

AFR SERIES ARC PROTECTION RELAY

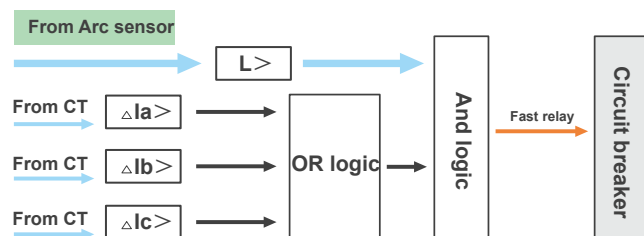
SWITCHGEAR PROTECTION RELAY



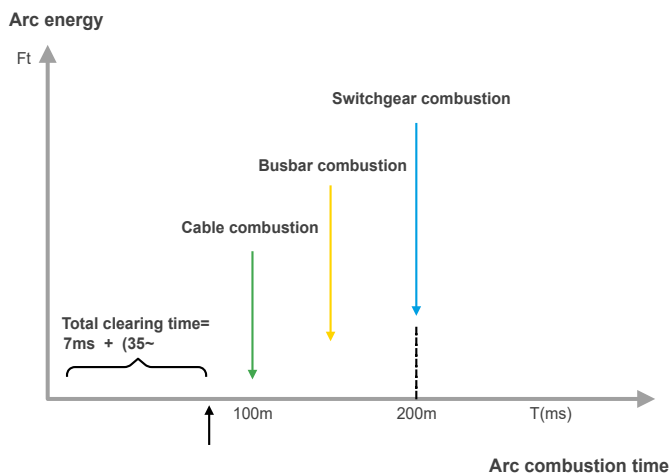
Introduction

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 10 ms.
- 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 function 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

SWITCHGERA PROTECTION RELAY

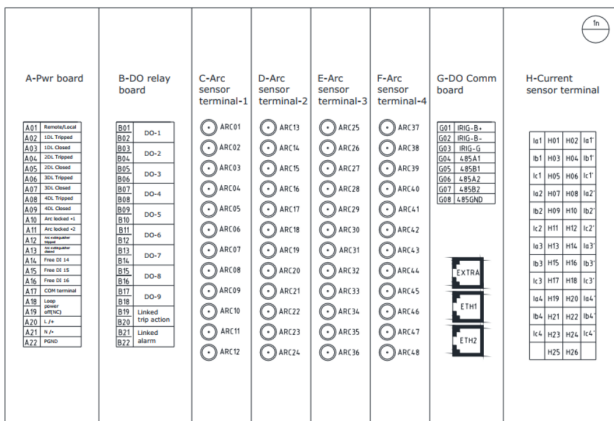


Introduction

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



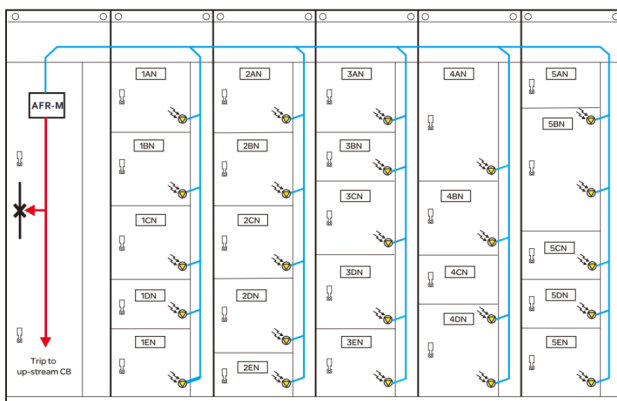
Main Features

- Arc light and current dual criterion.
- Total 4*3-phase current signal input.
- 16* passive DI point, indicates CB status.
- Single unit max 48pcs opt-sensor connected.
- HD 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 RS-485 connection.
- Panel mounting design with rugged aluminum housing.
- 1* ethernet port support IEC60870-5-103 communication.
- Less than 10 ms operation time from arc flash to arc relay trip.

