



## Single Module Type B RCBO



### Overview

EKL19-40B is a single-module Type B Residual Current Breaker with Overcurrent Protection (RCBO) introduced by ETEK Electric. This advanced circuit protection device efficiently handles overcurrent, short circuits, and earth fault leakages, while being specifically designed to detect complex waveforms and DC residual currents. The compact single-module design, combined with its bidirectional power capability, makes it an ideal solution for modern electrical installations and the renewable energy sector.

EKL19-40B operates at a rated voltage of 230/240V and supports a maximum current of up to 40A. It features a residual current sensitivity of 30mA and a short-circuit rating of 6kA. Additionally, it offers both B curve and C curve characteristics, making it an ideal solution for safeguarding sensitive electronic equipment like electric vehicle chargers, solar panels, and heat pumps.

### Features

- **Compact Design:** Single-module (18mm) structure saves distribution board space, making it ideal for modern, space-efficient installations or retrofits.
- **Bidirectional Power capability:** Supports bidirectional power transfer between the grid and devices, perfectly suited for renewable energy applications.
- **Comprehensive Protection:** Offers overload, short circuit, and residual current protection to ensure circuit safety.
- **DC Residual Current Detection:** Specifically designed for complex waveforms and DC residual currents, ideal for EV chargers, solar PV systems, and heat pumps.
- **High Performance:** 6kA short circuit rating with B or C curve options to meet diverse application needs.

#### Standard:

IEC 61009-1: Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules

IEC62423: Type B residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs)

### Application Scenarios



EV Charging Stations



Photovoltaic (PV) Systems



UPS Systems





Industrial Welding Equipment

## Technical Data

Standard	IEC/EN 61009-1, IEC/EN 62423
Protection	Ground fault, Overcurrent and short circuit
Type of trip	Groundfault: Electronic
	Overload and short circuit: Thermo-magnetic
Residual current type	B: residual AC, pulsating and smooth DC current, high frequency ( $\leq 1$ kHz)
No. of poles	1P+N (18mm, with switched neutral)
Insulation voltage (Ui)	500V
Rated voltage (Ue)	230/240V~
Rated currents (In)	16,20,25,32,40A
Rated sensitivity currents (I $\Delta$ n)	30mA
Residual current off-time under (I $\Delta$ n)	$\leq 0.1$ s
Rated residual making and breaking capacity (I $\Delta$ m)	500A (In $\leq 50$ A)
Rated frequency	50/60Hz
Rated short-circuit capacity (Icn)	6kA
Energy limiting class	3
Rated impulse withstand voltage (Uimp) (1.2/50 $\mu$ s)	4kV
Dielectric test voltage	2kV (50/60Hz, 1 min.)
Fire resistance (glow-wire test)	960 $\pm$ 15°C (Enclosure)
	650 $\pm$ 10°C (Handle)
Thermal tripping characteristics	1.13In No tripping within an hour
	1.45In Tripping within an hour
Instantaneous tripping characteristics	B: 3In-5In; C: 5In-10In
Electrical life	4,000 Cycles
Mechanical life	10,000 Cycles
Contact position indication	green OFF / red ON
Protection degree	IP20
Ambient temperature	-25°C ~ +55°C
Storage temperature	-30°C ~ +70°C
Terminal connection type	Cable / Pin-type busbar
Max. terminal size for cable	16mm <sup>2</sup>
Max. tightening torque	2.0N.m
Installation	Mounting on 35mm DIN rail
Incoming method	Bi-directional

