



Ultra-fast, highly accurate arc protection ensuring safety and limited damage

AQ100 Series

Superior arc protection

The effects of arc faults can be devastating to both equipment and personnel. Arcing faults release large amounts of energy through radiant heat, intense light and high pressure waves.

The Arcteq arc protection system offers both detection and the 'cure' to arc faults. By detecting and eliminating the arc quickly, it prevents serious injury to staff and assists in limiting damage to just one area.

AQ100 units have the capability to be flexibly installed into even the most complex switchgear configurations, making it the ideal product for retrofitting.

Ultra-fast

The AQ100 units have an ultra-fast detection time of just 2ms. The AQ1000 arc quencher can extinguish the arc fault in just 3ms. During an arc fault, it takes just 30ms for the arc fault to reach maximum pressure and 100ms for temperatures to reach 20,000°C. The longer the arc is active, the more damage it causes.

Accuracy

The AQ100 offers high accuracy due to different methods of detection - this gives the fast tripping time and provides your equipment with maximum protection from the damage of arc faults.

Flexibility

The AQ100 is easily adaptable to any switchgear setup from single panels to full switchgear rooms. There's almost an unlimited number of units that can be connected in one system.

Product Datasheet

AQ100 Series

What is arc protection and why do I need it?

An arc fault is the most devastating fault switchgears can suffer. Arc faults are commonly caused by human error: dropping tools or accidentally touching live equipment during maintenance.

If no protection is in place, arc faults release large amounts of energy and temperatures can reach up to 20,000°C. These extreme temperatures vaporise switchgear components and encourage the release of toxic gases and burning shrapnel. It destroys thousands of pounds worth of equipment and will cause life-changing or even life-threatening injuries to anyone close-by.

The AQ100 arc flash relay detects the light, current or pressure produced by an arc fault and is able to trip the circuit breaker nearest to the fault, cutting the current. The AQ1000 arc quenching system will create a three-phase low impedance parallel path for the fault current, drawing the arc fault into the quenching unit, extinguishing the arc rather than letting it extend into the switchgear.

Arc protection on the switchgear limits damage done and saves lives.

Customer benefits

- Limiting damage - With the ultra-fast tripping time of just 2ms and quenching time of just 3ms, total destruction is prevented on the switchgear and damage will be limited to only one section. This saves downtime: it won't be necessary to wait for a whole board to be rebuilt. Selective tripping is also an option, meaning only the circuit breaker closest to the fault will trip. This can help find the source of the fault during investigation, whilst leaving the rest of the system in full operation.
- Cost-savings - These include the avoidance of an expensive rebuild of the switchgear, the repair of any other damage done to the room and the labour costs for doing so. Other costs often not considered are those when a staff member is injured (or worse) in the blast. This may involve legal fees, fines and compensation.
- Great option for retrofitting - The system is very adaptable into the existing switchgear configuration. This makes it ideal as a retrofit, as existing systems can't be easily equipped with additional current and voltage transformers.

What does an arc protection system look like?

You only need three components to create a reliable arc protection system: a trip relay, detection sensors and an arc quencher.



AQ100 series arc protection relay



Point or fibre sensor



AQ1000 arc quenching device

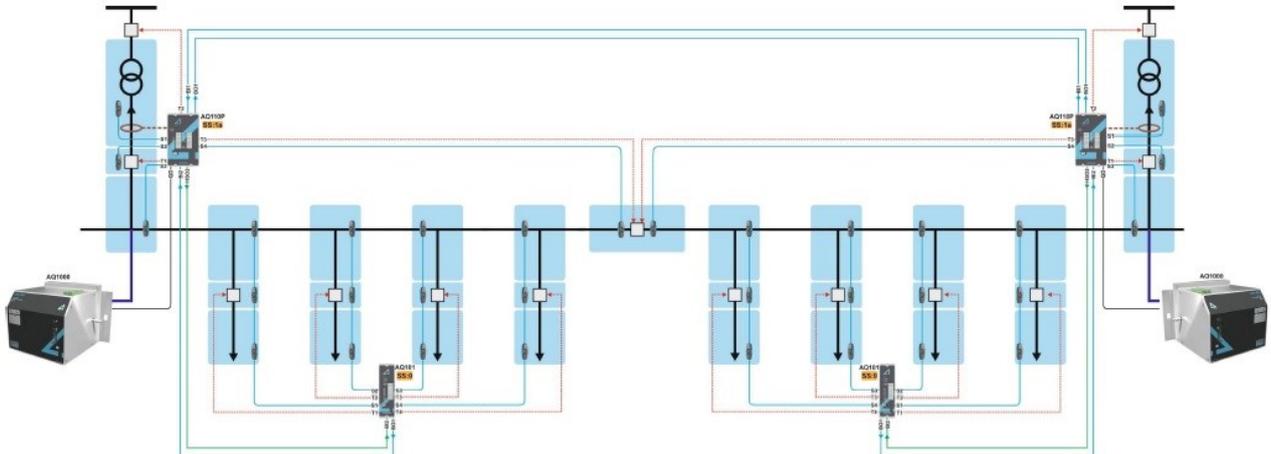
Installation using Standard Arc Schemes (AQ-SAS)

