

AFR SERIES ARC FLASH PROTECTION RELAY

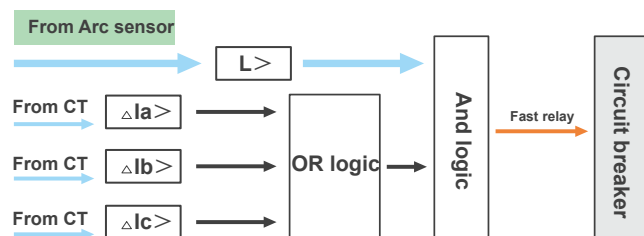
BUSBAR PROTECTION RELAY



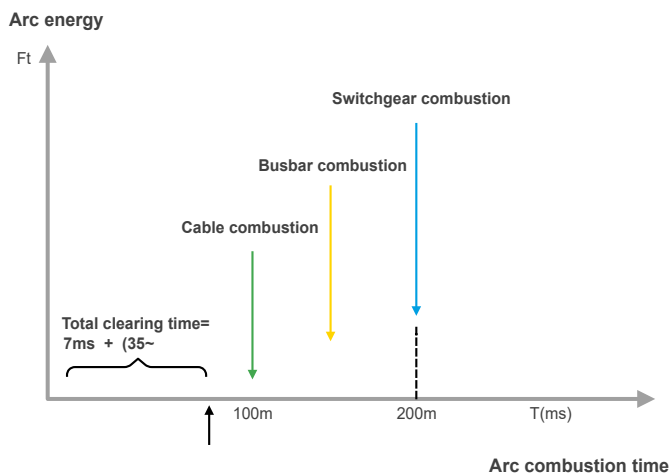
Introduction

AFR series arc protection relay detects electrical arcs in medium and low-voltage equipment, isolating power to minimize the risk of electrical fires. It works to prevent arcing faults in busbars, metal-clad switchgear, and cable boxes.

Arc flash relays can connect with remote light sensors to detect arc flashes and send a trip signal to cut off power. They can be used for stand-alone devices or embedded in complex switchgear layouts.



Arc Hazard Diagram



Main Features

- Accurate and real-time monitoring arc signals;
- High temperatures and humidity resistance;
- Fast response, relay tripping in less than 10ms;
- Equipped with RS485 communication interface;
- Support ST visible light and ST ultraviolet sensor access;
- Complete SOE records, all information power-off retention;
- Support automatic reclosing to improve system availability;

Application

- Capacitor cabinet;
- High voltage switchgear;
- Electric power substation;
- Large municipal engineering project;
- Medium and low voltage switchgear;
- Thermal power plant electrical section switchgear;
- Wind turbine & Wind farm and photovoltaic station switchgear;

AFR-M ARC FLASH PROTECTION RELAY

BUSBAR PROTECTION RELAY

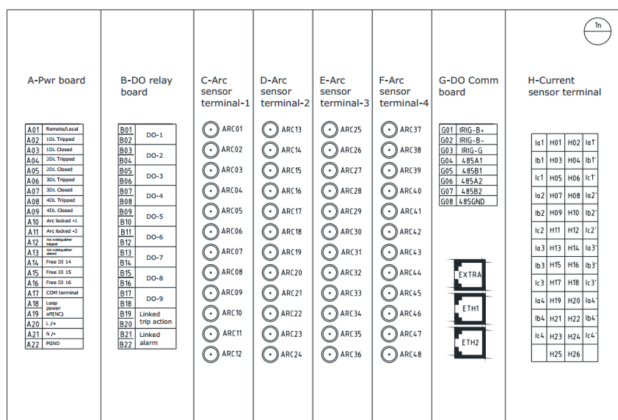


Introduction

AFR-M busbar ARC flash protection relay represents a cost-effective and highly efficient solution designed to mitigate arc-fault damage. AFR-M detects the emitted light from an arc flash and promptly triggers tripping relay in both low-voltage (LV) and medium-voltage (MV) electrical networks.

Equipped with up to 48 ultraviolet optical sensors, the relay operates on preset programs, ensuring optimal protection for the secure operation of bus circuits.

