

Modular DIN Rail

AFDD Arc Fault Detection Devices

Reset Button: After arc interruption, it will spring up and must be pressed to close.



Operation Indicator Light (Green): Represents normal functionality, stays continuously lit after closing.

Fault Indicator Light (Red): Due to arc interruption, it will continue flashing after closing, indicating arc trip alarm. (The alarm does not affect operation)

Test/Release: During operation, short press to perform arc trip test.

Setting Button*: Short press to query current mode, long press to switch working modes. When alarm is triggered, press and hold for 1 second to release the alarm.

*Setting Button: The setting button is concealed internally and can be accessed using a paperclip. A short press of the button will cause the operation light to flash a certain number of times, indicating the current working mode. A long press will toggle between the four working modes.

Flash once: Interference-resistant mode, suitable for scenarios with strong interference, large machine tools, and high harmonics pollution (lower sensitivity).

Flash twice: Strict mode, suitable for general factories, centralized lighting, large offices, and places with complex power conditions.

Flash three times: Normal mode, suitable for residential homes, office buildings, dormitories, and other places with good power environments.

Flash four times: Sensitive mode, suitable for scenarios with long line attenuation and no interference in the power grid.

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AFDD C20

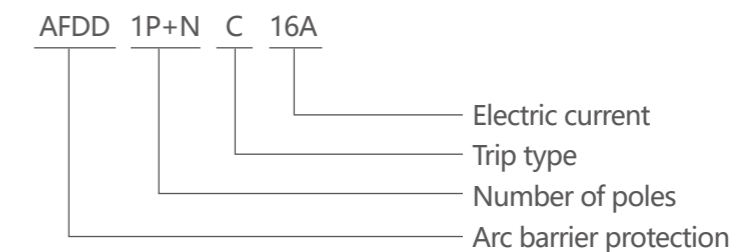
General

AFDD (Arc Fault Detection Devices) is a new type of electrical fire protection device, which can avoid the fire caused by short circuit, wire aging, heavy load, poor contact, electrical product failure and so on. AFDD built-in computer chip, real-time automatic control. Its working principle is to process, compare and identify the detected arc pulse through the electronic circuit and MCU. Once the fault arc pulse that is prone to fire is detected, a signal is output to drive the tripping device and cut off the load power supply to prevent fire. Generally it is used in residential buildings, as the end of the protection of electrical appliances, AFDD application range is very wide, in principle as long as there is electricity, it can use AFDD to prevent electrical fire, such as residential buildings, office buildings, hospitals, shopping malls, supermarkets, factories, vehicles (cars, trains, ships, planes), etc., especially for the residential for electrical fire prevention.

Feature

1. Overload long delay protection
2. Overload short delay protection
3. Instantaneous trip protection
4. Series arc fault protection
5. Parallel arc fault protection
6. Ground arc fault protection
7. Multiple current ratings.

Type designation



Modular DIN Rail

AFDD Arc Fault Detection Devices

Technical data

Table 1

Item	Parameter	Data
Electricalfeatures	Rated voltage U_e (V)	230V~
	Rated current I_n (A)	6A,10A,16A,20A,25A,32A,40A,50A,63A
	Rated sensitivity $I \Delta n$ (A)	0.03A
	Poles	2P+N、2P
	Wave form of the earth leakage sensed	AC
	Thermo-magnetic release characteristic	C (5-10 I_n)
	Rated short circuit capacity I_{cn} (A)	6000
	Rated residual making and breaking capacity $I \Delta m$ (A)	500A($I_n \leq 50A$),630A($I_n \leq 63A$)
	Rated insulation voltage U_i (V)	500V
	Rated impulse withstand voltage U_{imp} (V)	4000V
Mechanicalfeatures	Pollution degree	2
	Electrical life	10000
	Mechanical life	20000
	Protection degree	IP20
	Ambient temperature (°C)	-25~+40
Installation	Storage temperature (°C)	-25~+70
	Tightening torque (N.m)	2
	Terminal size for cable (mm)	16
	Installation category	II

Product features

AFDD-63 series Arc Fault Detection Devices includes residual current protection, fault arc protection, overload and short circuit protection. The residual current tripping characteristics of AFDD are shown in Table 2 below.

Technical data

Table 2

Model	I_n (A)	$I \Delta n$	Time limit for tripping or not tripping			Maximum tripping time
			$I \Delta n$	$2I \Delta n$	$5I \Delta n$	
AFDD-63	6A,10A,16A,20A,25A,32A,40A,50A,63A,	>0.03	0.03	0.15		
		0.03	0.03	0.15		
		<0.03	0.03	0.15	0.04	

The arc fault protection function of AFDD mainly includes the arc fault protection detection unit, the unit detects and identifies fault arcs in the line and sends tripping signals, tripping release takes off the operation mechanism of the product and makes the main contact of AFDD-63 from closed position to open position, thus disconnecting the fault line and effectively avoiding the fire caused by the arc fault. The time limit for tripping of AFDD-63 with rated voltage 230V are shown in Table 3 and Table 4.