Application

- Capacitor cabinet.
- High voltage switchgear.
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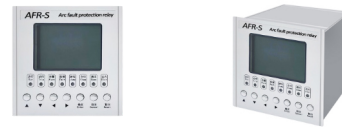
Wiring Method



AFR-M Multiple switchgear protection

AFR-S ARC FLASH PROTECTION RELAY

SWITCHGEAR PROTECTION RELAY

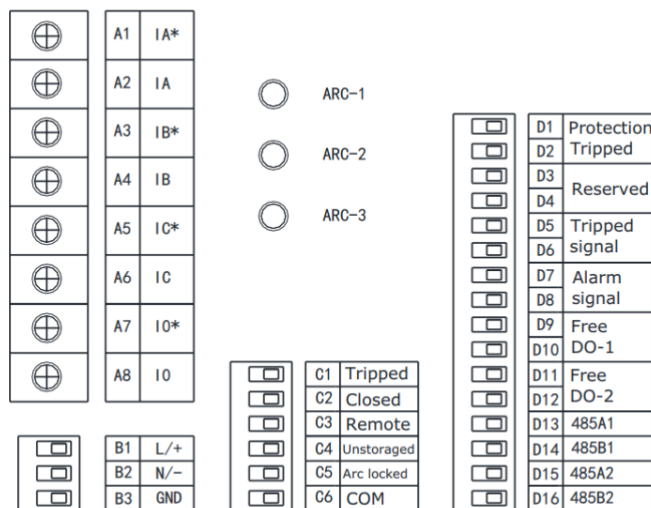


Introduction

AFR-S ARC flash protection relay is a cost-effective solution for minimizing arc-flash damage in low-voltage (LV) or medium-voltage (MV) feeder circuits, commonly recognized as a feeder protection relay. Outfitted with 3 arc sensors, can actively monitors arc faults occurring in cable connections and busbars within the cabinet.

AFR-S features a comprehensive range of functions, including three-stage phase-to-phase overcurrent protection, overload protection, zero-sequence overcurrent protection, arc flash protection, and high-temperature & over-temperature protection.

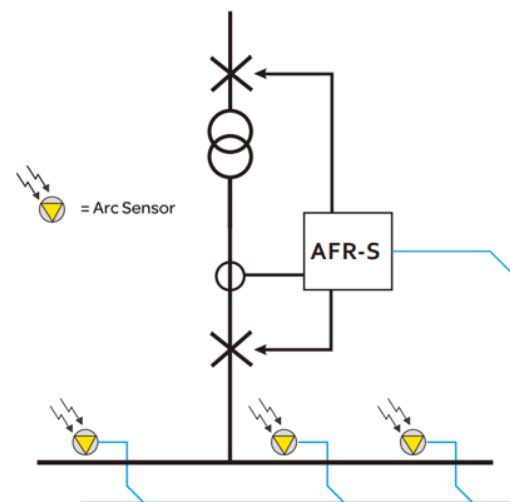
Terminal Definition



Main Features

- Programmable CB protects trip logic.
- Panel mounting design, HD LCD display.
- multiple passive DI points, indicate CB status.
- Can customized VCB control and protection logic.
- 3-phases current and earth-fault current measurement.
- Less than 10 ms operation time (including output relay).
- Multiple trip contacts, free to configure NC / NO status.
- Optional extra monitor functions by RS-485 connection.

