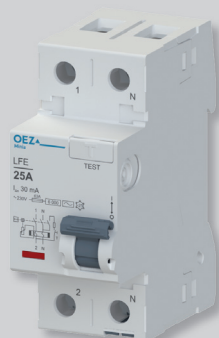


## RESIDUAL CURRENT CIRCUIT BREAKERS LFE

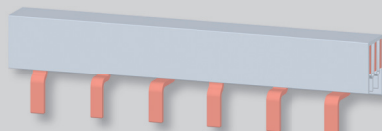
- Residual current circuit breakers with conditional short-circuit current 6 kA.
- They react to sine-wave residual current (type AC).
- For protection:
  - against dangerous contact with live parts ( $I_{\Delta n} \leq 30 \text{ mA}$ )
  - against dangerous contact with dead parts
  - against fire or short-circuit in reduced insulation capacity of electrical equipment ( $I_{\Delta n} \leq 300 \text{ mA}$ ).
- Mounting/dismantling on/from "U" rails: The latches enable very quick mounting and dismantling by hand, without any tool needed.
- Operating ambient temperature is for all designs already from  $-25^\circ\text{C}$  to  $+45^\circ\text{C}$ .
- Equipped with device status indicator.
- Wide range of accessories - auxiliary and signal switches, undervoltage releases and shunt trips, interconnecting busbars etc.
- Possibility of locking and sealing in off or on position.
- Possibility of interconnection with circuit breakers LTE, LTN by means of interconnecting busbars up or down.
- N-pole of residual current circuit breakers in switching on it closes before and in switching off it opens after the other poles.
- Residual current circuit breaker are testing once per 6 months.



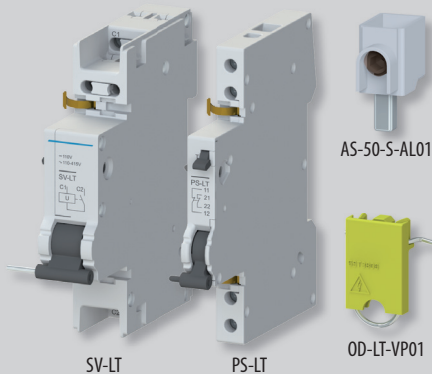
LFE-25-2-030AC



LFE-40-4-030AC



S2L



SV-LT

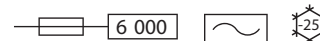
PS-LT

AS-50-S-AL01

OD-LT-VP01

### Residual current circuit breakers 2-pole, type AC

- Standard type for common use in building and housing installations up to 40 A, AC 230 V.
- Surge current resistance 250 A (8/20  $\mu\text{s}$ ).



$I_{\Delta n}$ [mA]	$I_n$ [A]	Type	Order code	Number of modules	Weight [kg]	Package [pcs]
10	16	LFE-16-2-010AC	OEZ:42388	2	0.219	1
	25	LFE-25-2-030AC	OEZ:42389	2	0.219	1
30	40	LFE-40-2-030AC	OEZ:42390	2	0.240	1
	25	LFE-25-2-100AC	OEZ:42391	2	0.219	1
100	40	LFE-40-2-100AC	OEZ:42392	2	0.240	1
	25	LFE-25-2-300AC	OEZ:42393	2	0.214	1
300	40	LFE-40-2-300AC	OEZ:42394	2	0.212	1

### Residual current circuit breakers 4-pole, type AC

- Standard type for common use in building and housing installations up to 80 A, AC 230/400 V.
- Surge current resistance 250 A (8/20  $\mu\text{s}$ ).



$I_{\Delta n}$ [mA]	$I_n$ [A]	Type	Order code	Number of modules	Weight [kg]	Package [pcs]
30	25	LFE-25-4-030AC	OEZ:42395	4	0.389	1
	40	LFE-40-4-030AC	OEZ:42396	4	0.375	1
	63	LFE-63-4-030AC	OEZ:42397	4	0.425	1
	80	LFE-80-4-030AC	OEZ:42398	4	0.424	1
100	25	LFE-25-4-100AC	OEZ:42399	4	0.375	1
	40	LFE-40-4-100AC	OEZ:42400	4	0.375	1
	63	LFE-63-4-100AC	OEZ:42401	4	0.425	1
300	25	LFE-25-4-300AC	OEZ:42402	4	0.375	1
	40	LFE-40-4-300AC	OEZ:42403	4	0.375	1
	63	LFE-63-4-300AC	OEZ:42404	4	0.389	1
	80	LFE-80-4-300AC	OEZ:42405	4	0.410	1
500	40	LFE-40-4-500AC	OEZ:42406	4	0.375	1
	63	LFE-63-4-500AC	OEZ:42407	4	0.425	1

### Accessories

Auxiliary and signal switches	PS-LT, SS-LT	page B36
Shunt trips	SV-LT	page B37
Undervoltage releases	SP-LT	page B37
Locking inserts	OD-LT-VU02	page B39
Interconnecting busbars	S2L, S2L+N, S3L+N, S3L-...FI-... <sup>1)</sup> , S4L	page B45
Terminal extension	AS-50-S-AL01	page B47

<sup>1)</sup> For interconnection of the residual current circuit breaker with a series of circuit breakers where the series of circuit breakers needs to start from N-pole of the residual current circuit breaker.