Terminal Definition



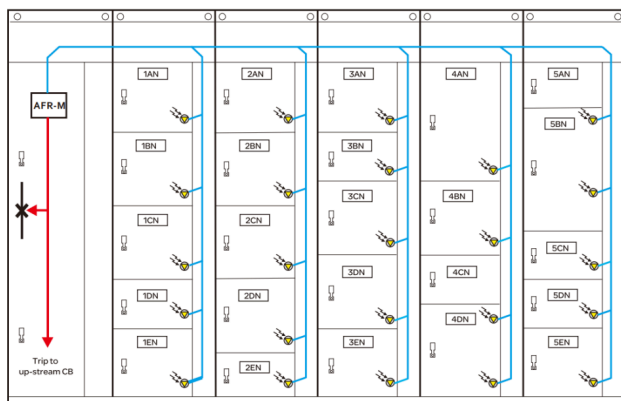
Main Features

- Arc light and current dual criterion;
- 16* passive DI point, indicates CB status;
- Single unit max 48pcs opt-sensor connected;
- High-definition LCD display to show integrated information;
- Independent trip act and alarm act arc flash relay;
- 9* trip contacts, free to configuration protect trip logic;
- Optional extra monitor functions by RS485 connection;
- Panel mounting design with rugged aluminum housing;
- Less than 10 ms operation time from arc flash to arc relay trip;

Application

- Capacitor cabinet;
- High voltage switchgear;
- Electric power substation;
- Large municipal engineering project;
- Medium and low voltage switchgear;
- Thermal power plant electrical section switchgear;
- Wind turbine & wind farm and photovoltaic station switchgear;

Wiring Method



AFR-M Multiple switchgear protection

AFR-3S ARC FLASH PROTECTION RELAY

BUSBAR PROTECTION RELAY



Introduction

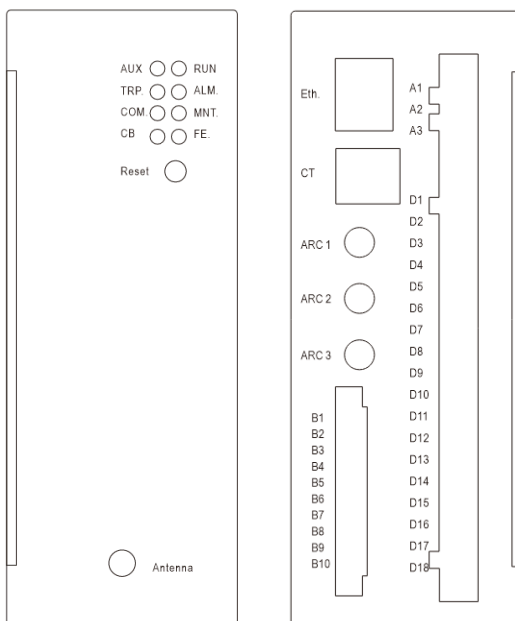
AFR-3S Arc flash protection relays serve as crucial components for detecting arc faults in electrical systems, ensuring the protection of equipment and personnel. AFR-3 adopts advanced monitoring of parameters such as current, voltage, and electric power to swiftly identify arcs.

Designed for application in medium and high-voltage power distribution systems, control cabinets, transformers, generators, motors, and various electrical equipment, the AFR-3 Arc flash relay operates based on a dual-criteria principle. Combining arc light detection with overcurrent detection, it delivers rapid protection responses and high reliability.