Wiring Method



AFR-S Single switchgear protection

AFR-3S ARC FLASH PROTECTION RELAY

SWITCHGERA PROTECTION RELAY



Introduction

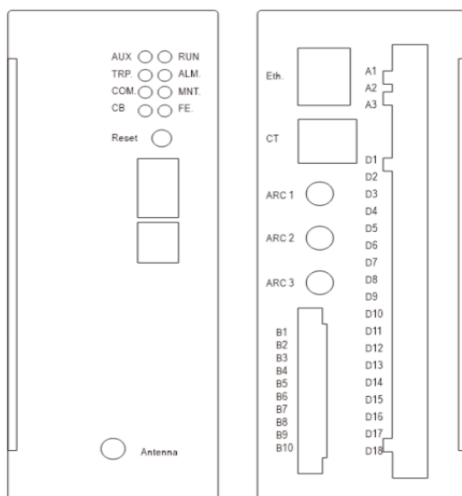
AFR-3S Arc flash protection relays serve as crucial components for detecting arc faults in electrical systems, ensuring the protection of equipment and personnel. AFR-3 adopts advanced monitoring of parameters such as current, voltage, and electric power to swiftly identify arcs.

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.

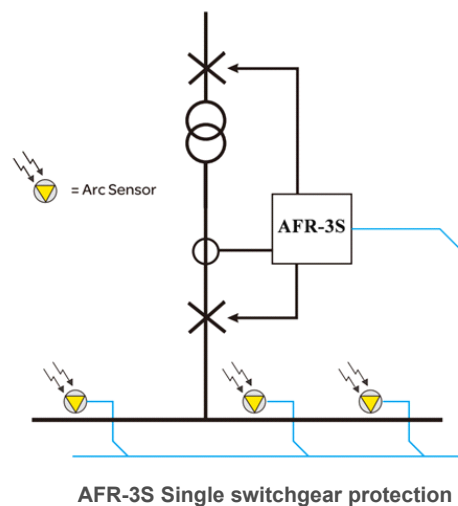
Main Features

- Advanced electrical power parameter monitoring.
- 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



Technical Characteristics

	AFR-S	AFR-M	AFR-3S
Basic parameter			
Power supply	85~265V AC/DC		85~265V AC/DC, optional 24/48V DC
Consumption	Monitoring <5W DO triggered <10W	Monitoring <8W DO triggered <10W	Monitoring <8W DO triggered <10W
Protection range	0.08~10 In	0~20 In	0.06~10 In
Rated current (In)	5A or 1A		
Burden	<0.5VA		
Protect current accuracy	<2%		
Protect frequency accuracy	0.1Hz		
Arc signal input & control			
Channels number	3	12-48	3
Sensor type	Optical fiber		
Detection light type	Visible light/UV light (optional)		
Trip coil contact	AC250V/8A fast relay, passive node		
Trip operation time	Pure arc protection: ≤10ms Overcurrent + arc protection: ≤20ms		
DO relay channels	6	9	4/6 (optional)
Safety isolation	Photoelectric isolation, isolation voltage 2500V		
RS485 Communication			
Comm port	RS485 Modbus-RTU (one standard, two optional)		
Isolation type	Photoelectric isolation, lightning protection		
Baud rate	9600bps		
Ethernet communication			
Interface	2-channels ethernet optional		
Network parameters	10M/100M adaptive		
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-OPUV (UV light detection)

- Detection angle: 0-240°
- Photosensitive threshold: 1-10mw/cm²
- Default trigger threshold: 5mw/ cm²



SCM-OPVL1 (Visible light detection)

- Detection angle: 0-240°
- Max.transmission distance: <30 m
- Photosensitive threshold: 5-20KLUX.



SCM-OPVL2 (Visible light detection)

- Detection angle: 0-360°.
- Photosensitive threshold: 5-20KLUX
- Trigger threshold: 8KLUX



SCM-BTM (Busbar temperature monitoring)

- Current: 5 A
- Temperature Range: -40 to 125°C
- Connectivity Type: Wireless



SCM-TEV (Partial discharge sensor)

- Bandwidth: 40 MHz - 80 MHz
- Measurement frequency range: 3M-100MHz
- Measuring range: 0~60dB
- Measurement error: ±2dB



SCM-MK (Smoke sensor)

- Smoke sensitivity: 0.15~0.3dB/m
- Alarm current: ≤45mA
- Communication method: RS485, MODBUS-RTU
- Working temperature: -40°C~+120°C, ≤97%RH(40°C±2°C)