EKL9-40AFD RCBO With Arc Fault Protective

Keep You Away From Electrical Fire

CE UK CA

Overview

EKL9-40AFD is an integrated RCBO Arc Fault Detection Device (AFDD), which aims to reduce the risk of electrical fire offering a breaking capacity of 6kA. It is designed to handle a rated current of up to 40A with sensitivity options of 30mA, 100mA, or 300mA.

Equipped with an LED arc fault indicator and an orange test button for verifying the functionality of the residual current device, it ensures reliable performance. Its compact 36mm width allows for space-efficient installation while providing robust protection against arc faults, overloads, short circuits, and earth leakage currents.

Features

- Series and parallel arc fault detection
- Combined arc fault detection, short circuit, overload, and earth leakage detection
- up to 40A working current
- Type AC and Type A residual current type
- 10mA, 30mA, 100mA, and 300mA residual current sensitivity
- B and C curve tripping
- 6kA breaking capacity
- Switched Live Neutral
- Fits existing busbar system
- Self testing (AFDD function only)
- Standard:
  IEC 61009-1: Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules
  IEC 62606: General requirements for arc fault detection and protection devices (AFDDs)

Applications

High-risk residential buildings

Houses in multiple occupation

Purpose-built student accommodation

Care homes

Other locations requiring high-security socket circuits

Complete Circuit Protection

	Over current	Short circuit	Earth leakage	Series arc fault	Parallel arc fault
MCB	✓	✓	✗	✗	✗
RCCB	✗	✗	✓	✗	✗
RCBO	✓	✓	✓	✗	✗
AFDD	✗	✗	✗	✓	✓
AFDD integrated with RCBO	✓	✓	✓	✓	✓

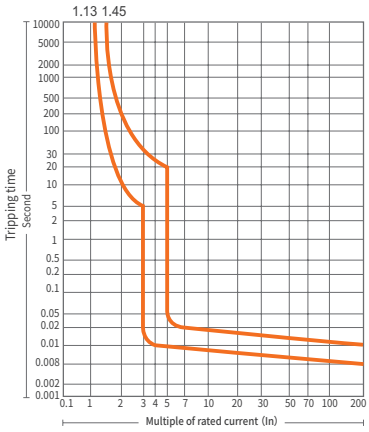
Technical Data

Standard	IEC/EN 61009-1, IEC 62026
Protection	Arc Fault Protection, Overload Protection, Short-Circuit Protection, Earth-Leakage Protection
Type of trip	Ground fault: Electronic
	Overload and short circuit: Thermo-magnetic
Residual current type	AC, A
No. of poles	1P+N (with switched neutral)
Rated voltage (Ue)	230/240V
Rated currents (In)	6, 10, 16, 20, 25, 32, 40A
Rated insulation voltage (Ui)	500V
Rated sensitivity currents ($I_{\Delta n}$)	10, 30, 100, 300mA
Residual current off-time under ($I_{\Delta n}$)	⩽ 0.1s
Reted residual making and breaking capacity ($I_{\Delta m}$)	500A (In ⩽ 50A)
Rated frequency	50/60Hz
Rated short-circuit capacity (Icn)	6kA
Rated impulse withstand voltage (Uimp) (1.2/50μs)	4kV
Dielectric test voltage	2kV (50/60Hz, 1 min.)
Thermal tripping characteristics	(1.13-1.45)×In
Instantaneous tripping characteristics	B: (3-5)×In, C: (5-10)×In
Electrical life	4,000 Cycles
Mechanical life	10,000 Cycles
Contact position indication	green OFF / red ON
Protection degree	IP20
Ambient temperature	-25°C to +40°C , Max.95% humidity
Terminal connection type	Cable / Pin-type busbar
Max. terminal size for cable	16mm^2
Max. tightening torque	2.0N.m
Installation	Mounting on 35mm DIN rail
Incoming method	From top

Tripping Characteristic (IEC61009-1)

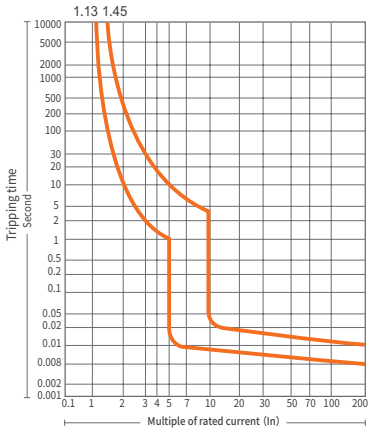
Curve	Rated current	Thermal release					Magnetic release			
		Non-trip	Trip	Non-trip time	Trip time	Ambient temperature	Hold current	Trip current	Trip time	Ambient temperature
B	6-40A	1.13×In		⩽ 1h		30°C+5°C	3×In		⩾ 0.1	Normal temperature
			1.45×In		＜ 1h			5×In	＜ 0.1	
C	6-40A	1.13×In		⩽ 1h			5×In		⩾ 0.1	
			1.45×In		＜ 1h			10×In	＜ 0.1	

