Screw head type		PZ2
Torque		2.5 ÷ 3 Nm
Top or bottom connection		top/bottom
Operating conditions		
Ambient temperature	°C	-25 ÷ +45 °C, max. 95 % air humidity
Working position		arbitrary
Climatic resistance (EN 60068-2-30)		6 operating cycles

Connection range

Number of connected conductors	Rigid conductor (solid, stranded)	Conductor flexible with a sleeve	Conductor flexible without a sleeve [1]
1x flexible	1x (0.75 ÷ 35) mm²	1x (0.75 ÷ 25) mm²	1x (1 ÷ 35) mm²
2x flexible	2x (0.75 ÷ 10) mm²	2x (0.75 ÷ 4) mm²	2x (1 ÷ 4) mm²
1x conductor + interconnecting busbar	1x (10 ÷ 25) mm² + interconnecting busbar pin thickness max. 1.5 mm	1x (6 ÷ 16) mm² [2] + Interconnecting busbar pin thickness max. 1.5 mm	- -

[1] The conductor must be twisted before insertion to a terminal; individual conductor fibres must not stick out of the terminal.
[2] In case of use of a sleeve without plastic neck: conductor 1x (6 ÷ 25) mm².
If more conductors are used they must be of the same type and cross-section.

MINIATURE CIRCUIT BREAKERS LTP

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

I_n [A]	Characteristic B Z[1] [mΩ/pole]	Characteristic B P[1] [W/pole]	Characteristic C Z[1] [mΩ/pole]	Characteristic C P[1] [W/pole]	Max. impedance of fault loop Z_S [Ω][2] Characteristic B t ≤ 0.4 s	Characteristic B t ≤ 5 s	Characteristic C t ≤ 0.4 s	Characteristic C t ≤ 5 s
2	446	1.8	295	1.2	23.0	23.0	11.5	23.0
4	97	1.6	81.0	1.3	11.5	11.5	5.8	11.6
6	23.3	0.8	17.1	0.6	7.6	7.6	3.8	7.6
10	14.9	1.5	12.1	1.2	4.6	4.6	2.3	4.6
13	11.0	1.9	10.6	1.8	3.57	3.57	1.7	3.4
16	7.6	1.9	6.6	1.7	2.9	2.9	1.4	2.8
20	5.2	2.1	5.1	2.0	2.3	2.3	1.1	2.2
25	4.0	2.5	3.7	2.3	1.8	1.8	0.9	1.8
32	2.3	2.4	2.4	2.5	1.4	1.4	0.7	1.4
40	2.1	3.4	2.1	3.3	1.1	1.1	0.6	1.2
50	1.5	3.8	1.4	3.5	0.9	0.9	0.5	1.0
63	1.4	5.4	1.1	4.4	0.7	0.7	0.4	0.8

[1] Average values per protected pole

[2] For TN network, U_0 = AC 230 V, according to EN 60364-4-41; if the measured value exceeds the table value, we recommend to use residual current circuit breaker.

Correction of rated current I_n

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

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

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

K_T … is correction factor taking ambient temperature into account

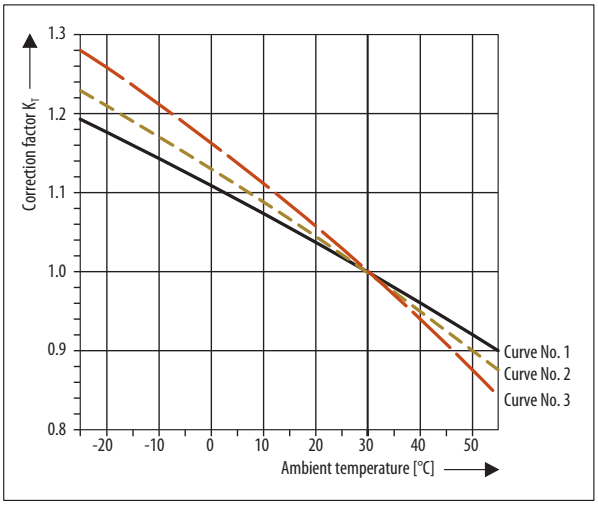
K_N … is correction factor taking into account placement of more loaded circuit breakers side-by-side

1) Correction factor K_T

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

Characteristic	Number of poles	Rated current of the circuit breaker I_n [A] 2	4	6	10	13	16	20	25	32	40	50	63
		Correction curve number											
B	1, 2	2	2	3	2	2	2	3	3	3	3	3	3
	3	-	-	3	2	2	2	3	2	1	2	3	3
C	1, 2	2	3	3	3	2	2	3	3	3	3	3	3
	3	2	2	3	3	2	2	3	2	3	2	3	3

Correction factor K_T depending on ambient temperature



2) Correction factor K_N

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

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

Example

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

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

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

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

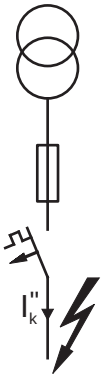
MINIATURE CIRCUIT BREAKERS LTP

Selectivity and short-circuit current with backup fuse

Selectivity of LTP miniature circuit breakers of characteristic B and C with backup fuses [kA]

I_n [A]	Fuse of type gG								
	16 A	20 A	25 A	35 A	50 A	63 A	80 A	100 A	125 A
2	0.3	0.4	0.7	1.4	2.5	3.3	4.6	6.0	6.0
4	0.3	0.4	0.6	1.3	2.2	2.9	4.1	6.0	6.0
6	-	0.4	0.5	1.0	1.7	2.2	3.2	6.0	6.0
10	-	-	0.5	1.0	1.6	2.0	2.9	5.0	6.0
13	-	-	-	1.0	1.6	2.0	2.9	5.0	6.0
16	-	-	-	0.8	1.3	1.8	2.6	4.0	5.6
20	-	-	-	-	1.3	1.8	2.6	4.0	5.6
25	-	-	-	-	-	1.8	2.6	4.0	5.6
32	-	-	-	-	-	-	2.3	3.4	4.5
40	-	-	-	-	-	-	-	3.4	4.5
50	-	-	-	-	-	-	-	-	4.4
63	-	-	-	-	-	-	-	-	-

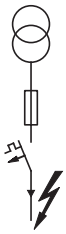
The time selectivity of particular combination up to the value of short-circuit current I_k'' shown in the table is ensured in case of short-circuit behind the LTP circuit breaker with back-up fuse-link.
Which means that at short-circuit of particular combination under the I_k'' value only the circuit breaker actuates. In case the short-circuit current value is bigger than I_k'', value then also the back-up fuse-link actuates.