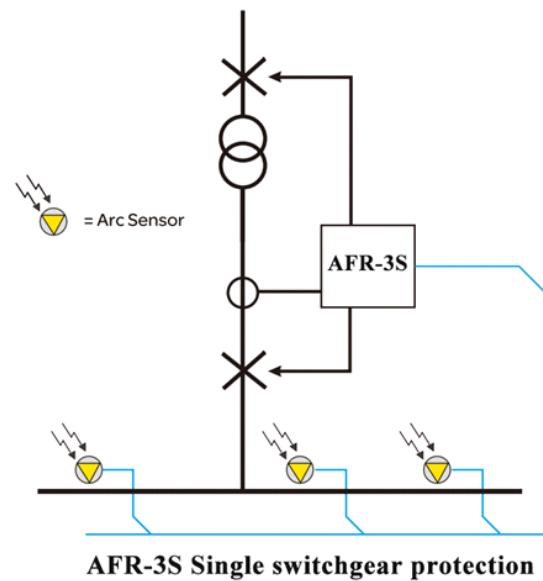
Main Features

- Advanced electrical power parameter monitoring;
- Support standard 35mm rail installation;
- Fast response, Identify arc faults in electrical systems;
- Effectively reduce the risk of fire in electrical systems;
- Quickly cut off the power supply to protect electrical safety;
- Adopt the dual criterion of arc detection and overcurrent detection;
- Comprehensive SOE record for analysis and system optimization;

Terminal Definition



Wiring Method



AFR-4 ARC FLASH PROTECTION RELAY

BUSBAR PROTECTION RELAY



Introduction

AFR-4 is a versatile and independently operating device for bay based protection. It supports 4-channels arc signal detection and can configuration multiple arc tripping modes, ensuring accurate and fast fault isolation. With a fast relay output speed up to 5ms, AFR-4 can minimize or completely eliminate arc flash damage, improving system safety and reliability. It can be used in various arc protection applications in low or medium voltage power distribution system.

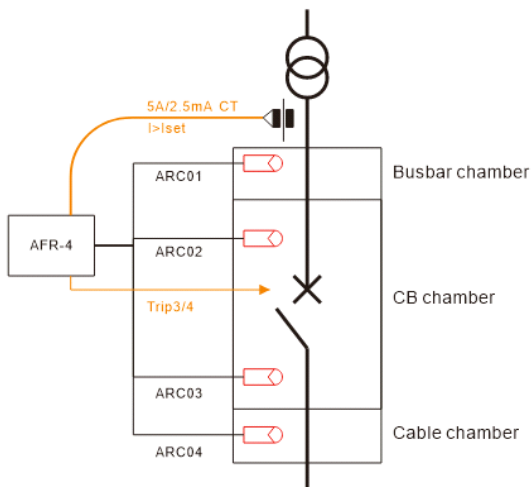
AFR-4 also provides flash warning and dual criteria tripping mechanism (arc detection + current), providing a comprehensive solution for arc flash protection. Integrated RS485/Modbus communication enables seamless remote monitoring and control, which is ideal for modern power systems.

Main Features

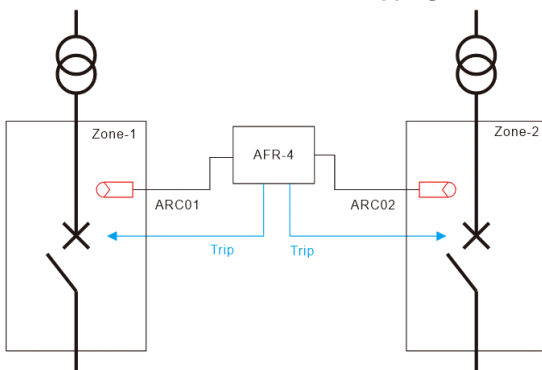
- ≤5ms fast relay tripping;
- Regional arc light detection;
- Multiple combined tripping modes;
- Circuit breaker failure protection;
- 4 channels of arc light signals detection;
- Support 35mm DIN rail or panel mounting;
- Dual criteria for arc detection and overcurrent detection;
- Integrated /RS485 MODBUS communication protocol;
- Support ST visible light and ST ultraviolet sensor access;