B curve



Universal use
- socket outlet, lighting device

C curve



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

Limit values of operating criteria for AFDD at low arc currents up to 63A (IEC62026)

Limit values of break time for Ue 230V AFDD	
Test arc current (r.m.s.values)	Max breaking time
2.5A	1S
5A	0.5S
10A	0.25S
16A	0.15S
32A	0.12S
63A	0.12S

Note:
1. The test arc current is the expected current before ignitionoccurs in the test circuit.
2. Low arc currents can occur due to insulation faults phase to earth or series arcing.

Led Indicator Instruction

What to do if AFDD/RCBO trips?

1. Disconnect all electrical appliances connected to the circuit.
2. Reset and trigger AFDD/RCBO to 'ON' position.
3. For the description of LED indicators due to devices faulty-please refer to the Table 1 below.

3.1 If the fault indicator is normal, the tripping fault is a short-circuit or an overload.

4. Switch AFDD/RCBO to 'ON'position and then connect 1 appliance one at a time on the circuit to see which device is causing the tripping of the AFDD.
5. Once faulty appliance has been identified, Do not use it, until it has been repaired or disconnected from the circuit.
6. After the faulty appliance has been repaired or disconnected,switch AFDD/RCBO to 'ON' position.
7. If the fault is still not confirmed, please contact a qualified electrician for inspection.

SN	LED Indicator Instruction		
1	LED-green light goes on.	Device normal operation	
2	LED-red light goes on 1 time and goes out 1 time,5 cycles.	Arc fault	
3	LED-red light goes on.	Arc self-check failure	

The LED light flashing program in Table is described in detail:

1. When the product is in normal operation, the light on the AFDD will remain green.
2. Should the AFDD trip off and to check for an arc fault trip, put the AFDD into the 'ON' position and the red light will flash continuously for 5 cycles. Then the arc module will detect itself and turn green when no fault is detected. If there is a fault, the red light will be lit.
3. Arc self-test failure, red light on. (Please contact a qualified electrician as the device may need to be changed.)

Selection

RCD type

Type AC - Tripping is ensured for sinusoidal, alternating residual currents, whether they be quickly applied or slowly increase.

Type A - Tripping is ensured for sinusoidal, alternating residual currents as well as for pulsed DC residual currents, whether they be quickly applied or slowly increase.

Tripping curve

B curve (3-5 In) protection and control of the circuits against overloads and short-circuits; protection for people and big length cables in TN and IT systems.

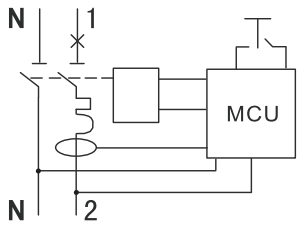
C curve (5-10 In) protection and control of the circuits against overloads and short-circuits; protection for resistive and inductive loads with low inrush current.