Example:
Miniature circuit breaker LTP-10B-.. actuates earlier than back-up fuse-link with rated current 50 A up to short-circuit current 1.6 kA.

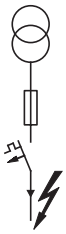
Max. short-circuit current with backup fuse [kA]
In case that short-circuit current passing through the circuit breaker is not known in the place of installation or is higher than breaking capacity of the circuit breaker, backup fuse must be used to eliminate circuit breaker overload.

Characteristic B



I_n [A]	Backup fuse of gG type			
	63 A	80 A	100 A	125 A
2	6	6	6	6
4	6	6	6	6
6	6	6	6	6
10	6	6	6	6
13	6	6	6	6
16	6	6	6	6
20	6	6	6	6
25	6	6	6	6
32	6	6	6	6

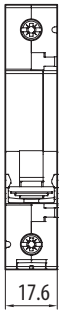
Characteristic C



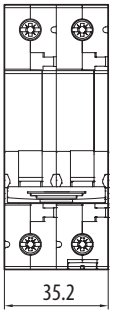
I_n [A]	Backup fuse of gG type			
	63 A	80 A	100 A	125 A
2	6	6	6	6
4	6	6	6	6
6	6	6	6	6
10	6	6	6	6
13	6	6	6	6
16	6	6	6	6
20	6	6	6	6
25	6	6	6	6
32	6	6	6	6

Dimensions

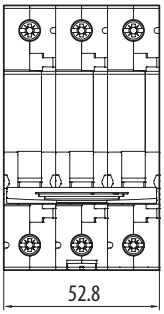
LTP-..-1

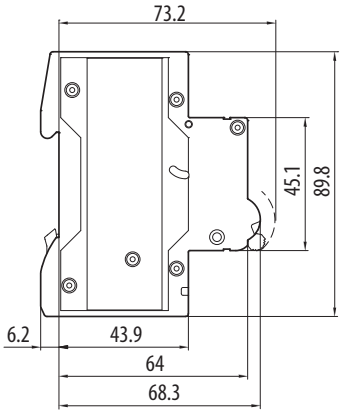


LTP-..-2



LTP-..-3

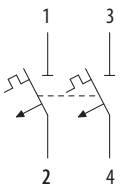




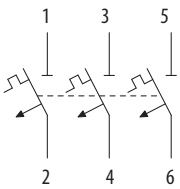
Diagram

LTP-..-1

LTP-..-2

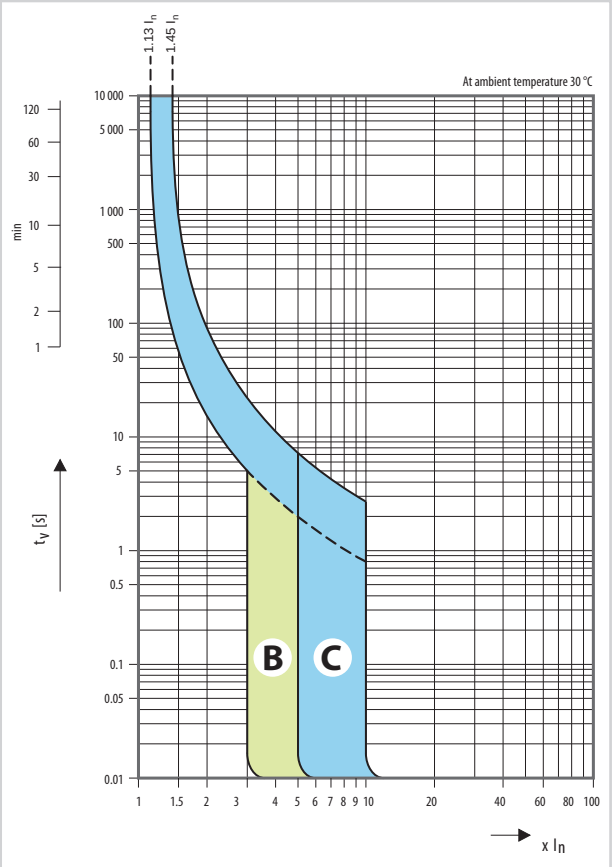


LTP-..-3



MINIATURE CIRCUIT BREAKERS LTP

Characteristics



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

Tripping characteristics of circuit breakers according to EN 60898-1

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

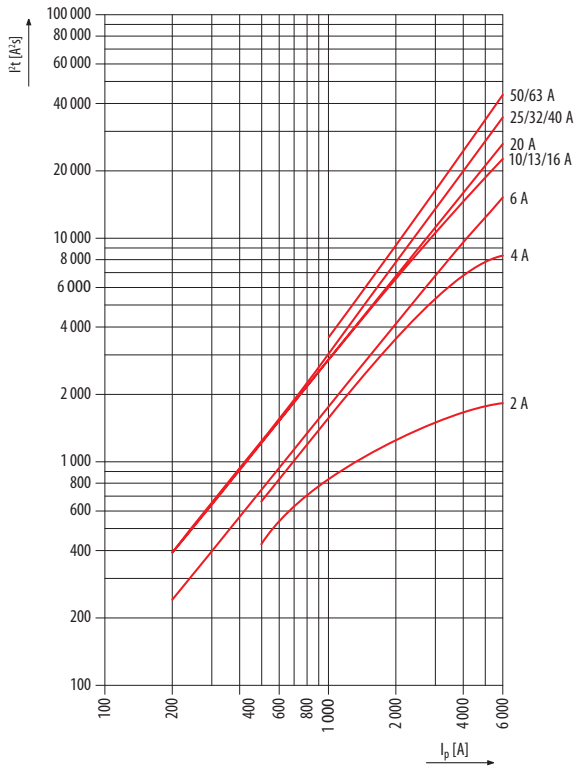
t - break time of the circuit breaker

Electromagnetic release		Tripping characteristic type B	C
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)		$I_4 = 5\ I_n$
Current I_5 for t < 0.1 s		$I_5 = 5\ I_n$	$I_5 = 10\ I_n$