## RESIDUAL CURRENT CIRCUIT BREAKERS LFE

### Specifications

Type		LFE...-2	LFE...-4
Standards		EN 61008-1 EN 61008-2-1 EN 61543	EN 61008-1 EN 61008-2-1 EN 61543
Approval marks			
Number of poles		2	4
Type		AC	AC
Rated current	$I_n$	16, 25, 40 A	25, 40, 63, 80 A
Rated residual current	$I_{\Delta n}$	10, 30, 100, 300 mA	30, 100, 300, 500 mA
Rated operating voltage	$U_e$	AC 230 V	AC 230/400 V
Min. operating voltage (for test button function)	$U_{\min}$ for $I_{\Delta n} = 30$ mA $U_{\min}$ for $I_{\Delta n} \neq 30$ mA	AC 195 V AC 100 V	AC 195 V AC 100 V
Max. operating voltage	$U_{\max}$	AC 250 V	AC 250/440 V
Rated frequency	$f_n$	50 Hz	50 Hz
Rated conditional short-circuit current	$I_{nc}$	6 kA (see table below)	6 kA (see table below)
Rated making and breaking capacity	$I_m$	500 A	800 A
Surge resistance		250 A	250 A
Mechanical endurance		> 10 000 operating cycles	> 10 000 operating cycles
Electrical endurance		> 10 000 operating cycles	> 10 000 operating cycles
Degree of protection - with connected conductors		IP20	IP20
Mounting on "U" rail according to EN 60715 – type		TH 35	TH 35
<b>Connection</b>			
Conductor Cu - rigid (solid, stranded) <sup>1)</sup>		0.75 ÷ 35 mm <sup>2</sup>	0.75 ÷ 35 mm <sup>2</sup>
Conductor Cu - flexible <sup>1)</sup>		0.75 ÷ 25 mm <sup>2</sup>	0.75 ÷ 25 mm <sup>2</sup>
Screw head type		PZ2	PZ2
Torque		2.5 ÷ 3 Nm	2.5 ÷ 3 Nm
Top or bottom connection		top/bottom	top/bottom
<b>Operating conditions</b>			
Ambient temperature		-25 ÷ +45 °C	-25 ÷ +45 °C
Working position		arbitrary	arbitrary
Climatic resistance (EN 60068-2-30)		28 operating cycles (55 °C, 95 % relative air humidity)	28 operating cycles (55 °C, 95 % relative air humidity)

<sup>1)</sup> For detailed connection of conductors see table on page C6.

### Protection of residual current circuit breakers

#### A) Short-circuit protection

In function principle, residual current circuit breaker is not possible to use for short-circuit protection. For circuit protection it is necessary to use a fuse or a circuit breaker, that cuts the short-circuited circuit safely off. The residual current circuit breaker must only withstand the through-going short-circuit current. The amplitude of the maximum through short-circuit current is defined as rated conditional short-circuit current  $I_{nc}$ . The table below indicates the rated conditional short-circuit current depending on the max. backup fuse and the circuit breaker.

Rated conditional short-circuit current with backup fuse

Design LFE	Rated current $I_n$ [A]	Max. backup fuse gG	Rated conditional short-circuit current $I_{nc}$ [kA]
2-pole	16 ÷ 40	63 A	6 kA
	25 ÷ 40	80 A	6 kA
4-pole	63 ÷ 80	100 A	6 kA

Rated conditional short-circuit current with backup circuit breaker

Residual current circuit breaker	Backup circuit breaker		Rated conditional short-circuit current $I_{nc}$ [kA]
	Type	$I_n$ of the circuit breaker	
LFE	LTP, LTK, LTS, LVN	$I_n MCB \leq I_n RCCB$	6 kA

#### B) Protection against overload

Protection of the residual current circuit breakers against overload may be provided by fuses or circuit breakers subject to following conditions:

- rated current of the fuse-link must be by one degree lower than rated current of the residual current circuit breaker  $I_n$  of the fuse by one degree lower  $\leq I_n$  of the residual current circuit breaker
- rated current of the circuit breaker must be equal or lower than the rated current of the residual current circuit breaker  $I_n$  of the circuit breaker  $\leq I_n$  of the residual current circuit breaker\*