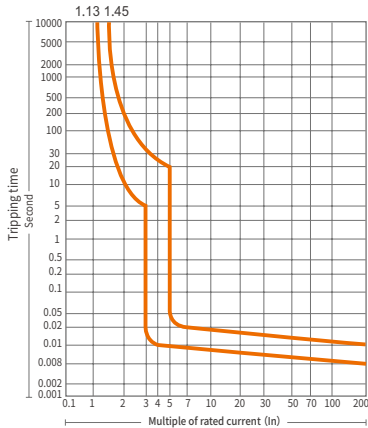
## Product Selection Form

Poles	Curve	Type	Sensitivity	Rated Current (A)	EAN-13	Ref No.
 1P+N	B	B	30mA	16A	6942012143075	EKL19-40B-1NB1630
				20A	6942012143082	EKL19-40B-1NB2030
				25A	6942012143099	EKL19-40B-1NB2530
				32A	6942012143105	EKL19-40B-1NB3230
				40A	6942012143112	EKL19-40B-1NB4030
 1P+N	C			16A	6942012143129	EKL19-40B-1NC1630
				20A	6942012143136	EKL19-40B-1NC2030
				25A	6942012143143	EKL19-40B-1NC2530
				32A	6942012143150	EKL19-40B-1NC3230
				40A	6942012143167	EKL19-40B-1NC4030

## Tripping Characteristic

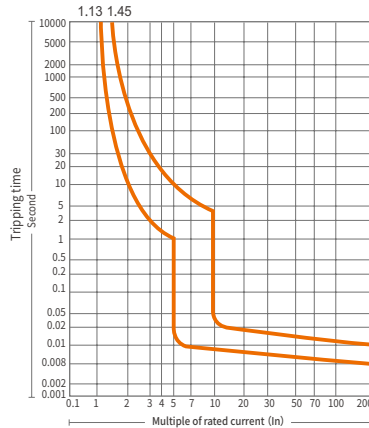
Curve	Rated current	Thermal release				Ambient temperature	Magnetic release			
		Non-trip	Trip	Non-trip time	Trip time		Hold current	Trip current	Trip time	Ambient temperature
B	16-40A	1.13In		≤1h		30°C+5°C	3In		≥0.1	Normal temperature
			1.45In		<1h		5In		<0.1	
C	16-40A	1.13In		≤1h			5In		≥0.1	
			1.45In		<1h		10In		<0.1	

B curve



Universal use  
- socket outlet, lighting device

C curve



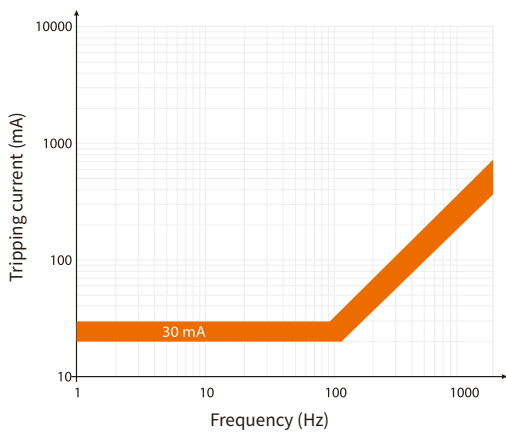
Resistive & inductive loads with low inrush current  
- lamp, high starting current motor

Type B RCDs - Standard values of break time and non-actuating time for residual direct currents which result from rectifying circuits and for residual smooth direct current.

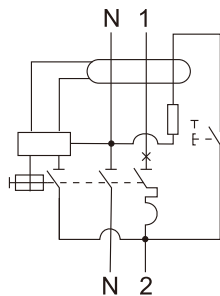
Tripping times					
Type	Fault currents	Tripping time at			
Standard	Alternating currents	$1 \times I_{\Delta n}$	$2 \times I_{\Delta n}$	$5 \times I_{\Delta n}$	500A
	Pulsating DC currents	$1.4 \times I_{\Delta n}$	$2 \times 1.4 \times I_{\Delta n}$	$5 \times 1.4 \times I_{\Delta n}$	500A
	Smooth DC currents	$2 \times I_{\Delta n}$	$2 \times 2 \times I_{\Delta n}$	$5 \times 2 \times I_{\Delta n}$	500A
Standard		Max. 0.3s	Max. 0.15s	Max. 0.04s	Max. 0.04s

Type B RCDs - Residual non-operating and operating current according to frequencies which differ from the rated frequency 50/60 Hz

Frequency (Hz)	Residual non-operating current ( $I_{\Delta n}$ )	Residual operating current ( $I_{\Delta n}$ )
150	$0.5 I_{\Delta n}$	$2.4 I_{\Delta n}$
400	$0.5 I_{\Delta n}$	$6 I_{\Delta n}$
1000	$I_{\Delta n}$	$14 I_{\Delta n}$



## Circuit Diagram



## Dimension (mm)

