

AFDD-63



General info

Brief introduction

AFDD(arc fault detection device) is a new electrical anti-fire equipment. It could avoid various of fires caused by short circuit, circuit aging, heavy load, poor contact, fault electrical devices, etc. Automatic control is realized by built-in computer chip. Its operating principle: the detected arc impulse is processed, compared and identified by electronic circuit and MCU. Once fault arc impulse which easily creates fire detected, the output will drive tripping unit to cut off the load power supply, so that the fire is prevented.

Function

AFDD aims to detect hazardous arc impulse which easily creates fire(such as insulation decreasing between lines, load short circuit, poor contact of connector, arc caused by house electrical apparatus fault).Then it triggers tripping unit to cut off the power supply to prevent electrical fire. AFDD is used together with leakage circuit breaker, low voltage circuit breaker(overcurrent protection)to build a multi function electrical protective device. As a true intelligent low voltage electrical apparatus, it can not only prevent electrical fire, electric shock to human, overload danger, etc, but also be customized with different functions.

Application

As per IEC62606, these different ratings available: 10A, 16A, 20A, 32A, 40A, 63A ,usually used in residential houses as a terminal protective device. The applications of AFDD are wide, in theory, it can be used to avoid fire wherever there is electricity, such as in residential house, office building, hospital, shopping mall, supermarket, factory, vehicle(auto, train, vessel, air plane), especially for anti-fire use in residential house.

Conform to

IEC61009-1 IEC62606

Main parameters

Rated voltage(Un): 230V/50Hz;

Rated operating frequency: 50/60Hz;

Max load current: 10A、16A、20A、32A、40A、63A;

Min load current: 3A;

Max load power: 4KVA(depends on load current);

AFDD-63

Main parameters

Form 1

Main parameters	Values
Rated voltage options(Un)	AC: 110V~,230V ~,240V
Rated current(In)	6A,10A,16A,20A,25A,32A,40A,50A,63A
Rated residual operated current(I Δ n)	0.03A
Rated residual non tripping current(I Δ no)	0.5I Δ n
DC component	AC type, A type
Poles	2P
Instant tripping type	Type C
Rated short circuit breaking capacity(Icn)	6000A
Rated residual making and breaking capacity(I Δ m)	500A(In $\leq$ 50A),630A(In=63A)
Overcurrent protection properties	See Form 5, Diagram 1
Mechanical and electrical life	See Form 6
Connection wire	See Form 7
Tightening torque	2.0N.m
Nominal temperature $^{\circ}$ C	30
Operated ambient temperature $^{\circ}$ C	-25~+40
Stored ambient temperature $^{\circ}$ C	-25~+70
Pollution level	2
Protection level	IP20

Normal use conditions

Ambient temperature -5 $^{\circ}$ C or +40 $^{\circ}$ C ,average daily temperature +35 $^{\circ}$ C Max. Altitude not exceeding 2000m, relative humidity: 50% Max at 40 $^{\circ}$ C , 90% at 20 $^{\circ}$ C .

Characteristics

AFDD-63 has the following protections: residual operated current, fault arc, overload and short circuit. The tripping characteristics of residual operated current shown as Form 1.

Form 2

Type	In(A)	I Δ n(A)	Breaking time and limit data of non driven time			
			I Δ n	2I Δ n	5I Δ n	
AFDD-63	Any value	> 0.03	0.3	0.15		Max breaking time
		0.03	0.3	0.15		
		< 0.03	0.3	0.15	0.04	

The protection units of AFDD-63 consists of the followings: arc fault protection and detection unit, modification of unit detection and send a tripping signal when distinguishing the fault arc, the tripper pushes the mechanical structure to trip, then the main contact of AFDD will be switched from opening position to disconnecting position, which makes the fault circuit disconnected and avoid efficiently the fire created by arc fault.

Form 2 and form 3 show the ultimate limit of tripping judgement of arc fault and breaking time for rated voltage of 230V.:

Limit value of tripping judgement of 63A and below

Form 3

Tested arc current(effective value)	3A	6A	13A	20A	40A	63A
Max breaking time	1s	0.5s	0.25s	0.15s	0.12s	0.12s

Tested arc current refers to the expected current before circuit burns.

Limit value of tripping judgement of above 63A

Form 4

Tested arc current(effective value)	75A	100A	150A	200A	300A	500A
N	12	10	8	8	8	8

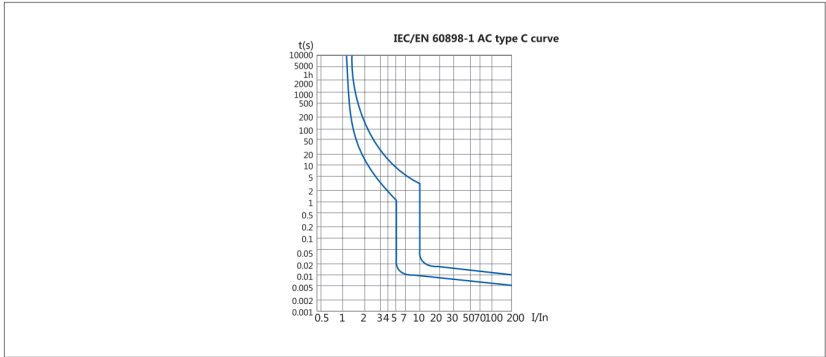
N refers to the number of half waves under rated frequency.

Overcurrent protective properties(nominal temperature 30 $^{\circ}$ C)

Form 5

Item	Type	Test current	Initial status	Time limit of tripping or non tripping	Expected result	Remarks
a	C	1.13In	Cold	$t \leq 1h$	Non tripping	
b		1.45In	Test following the previous procedure; Process after the test	$t < 1h$	Trip	Current increases to stipulated value within 5s
c		2.55In	Cold	1s < t < 60s(for In $\leq$ 32A) 1s < t < 120s(for In > 32A)	Trip	
d	C	3In, 5In, 10In	Cold	$t \leq 0.1s$	Non tripping	Connection of current by opening auxiliary switch
e	C	3In, 5In, 10In	Cold	$t \leq 0.1s$	Trip	Connection of current by opening auxiliary switch

Diagram 1



Mechanical and electrical life

Form 6

Type	Time	Operation frequency(time/hour)
Mechanical life	10000	240
Electrical life	2000	120

Connection wire

Form 7

Rated current I_n (A)	Nominal section area of copper wire S (mm ²)
6	1.0
10	1.5
16,20	2.5
25	4
32	6
40,50	10
63	16

Overall and mounting sizes(mm)