Modular DIN Rail

AFDD Arc Fault Detection Devices

Limit value for tripping of AFDD under small arc current below 63A

Table 3

Arc current of test (the effective value)	3A	6A	13A	20A	40A	63A
Maximum tripping time	1s	0.5s	0.25s	0.15s	0.12s	0.12s
The arc current of test is the expected current before ignition occurs in the test circuit.						

Limit value for tripping of AFDD under large arc current above 63A

Table 4

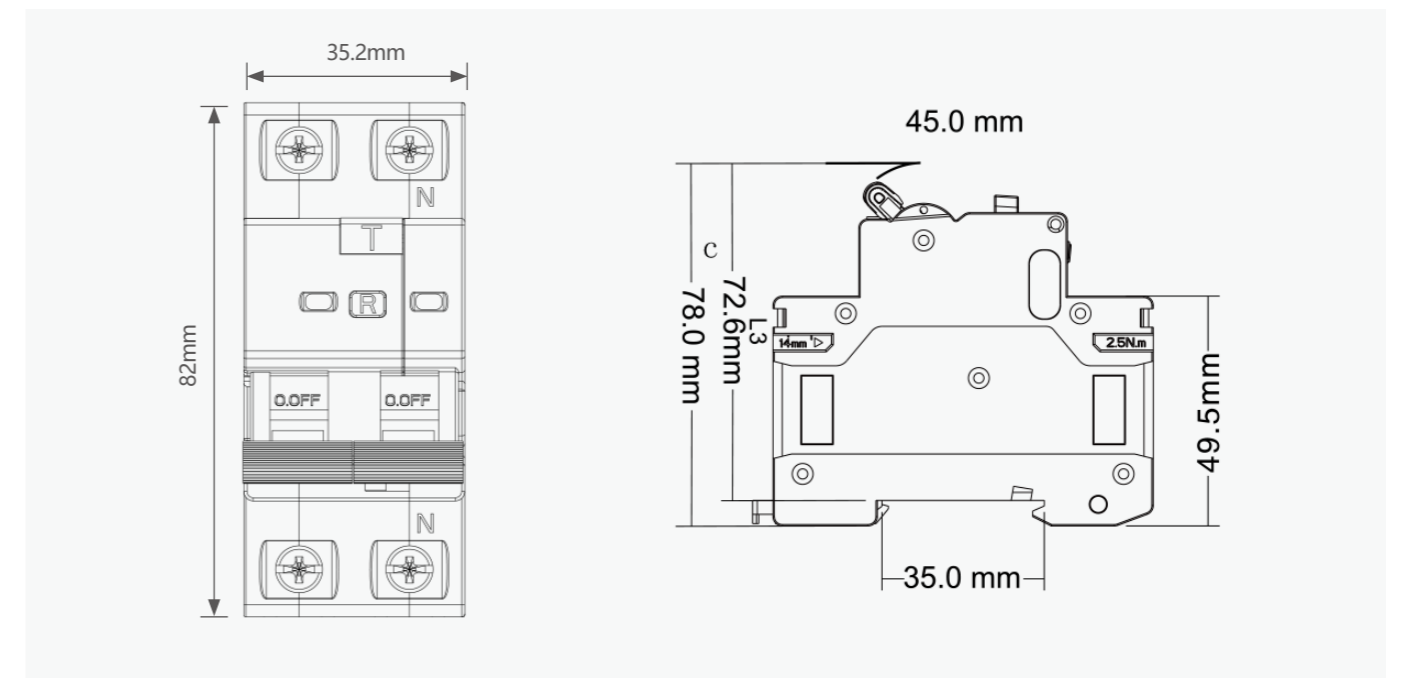
Arc current of test (the effective value)	75A	100A	150A	200A	300A	500A
N	12	10	8	8	8	8
N is the number of half waves at the rated frequency						

Over current protection characteristics (reference temperature 30°C)

Table 5

Type	I_n (A)	Tripping time	Expected result	Type	I_n (A)	Tripping time	Expected result
B,C,D	1.13 I_n	$t \leq 1h(I_n \leq 63A)$	Not tripping	B,C,D	B	$t \leq 0.1s$	Not tripping
	1.13 I_n	$t \leq 2h(I_n > 63A)$			C	$t \leq 0.1s$	
B,C,D	1.45 I_n	$t < 1h(I_n \leq 63A)$	Tripping	B,C,D	D	$t \leq 0.1s$	Tripping
	1.45 I_n	$t < 2h(I_n > 63A)$			B	$t < 0.1s$	
B,C,D	2.55 I_n	$1s < t < 60s(I_n \leq 32A)$	Tripping	B,C,D	C	$t < 0.1s$	Tripping
	2.55 I_n	$1s < t < 120s(I_n > 32A)$			D	$t < 0.1s$	