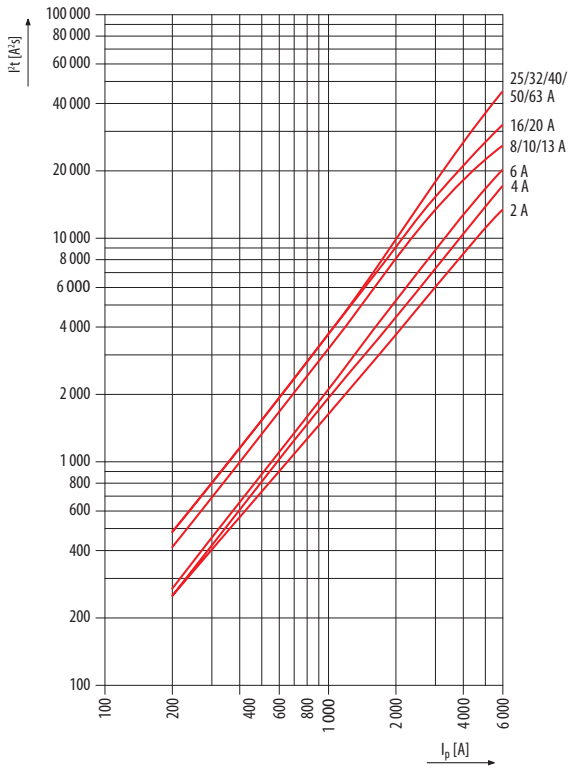
t - break time of the circuit breaker

Characteristics I^2t

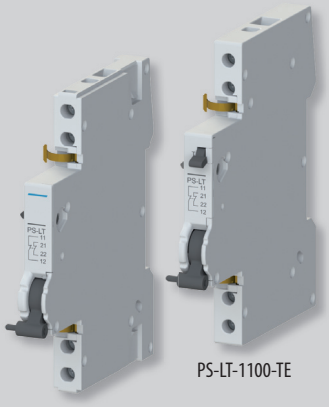
LTP - characteristic B



LTP - characteristic C



ACCESSORIES



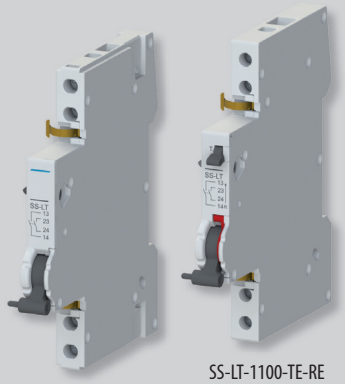
PS-LT-1100 PS-LT-1100-TE

Auxiliary switches

- Accessory to:
  - miniature circuit breakers: LTP, LTK, LTS, LTN, LTN-UC, LVN, LVN-DC
  - residual current circuit breakers: LFN, LFE
  - residual current circuit breakers with overcurrent protection: OLI, OLE (installation on OLI/OLE requires handle adapter OD-OL-NR01 see page B46 except for PS-LT-1100-K)
  - switches: MSO, MSN, AVN-DC.
- For signalling the position of contacts of the device in switching off by releases or manually, i.e. in switching off by overload, short-circuit, shunt trip or undervoltage release, residual current and manually by control lever.
- Mounting on the right side of the device.
- For the number of auxiliary switches connected to the device in combination with the other accessories see page B53, B54.
- Width 9 mm.
- Auxiliary switch function can be checked by test lever on the front side of the device (version PS-..-TE).
- Variant for switching small direct current voltages up to DC 30 V.
- They are suitable for application in SELV and PELV circuits - sufficient insulation is provided between the circuit breaker and the auxiliary switch.

Design	Arrangement of contacts [1]	Type	Order code	Number of modules	Weight [kg]	Package [pcs]
Standard	1100	**PS-LT-1100**	OEZ:42297	0.5	0.065	1
	2000	**PS-LT-2000**	OEZ:42299	0.5	0.071	1
	0200	**PS-LT-0200**	OEZ:42298	0.5	0.065	1
	0010	**PS-LT-0010**	OEZ:45595	0.5	0.051	1
With test and reset lever	1100	**PS-LT-1100-TE**	OEZ:42300	0.5	0.054	1
	2000	**PS-LT-2000-TE**	OEZ:42302	0.5	0.058	1
	0200	**PS-LT-0200-TE**	OEZ:42301	0.5	0.080	1
For small voltages standard	1100	**PS-LT-1100-MN**	OEZ:42303	0.5	0.075	1
For small voltages with test lever	1100	**PS-LT-1100-MN-TE**	OEZ:42304	0.5	0.054	1
With handle adapter OD-OL-NR01 [2]	1100	**PS-LT-1100-K**	OEZ:42305	0.5	0.065	1
Combined with signal contact [3]	0011	**PS-LT-0011**	OEZ:46050	0.5	0.056	1

[1] Each digit indicates successively the number of make, break, auxiliary make-and-break and signal make-and-break contacs.
[2] PS-LT-1100-K is a set for convenient ordering in installation on OLI/OLE. The other designs of the auxiliary switches installed on OLI/OLE require separate ordering of OD-OL-NR01.
[3] Signal contact: for position signalling of main contacts of the device in switching off by releases, i.e. in switching off by overload, short-circuit, shunt trip and undervoltage release or residual current.



SS-LT-1100 SS-LT-1100-TE-RE

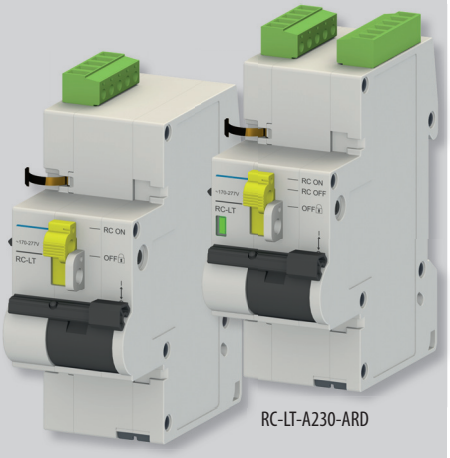
Signal switches

- Accessory to:
  - miniature circuit breakers: LTP, LTK, LTS, LTN, LTN-UC, LVN, LVN-DC
  - residual current circuit breakers: LFN, LFE
  - residual current circuit breakers with overcurrent protection: OLI, OLE (installation on OLI/OLE requires handle adapter OD-OL-NR01 see page B46)
  - switches: MSN.
- For position signalling of main contacts of the device in switching off by releases, i.e. in switching off by overload, short-circuit, shunt trip and undervoltage release or residual current.
- Mounting on the right side of the device.
- For the number of auxiliary switches connected to the device in combination with the other accessories see page B53, B54.
- Auxiliary switch function can be checked by test lever on the front side of the device (version SS-..-TE).
- Signal switch can be reset by means of the red reset lever on the front side of the device without switching the device on by the control lever (version SS-..-RE).
- They are suitable for application in SELV and PELV circuits - sufficient insulation is provided between the circuit breaker and the signal switch.
- Reaction in switching off by releases: in switching off by releases the make/break contact will break/make – for details see the table on page B48.