Product Selection Form

Poles	Type	Sensitivity	Rated current (A)	Ref No.	
				B curve	C curve
	AC	10mA	6A	EKL9-40AFD-1NB0610	EKL9-40AFD-1NC0610
			10A	EKL9-40AFD-1NB1010	EKL9-40AFD-1NC1010
			16A	EKL9-40AFD-1NB1610	EKL9-40AFD-1NC1610
			20A	EKL9-40AFD-1NB2010	EKL9-40AFD-1NC2010
			25A	EKL9-40AFD-1NB2510	EKL9-40AFD-1NC2510
			32A	EKL9-40AFD-1NB3210	EKL9-40AFD-1NC3210
			40A	EKL9-40AFD-1NB4010	EKL9-40AFD-1NC4010
		30mA	6A	EKL9-40AFD-1NB0630	EKL9-40AFD-1NC0630
			10A	EKL9-40AFD-1NB1030	EKL9-40AFD-1NC1030
			16A	EKL9-40AFD-1NB1630	EKL9-40AFD-1NC1630
			20A	EKL9-40AFD-1NB2030	EKL9-40AFD-1NC2030
			25A	EKL9-40AFD-1NB2530	EKL9-40AFD-1NC2530
			32A	EKL9-40AFD-1NB3230	EKL9-40AFD-1NC3230
			40A	EKL9-40AFD-1NB4030	EKL9-40AFD-1NC4030
		100mA	6A	EKL9-40AFD-1NB06100	EKL9-40AFD-1NC06100
			10A	EKL9-40AFD-1NB10100	EKL9-40AFD-1NC10100
			16A	EKL9-40AFD-1NB16100	EKL9-40AFD-1NC16100
			20A	EKL9-40AFD-1NB20100	EKL9-40AFD-1NC20100
			25A	EKL9-40AFD-1NB25100	EKL9-40AFD-1NC25100
			32A	EKL9-40AFD-1NB32100	EKL9-40AFD-1NC32100
			40A	EKL9-40AFD-1NB40100	EKL9-40AFD-1NC40100
		300mA	6A	EKL9-40AFD-1NB06300	EKL9-40AFD-1NC06300
			10A	EKL9-40AFD-1NB10300	EKL9-40AFD-1NC10300
			16A	EKL9-40AFD-1NB16300	EKL9-40AFD-1NC16300
			20A	EKL9-40AFD-1NB20300	EKL9-40AFD-1NC20300
			25A	EKL9-40AFD-1NB25300	EKL9-40AFD-1NC25300
			32A	EKL9-40AFD-1NB32300	EKL9-40AFD-1NC32300
			40A	EKL9-40AFD-1NB40300	EKL9-40AFD-1NC40300
	A	10mA	6A	EKL9-40AFD-1NB0610A	EKL9-40AFD-1NC0610A
			10A	EKL9-40AFD-1NB1010A	EKL9-40AFD-1NC1010A
			16A	EKL9-40AFD-1NB1610A	EKL9-40AFD-1NC1610A
			20A	EKL9-40AFD-1NB2010A	EKL9-40AFD-1NC2010A
			25A	EKL9-40AFD-1NB2510A	EKL9-40AFD-1NC2510A
			32A	EKL9-40AFD-1NB3210A	EKL9-40AFD-1NC3210A
			40A	EKL9-40AFD-1NB4010A	EKL9-40AFD-1NC4010A

Poles	Type	Sensitivity	Rated current (A)	Ref No.	
				B curve	C curve
	A	30mA	6A	EKL9-40AFD-1NB0630A	EKL9-40AFD-1NC0630A
			10A	EKL9-40AFD-1NB1030A	EKL9-40AFD-1NC1030A
			16A	EKL9-40AFD-1NB1630A	EKL9-40AFD-1NC1630A
			20A	EKL9-40AFD-1NB2030A	EKL9-40AFD-1NC2030A
			25A	EKL9-40AFD-1NB2530A	EKL9-40AFD-1NC2530A
			32A	EKL9-40AFD-1NB3230A	EKL9-40AFD-1NC3230A
			40A	EKL9-40AFD-1NB4030A	EKL9-40AFD-1NC4030A
		100mA	6A	EKL9-40AFD-1NB06100A	EKL9-40AFD-1NC06100A
			10A	EKL9-40AFD-1NB10100A	EKL9-40AFD-1NC10100A
			16A	EKL9-40AFD-1NB16100A	EKL9-40AFD-1NC16100A
			20A	EKL9-40AFD-1NB20100A	EKL9-40AFD-1NC20100A
			25A	EKL9-40AFD-1NB25100A	EKL9-40AFD-1NC25100A
			32A	EKL9-40AFD-1NB32100A	EKL9-40AFD-1NC32100A
			40A	EKL9-40AFD-1NB40100A	EKL9-40AFD-1NC40100A
		300mA	6A	EKL9-40AFD-1NB06300A	EKL9-40AFD-1NC06300A
			10A	EKL9-40AFD-1NB10300A	EKL9-40AFD-1NC10300A
			16A	EKL9-40AFD-1NB16300A	EKL9-40AFD-1NC16300A
			20A	EKL9-40AFD-1NB20300A	EKL9-40AFD-1NC20300A
			25A	EKL9-40AFD-1NB25300A	EKL9-40AFD-1NC25300A
			32A	EKL9-40AFD-1NB32300A	EKL9-40AFD-1NC32300A
			40A	EKL9-40AFD-1NB40300A	EKL9-40AFD-1NC40300A

Circuit Diagram



Dimension (mm)