### Powers losses P

Design LFN	Rated current $I_n$ [A]	Rated residual current $I_{\Delta n}$ [mA]				
		10	30	100	300	500
2-pole	16	0.7 W/pole	-	-	-	-
	25	-	1.0 W/pole	0.6 W/pole	0.6 W/pole	-
	40	-	2.6 W/pole	1.6 W/pole	1.6 W/pole	-
4-pole	25	-	1.3 W/pole	0.7 W/pole	0.7 W/pole	-
	40	-	3.9 W/pole	2.0 W/pole	2.0 W/pole	1.8 W/pole
	63	-	3.9 W/pole	3.9 W/pole	3.9 W/pole	3.9 W/pole
	80	-	4.1 W/pole	-	4.1 W/pole	-

# RESIDUAL CURRENT CIRCUIT BREAKERS LFE

## Connection range

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

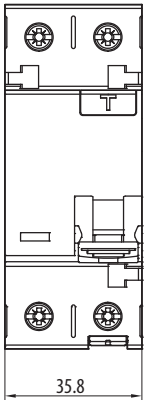
<sup>1)</sup> The conductor must be twisted before insertion to a terminal; individual conductor fibres must not stick out of the terminal.

<sup>2)</sup> In case of use of a sleeve without plastic neck: conductor 1x (6 ÷ 25) mm<sup>2</sup>.

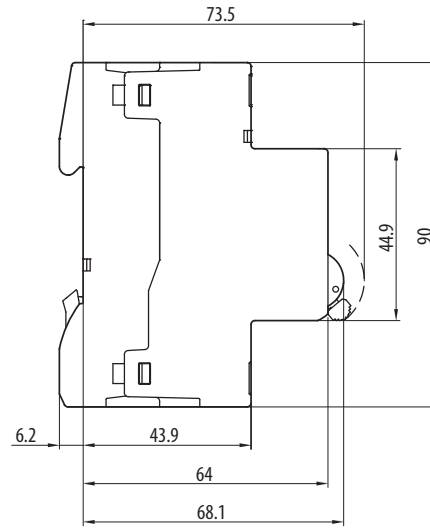
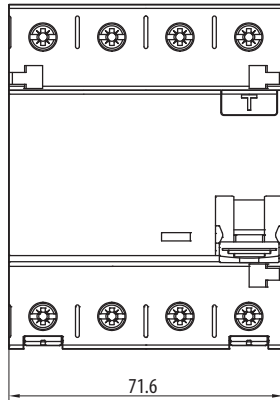
If more conductors are used they must be of the same type and cross-section.

## Dimensions

LFE...- 2

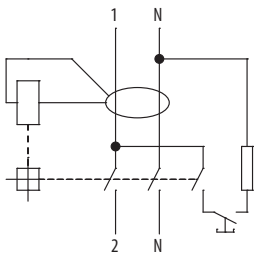


LFE...-4

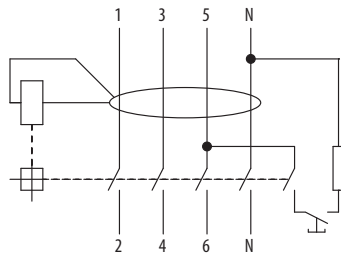


## Diagram

LFE...- 2

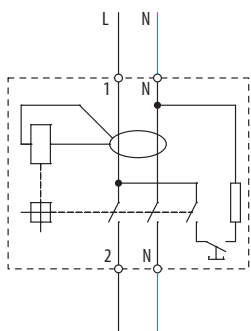


LFE...-4

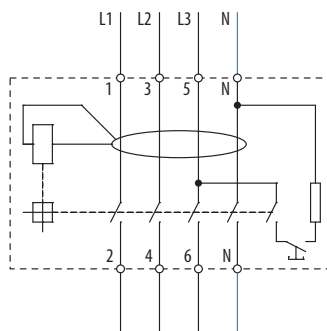


## Connection

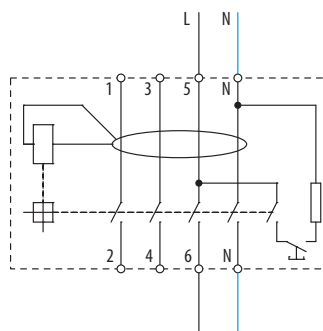
Standard connection of 2-pole residual current circuit breaker LFE



Standard connection of 4-pole residual current circuit breaker LFE



4-pole residual current circuit breaker LFE in 1-phase circuits with N-pole



4-pole residual current circuit breaker LFE in 3-phase circuits without N-pole