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

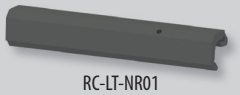
[1] Each digit indicates successively the number of make, break, auxiliary make-and-break and signal make-and-break contacs.

ACCESSORIES



RC-LT-A230-ARD

RC-LT-A230



RC-LT-NR01

Remote control

- Accessory to:
  - miniature circuit breakers: LTP, LTK, LTS, LTN, LTN-UC
  - residual current circuit breakers: LFE, LFN (only in combination with RC-LT-A230-ARD)
  - residual current circuit breakers with overcurrent protection: OLI, OLE
  - switches: MSO, MSN, AVN-DC.
- They are used for remote switching on/off the device.
- ARD (auto reclose device) function is used for automatic reclosing of the controlled device after switching off by release.
- It is necessary to use a suitable remote control adapter for mounting of a remote control.

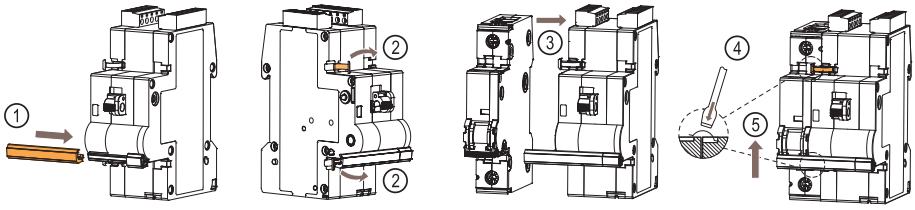
Rated voltage U_c	Arrangement of contacts [1]	Type	Order code	Number of modules	Weight [kg]	Package [pcs]
AC 230 V	-	**RC-LT-A230**	OEZ:46474	2	0.229	1
	0011	**RC-LT-A230-ARD**	OEZ:46478	2	0.237	1

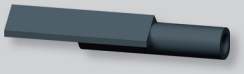
[1] Each digit indicates successively the number of make, break, auxiliary make-and-break and signal make-and-break contacs.

Remote control adapter

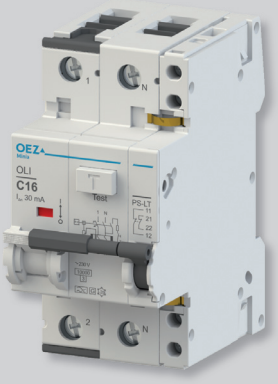
Type	Order code	Description	Weight [kg]	Package [ks]
RC-LT-NR01	OEZ:46480	for 1-pole and 2-pole LTK, LTN, LTN-UC and MSN	0.013	5
RC-LT-NR02	OEZ:46481	for 3-pole and 4-pole LTK, LTN, MSN and AVN-DC	0.011	5
RC-LT-NR03	OEZ:46482	for 2-pole OLE, OLI	0.010	5
RC-LT-NR04	OEZ:46483	for 1-pole and 2-pole LFK, LFN and MSO	0.009	5
RC-LT-NR05	OEZ:46484	for 3-pole and 4-pole LTP, LTK, LTS and MSO	0.011	5

Example of installation





OD-OL-NR01

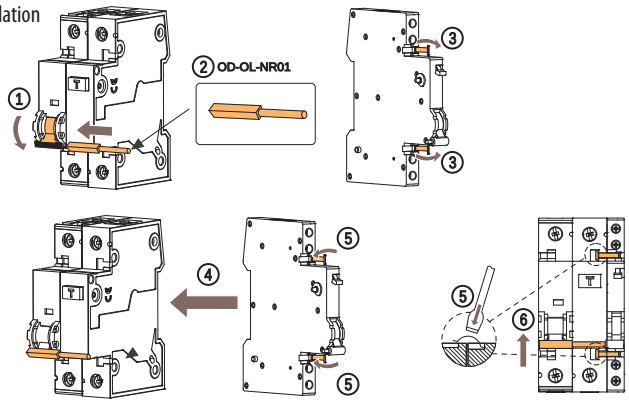


Handle adapter OD-OL-NR01

- Accessory to: OLI, OLE.
- It enables installation of the following accessories on residual current circuit breakers with overcurrent protection OLI, OLE
  - auxiliary switches (PS-LT)
  - signal switches (SS-LT)
  - undervoltage releases (SP-LT)
  - shunt trips (SV-LT).
- Special auxiliary switch PS-LT-1100-K contains the handle adapter OD-OL-NR01. So it is not necessary to order it separately.

Type	Order code	Weight [kg]	Package [pcs]
OD-OL-NR01	OEZ:38270	0.002	5

Example of installation



ACCESSORIES

OD-LT-VU01

Locking insert OD-LT-VU01

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

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

OD-LT-VU02

Locking insert OD-LT-VU02

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

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

OD-LT-VP01

Sealing insert OD-LT-VP01

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

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

ACCESSORIES

Specifications of auxiliary and signal switches

Type				PS-LT SS-LT	PS-LT-1100-MN PS-LT-1100-MN-TE
Standards				EN 60947-5-1 EN 62019	EN 60947-5-1 EN 62019
Approval marks					
Arrangement of contacts [1]				1100, 2000, 0200, 0010, 0011	1100, 2000, 0200
Rated operating voltage/current	U_e/I_e	AC-13	400 V	2 A	-
			230 V	6 A	-
		AC-14	400 V	2 A	-
			230 V	6 A	-
		DC-13 [2]	220 V	1 A/0.5 A	-
			110 V	1 A/0.75 A	-
			60 V	3 A/1.5 A	-
			24 V	6 A/3 A	-
Max. voltage/current				-	DC 30 V / 100 mA
Min. voltage/current				AC/DC 24 V / 50 mA	DC 5 V / 1 mA
Backup protection - fuse / miniature circuit breaker				6 A gG / 6 A characteristic B, C	6 A gG / 6 A characteristic B, C
Mechanical endurance				10 000 operating cycles	10 000 operating cycles
Electrical endurance at I_e				10 000 operating cycles	10 000 operating cycles
Degree of protection				IP20	IP20
Connection					
Cu conductor - rigid (solid, stranded)				0.5 ÷ 2.5 mm²	0.5 ÷ 2.5 mm²
Cu conductor - flexible				0.5 ÷ 2.5 mm²	0.5 ÷ 2.5 mm²
Torque				0.5 Nm	0.5 Nm
Top or bottom connection				top/bottom	top/bottom
Operating conditions					
Ambient temperature				-25 ÷ +55 °C	-25 ÷ +55 °C
Working position				arbitrary	arbitrary
Climatic resistance according to IEC 60068-2-30				28 operating cycles	28 operating cycles
Shocks (EN 60068-2-27)				150 m/s² in 11 ms half-sine pulse	150 m/s² in 11 ms half-sine pulse
Vibration resistance according to IEC 60068-2-6				50 m/s² at 10 ÷ 150 Hz	50 m/s² at 10 ÷ 150 Hz