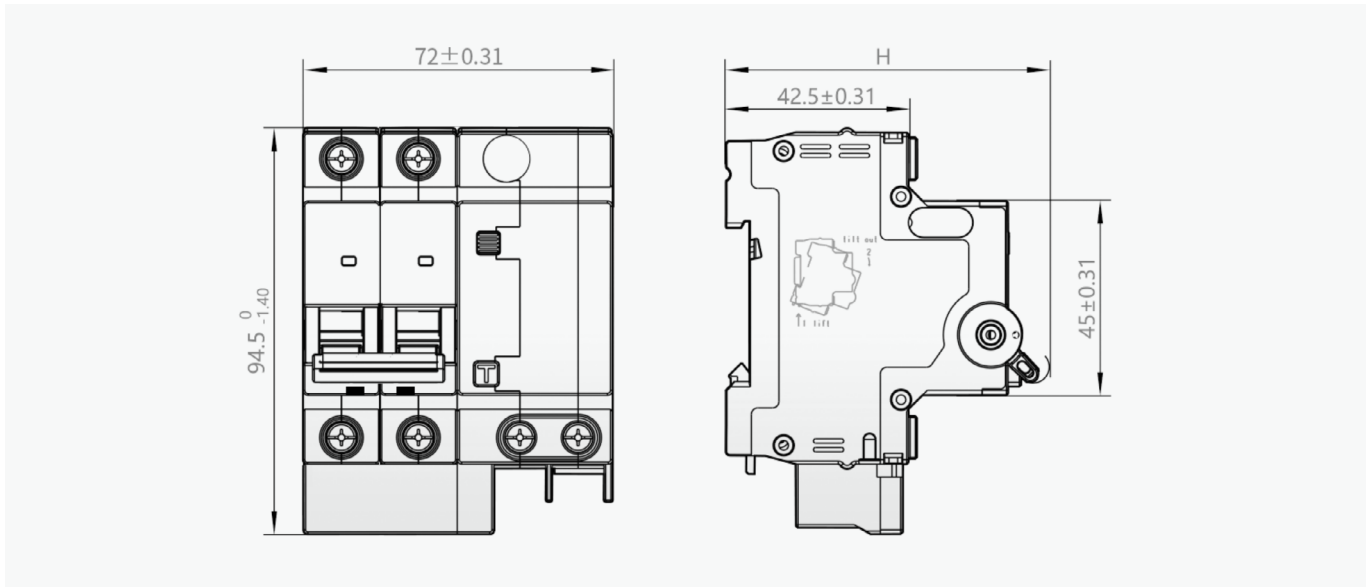
Overall and mounting dimensions(mm)



2P+N

Modular DIN Rail

AFDD Arc Fault Detection Devices



2P

Installation and Usage (Maintenance)

- Before installation, check if the product markings match the intended conditions of use.
- Before installation, operate the AFDD arc fault protection device to ensure that its mechanism moves smoothly, reliably, and without any jamming.
- Connect the input terminal to the power supply and the output terminal to the load.
- After power is applied, press the test button on the AFDD arc fault protection device several times to confirm its reliable operation.
- When the handle moves upwards, the MCB (Miniature Circuit Breaker) side handle displays "ON," and the indicator window changes from green to red, indicating that the circuit is in the ON state. When the handle moves downwards and the MCB side handle displays "OFF," the indicator window changes from red to green, indicating that the circuit is in the OFF state.
- During installation, securely fix the AFDD arc fault protection device onto the installation rail to prevent loosening or falling. To remove the AFDD arc fault protection device, simply pull the stopper.
- The working reference temperature for the AFDD arc fault protection device is +30+5 °C . When the ambient temperature changes, the rated values should be adjusted accordingly. If multiple AFDD arc fault protection devices are installed in an enclosed enclosure, the internal temperature of the enclosure will rise, and the rated current should be multiplied by a derating factor of 0.8.

Fault analysis

Fault Analysis and Troubleshooting of AFDD Arc Fault Protection Device can be found in Table 6.

Fault cause		Fault analysis	Troubleshooting
Refusal to operate	The AFDD circuit breaker is not connected to the neutral wire, causing refusal to operate	The AFDD circuit breaker is only connected to the phase wire on the power side and the neutral wire is not connected.	Connect the neutral wire on the power side.
False tripping	The AFDD circuit breaker trips due to a short circuit	The line (L) and neutral (N) wires at the incoming and outgoing terminals of the AFDD circuit breaker are crossed	Strictly follow the wiring diagram and the product markings to correctly connect the circuit.

Table 6