The AQ100 Series offers simple, flexible and rapid installation options as it needs no software programming and is simply set up by dip switches.

Product Datasheet

AQ100 Series

Arcteq have a library of tested and documented arc protection systems for typical switchgear layouts. This avoids complexity in setting-up, wiring and commissioning of the systems. The use of standard, pre-built arc schemes can give you direct cost savings and improved project timelines. To see a short animation of a basic arc protection configuration please take a look at: www.ipu.co.uk/products/arc-protection-system/



Why choose Arcteq?

Arcteq was formed in 2010 by a team of engineers and specialists who have more than a century of combined experience in protection relays, gained with some of the best-known names in the market sector.

Take a look below competitor analysis to see the superior features of the AQ100 series.

	Arcteq AQ100 Series	Schneider Electric VAMP 221 Series
Trip time	2ms trip time	7ms trip time
Distance of sensors	Max 100m length line of point sensors	Max 20m length line of point sensors
No. of sensors	Max 3 sensors in a line	Max 1 sensor in a line
Hierarchy	Peer system	Master-slave hierarchy

Why do I need an arc quencher as well as a relay?

The AQ1000 arc quenching device is an essential part of your arc protection system. Whilst the AQ100 relays are responsible for detecting and tripping the circuit breaker, the AQ1000 eliminates the actual fault. The main function of an arc quenching system is to facilitate faster arc elimination when considering the additional opening time of the circuit breaker.

To do this, the AQ1000 creates a three-phase low impedance parallel path for the fault current, drawing the arc fault into the quenching unit, extinguishing the arc rather than letting it extend into the switchgear.

Total operational time (to fully eliminate the arc) is just 3ms. This takes equipment and personnel outside the danger zone of 50ms – 100ms.

Fitting an AQ1000 quencher ensures your system sits at IEEE 1584 Hazard Risk Category 0. Category 0 is for equipment that poses very little risk, so PPE requirements are much lower.

The only resettable arc quencher

The AQ1000 is the only reusable arc quenching device on the market today. This unique feature means your system remains fully protected from arc flashes immediately after the quencher is reset (the reset itself takes only a few seconds).

Technical Specifications

Arc Protection Relays	AQ110F	AQ110P	AQ102	AQ101	AQ101D	AQ101S
Wide range power supply (18-72Vdc or 80-265Vac/dc)	Yes	Yes	Yes	Yes	Yes	Yes
Mounting	Panel/rack	Panel/rack	Panel/rack	Panel/rack	Din rail	Panel/rack
3 phase current detection (1/5A)	Yes	Yes	-	-	-	-
Residual current detection (1/5A)	Yes	Yes	-	-	-	-
Max number of point sensors	-	12	-	12	12	12
Max number of fibre loop sensors	3	1 (option)	3	1 (option)	1 (option)	-
High Speed Outputs (2ms trip time)	2	2	-	-	-	-
Number of trip relays (7ms trip time)	4	4	4	4	4	3
System failure relay	1	1	1	1	1	1
Binary outputs (24Vdc)	1	1	1	1	1	3
Binary inputs (24/110/220Vdc)	2	2	2	2	2	6
Push button	Yes	Yes	Yes	Yes	Yes	Yes
Non-volatile memory	Yes	Yes	Yes	Yes	Yes	Yes
Indication LEDs	20	20	12	12	12	17

AQ1000 Arc Quenching Unit

Power Supply	80-265Vdc or 18-70Vdc
Rated Voltage	690V
Short-circuit withstand	50kA for 1 second, 75kA for 0.5 second, 100kA for 0.2 second
BIL	12kV
Peak Current	220kA
Mechanical life	100 open/close cycles
Electric life	2 operations
Binary inputs	4
Indication LEDs	13