[1] Each digit indicates successively the number of make, break, auxiliary make-and-break and signal make-and-break contacs.
[2] Value according to EN 62019 / according to EN 60947-5-1

Function of signal switch SS-LT

Circuit breaker contact state	The state of the MAKE signal contact SS-LT-. . . *
Initial position - contacts open	switched off
Switching on manually - contacts closed	switched on
Switching off manually - contacts open	switched on
Switching off by release - contacts open	switched off

* The break contact works in opposite way.

ACCESSORIES

Specifications of remote controls

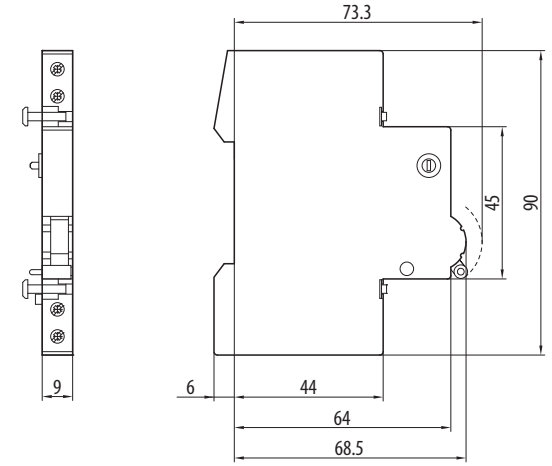
Type			RC-LT-A230	RC-LT-A230-ARD
Standards			EN 50557	EN 50557
Approval marks			CE	CE
Mounting			on the right side of the device	on the right side of the device
Degree of protection			IP20	IP20
Rated voltage	U_c		AC 230 V	AC 230 V
Range of rated voltage			AC 177 ÷ 270 V	AC 177 ÷ 270 V
Rated frequency	f_n		50/60 Hz	50/60 Hz
Max. length of remote control conductors			1 500 m	1 500 m
Power loss	P	AC 230 V	1 VA	-
ARD - auto reclose device				
Number of attempts			0	3
Time after which automatic reclosing will be executed.			-	10 s, 1 min, 10 min
Contact				
Arrangement of contacts [1]			-	0011
Rated operating voltage/current			-	AC 250 V / 2 A
Connection				
Cu conductor - rigid (solid, stranded)			0.5 ÷ 1.5 mm^2	0.5 ÷ 1.5 mm^2
Cu conductor - flexible			0.5 ÷ 1.5 mm^2	0.5 ÷ 1.5 mm^2
Torque			0.25 Nm	0.25 Nm
Operating conditions				
Mechanical endurance			10 000 operating cycles	10 000 operating cycles
Electrical endurance			10 000 operating cycles	10 000 operating cycles
Ambient temperature			-25 ÷ 45 °C	-25 ÷ 45 °C

[1] Each digit indicates successively the number of make, break, auxiliary make-and-break and signal make-and-break contacs.