Typical Wiring

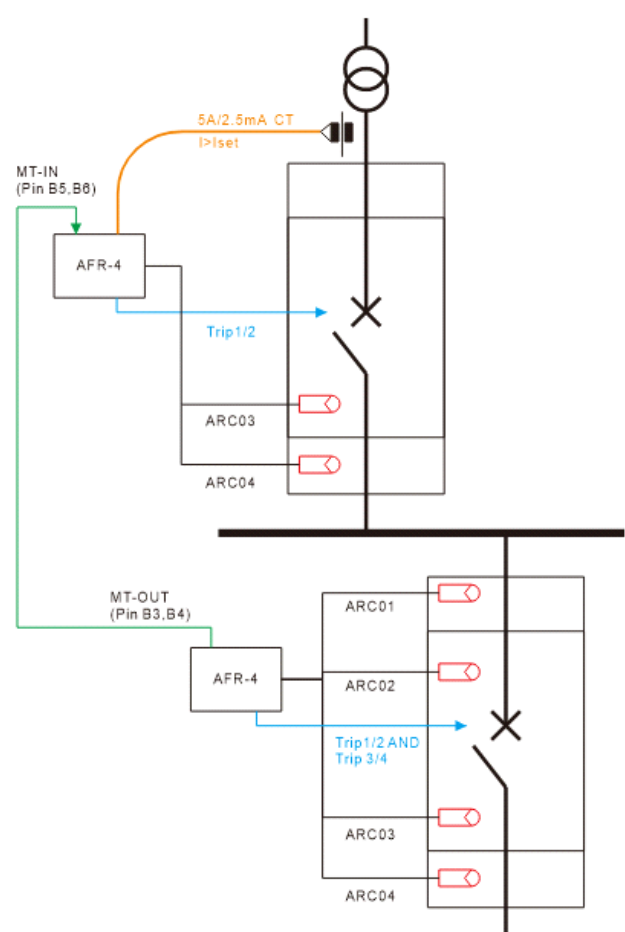
Mode 1: local tripping



Mode 2: Zone tripping



MT Mode: Master station tripping



Technical Characteristics

	AFR-M	AFR-3S	AFR-4
Basic parameter			
Power supply	85~265Vac/dc	85~265Vac/dc optional 15-70Vdc	
Consumption	Monitoring <8W; DO triggered <10W		
Protection range	0~20 In	0.06~10 In	
Rated current (In)	5A or 1A		
Burden	<0.5VA		
Protect current accuracy	<4%		
Arc signal input & control			
Channels number	12-48	3	4
Sensor type	Optical fiber		
Detection light type	Visible light/ UV light (optional)		
I/O capacity			
Digital input	16* DI, 5A@250Vdc, wet contact, optional dry contact	5*DI, 5A@250Vdc, NO; dry contact	2*DI (For Block/ MT in) Passive, NO, dry contact;
Digital output	8A@250Vac, dry contact	10A@250Vac/ 12A@24Vdc, dry contact Max. switching current: 10 A(dc)/ 12A(ac) Max. switching voltage: 277Vac/ 300Vdc.	
Trip action time	Pure arc protection: ≤10ms Overcurrent + arc protection: ≤20ms		Pure arc protection: ≤8ms Overcurrent + arc protection: ≤15ms
DO relay channels	9	4/6 (optional)	7
Safety isolation	Photoelectric isolation, isolation voltage 2500V		
RS485 Communication			
Interface	RS485 Modbus-RTU		
Isolation type	Photoelectric isolation, lightning protection		
Baud rate	9600bps		
Ethernet communication (optional)			
Interface	Optional 2 channels RJ45 ethernet		
Protocol	10/100 Mbps, Modbus TCP		
Default IP	192.168.12.2/192.168.13.2		
Others			
Working environment	-10 ~ 55°C, < 93% RH (Non-condensing)		
Storage environment	-30 ~ 70°C, < 70% RH (Non-condensing)		
Relative humidity	5%~95%		
Atmospheric pressure	60kPa~106kPa		

Related Accessories



SCM-OPVL (Visible light detection)

- Detection angle: 0-240° (-120°~ 120°)
- Photosensitive threshold: 5-20KLUX
- Spectral bandwidth: 280nm ~ 550nm



SCM-OPUV (UV light detection)

- Detection angle: 0-240° (-120°~ 120°)
- Photosensitive threshold: 1-10mw/cm²
- Spectral bandwidth: 280nm ~ 400nm