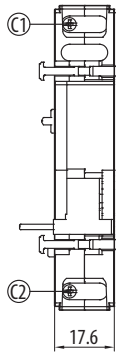
ACCESSORIES

Dimensions

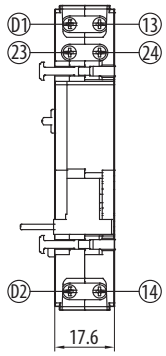
PS-LT, SS-LT

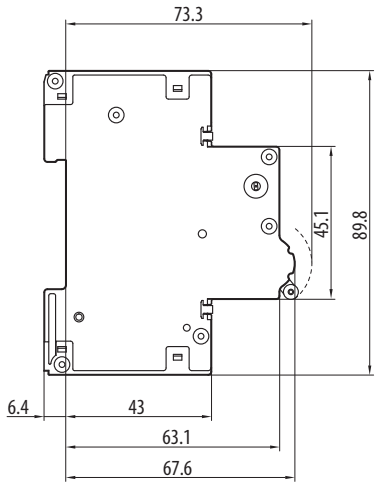


SV-LT

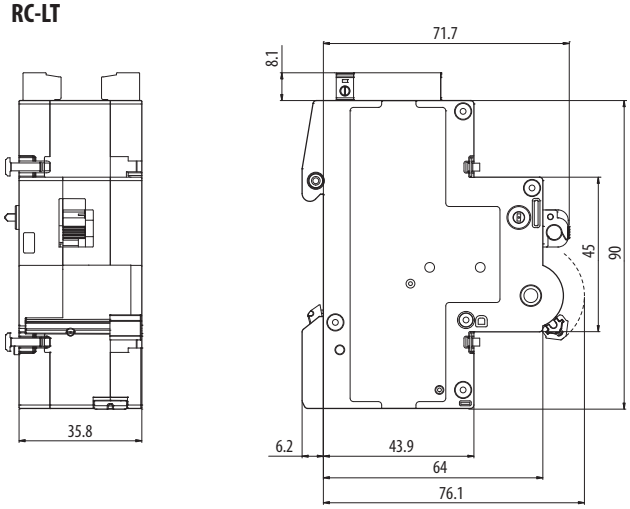


SP-LT

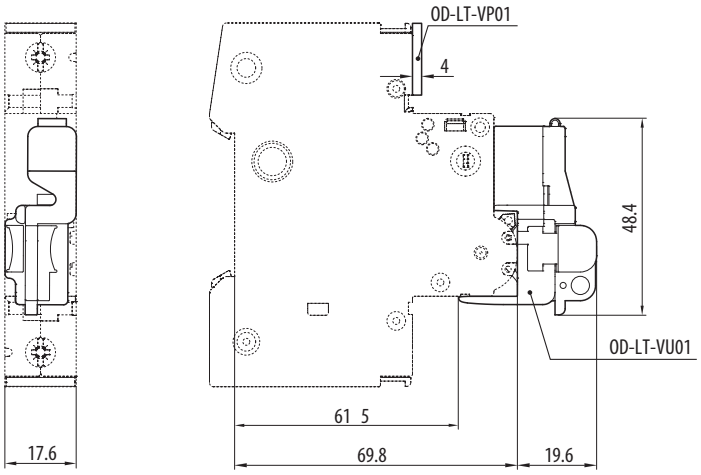




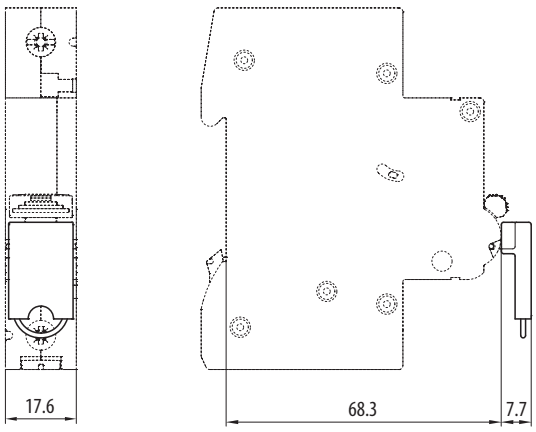
RC-LT



LTK, LTN, LVN, OLI, OLE, MSN, AVN-DC + OD-LT-VU01 + OD-LT-VP01



LTP, LTS, LFN, LFE, MSO + OD-LT-VU02

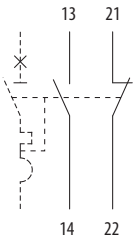


ACCESSORIES

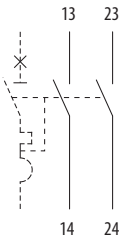
Diagram

Auxiliary switches

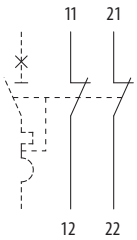
PS-LT-1100



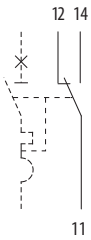
PS-LT-2000



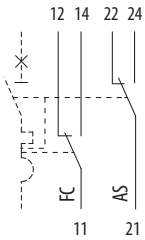
PS-LT-0200



PS-LT-0010

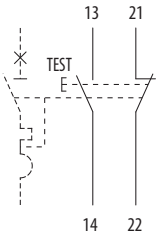


PS-LT-0011

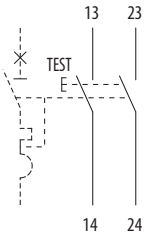


FC ... signal contact
AS ... auxiliary contact

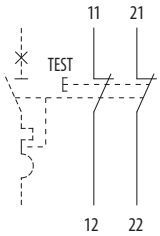
PS-LT-1100-TE



PS-LT-2000-TE

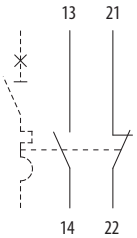


PS-LT-0200-TE

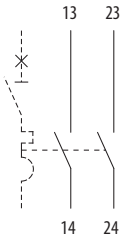


Signal switches

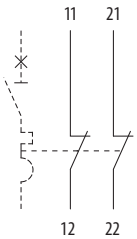
SS-LT-1100



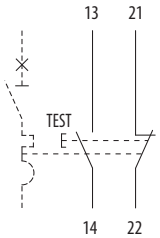
SS-LT-2000



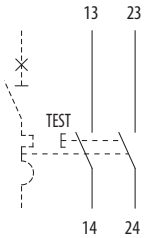
SS-LT-0200



SS-LT-1100-TE-RE



SS-LT-2000-TE-RE



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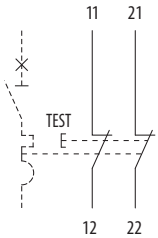
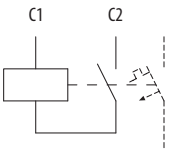
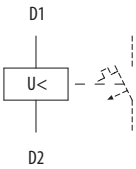


Shunt trips and undervoltage releases

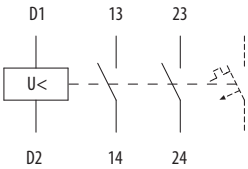
SV-LT-..



SP-LT

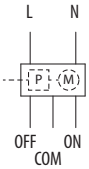


SP-LT-..-2000

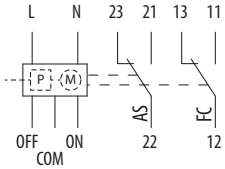


Remote control

RC-LT-A230



RC-LT-A230-ARD



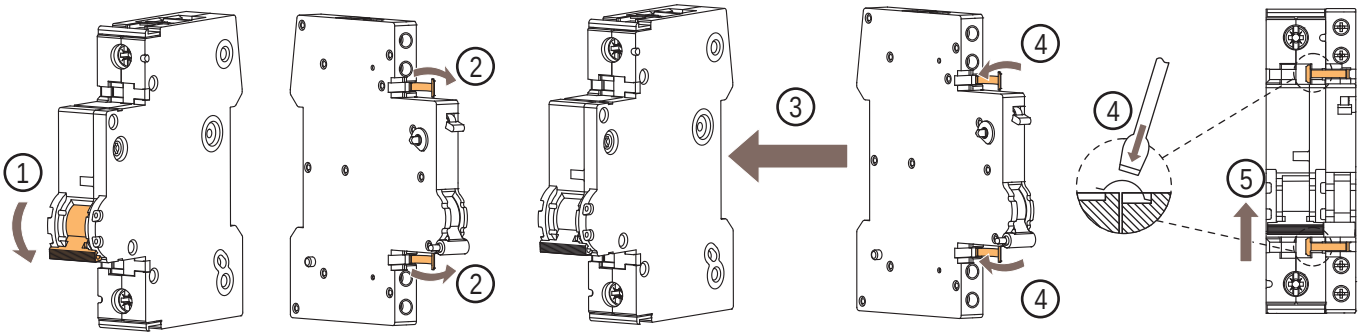
FC ... signal contact
AS ... auxiliary contact

ACCESSORIES

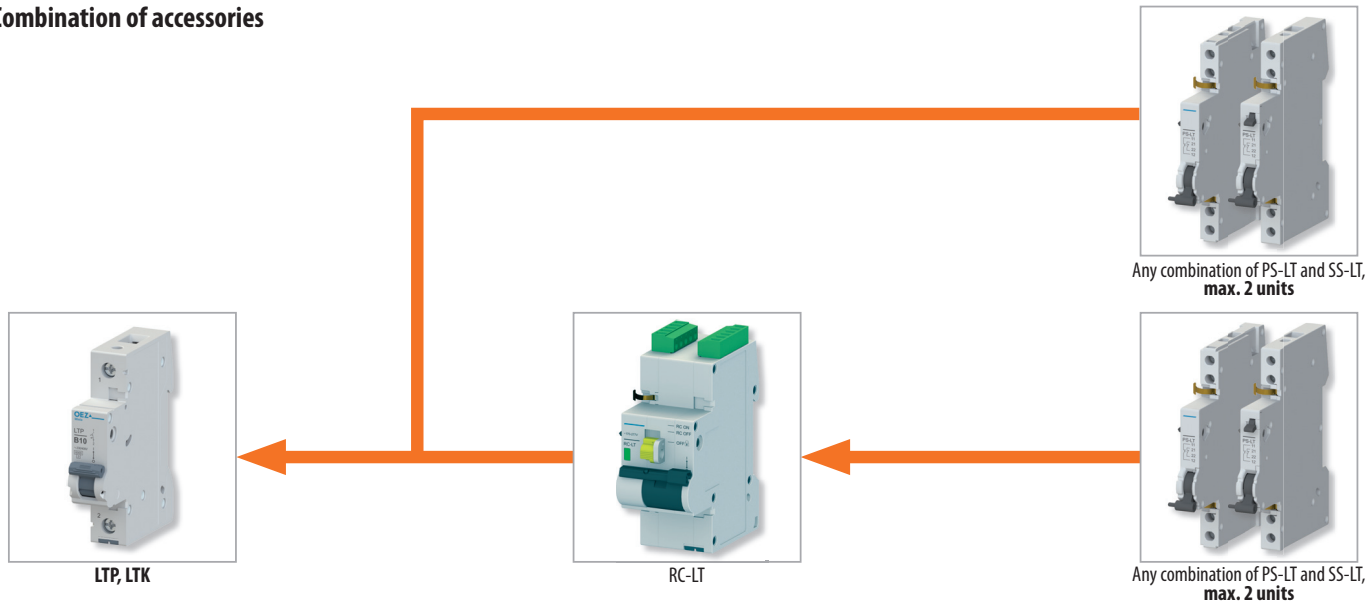
Installation of auxiliary switch, shunt trips or undervoltage releases

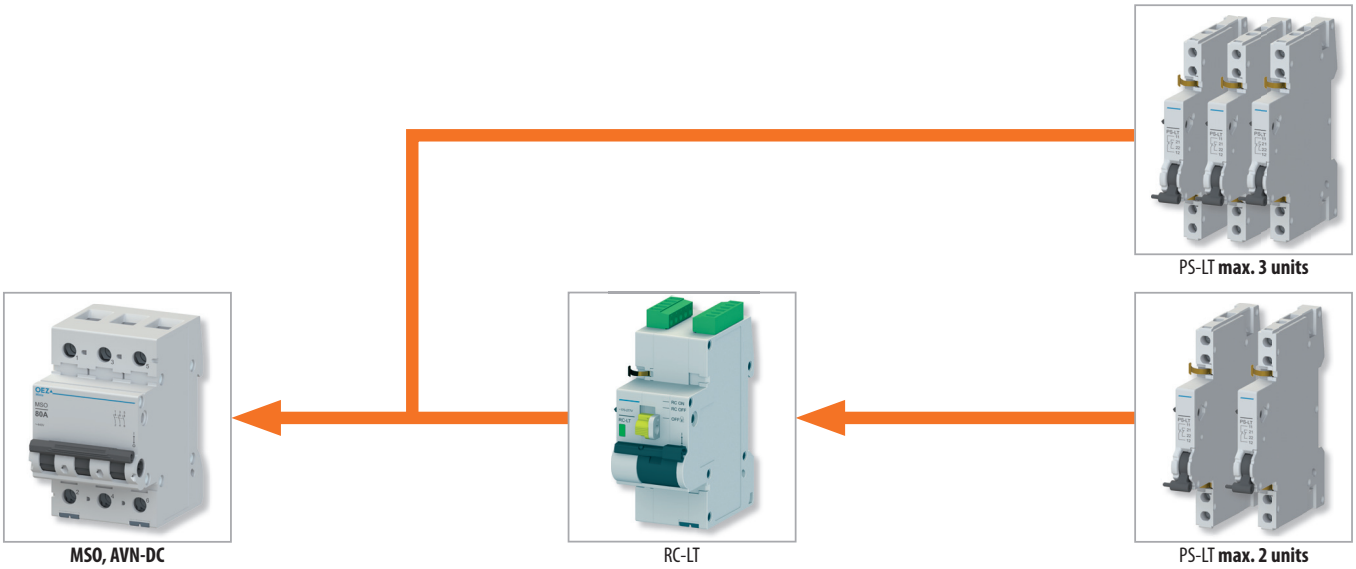
For installation of an auxiliary switch, shunt trip or undervoltage releases on a circuit breaker, residual current circuit breaker or switch, the same procedure shall apply as described on the example of installation of the auxiliary switch on the circuit breaker in the following points.

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



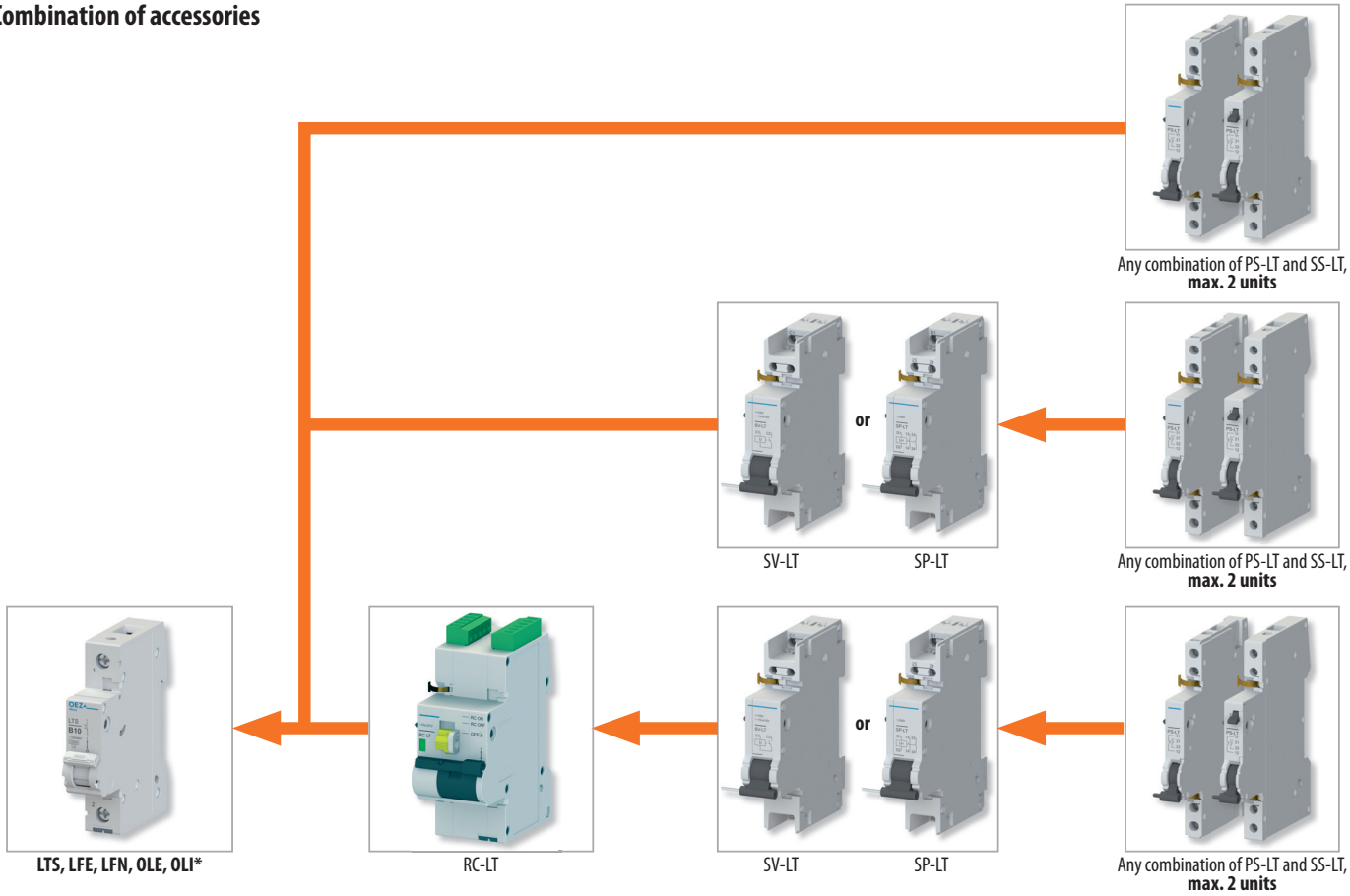
Combination of accessories



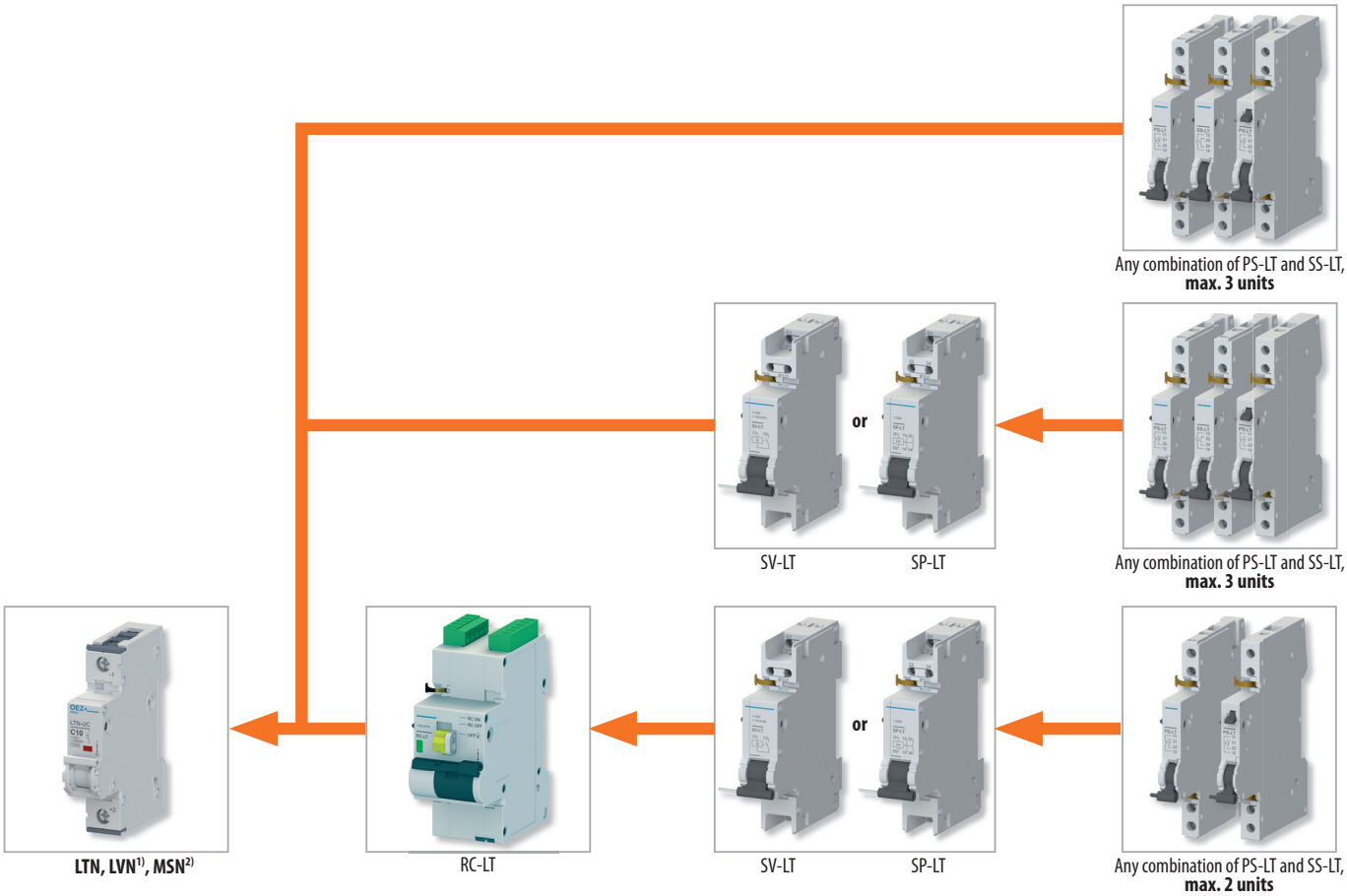


ACCESSORIES

Combination of accessories



* Installation of accessories on OLE/OLI requires handle adapter OD-OL-NR01, see page B35.



[1] Remote control RC-LT cannot be combined with miniature circuit breaker LVN.
[2] Installation of signal switches SS-LT on the MSN, switch, only with SP-LT or SV-LT.

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