AQ 100 SERIES – The efficient arc protection system

The AQ-100 series offers a complete solution to arc flash protection. All AQ-100 products are designed using the latest technology, with a focus on simplicity while maintaining both flexibility and function. The series is built to meet the growing demands in both LV and MV switchgear and controlgear applications, ranging from basic stand-alone solutions to more complex system solutions.

The AQ-100 series is designed and tested according to the latest protection relay standards; this makes it suitable for installations in any environment, from utilities and power plants to heavy industry applications (e.g. offshore, marine, mining) as well commercial and institutional electrical systems. Its modular design makes the AQ-100 series an excellent candidate for both new and retrofit installations.

THE BENEFITS OF AQ-100

SPEED

- Trip time can be as fast as 2 ms
- Connectivity to arc quenching systems AQ-1000 and AQ-2000 for rapid arc extinguishing

FLEXIBILITY

- Easy adaptation to any switchgear and all trip schemes
- A variety of arc sensors available
- Long distance between units possible
- A practically unlimited number of units can be interconnected in one system

RELIABILITY

- Standard hardwiring practice for communication between units
- Superior isolation level against external disturbances – tested at the highest EMC classes
- Selectable threshold voltages for the binary inputs
- Full self-supervision of all system components and interconnections

SIMPLICITY

- AQ-100 Standard Arc Scheme (AQ-SAS) approach for fast engineering and simple setting
- Auto-configuration feature that is operated with one push button
- Installation downtime often limited to hours

COST EFFECTIVENESS

- Careful component selection optimizes the AQ-100 cost structure
- Use of standard cables for interconnection and sensor wiring
- Quick installation of sensors and wires
- Cables can be cut to the required length on-site

AQ-SAS™ STANDARD ARC SCHEMES

- Reduces in engineering costs
- Quick and simple commissioning
- Fewer after-sales costs

AQ-SAS is a fully tested and documented standard arc protection solution library. Application descriptions, connection drawings and DIP switch settings are detailed in product literature, which reduces both the requires engineering effort and the after-sales costs significantly.

ARCTEQ®

RELAYABLE POWER

SELECTION TABLE	AQ 110F	AQ 110P	AQ 103	AQ 102	AQ 101	AQ 101D	AQ 101S
Wide power supply range (18...72V DC or 92...265 V AC/DC)	✓	✓	✓	✓	✓	✓	✓
Mounting	Panel /rack	Panel /rack	Panel /rack	Panel /rack	Panel /rack	Din rail	Panel /rack
Three-phase and residual current detection (1/5A)	✓	✓					
Maximum number of point sensors		12	14		12	12	12
Maximum number of fiber loop sensors	3	1 (option)	1 (option)	3	1 (option)	1 (option)	
Connectivity to arc quenching system	✓	✓					
High-speed outputs (2 ms trip time)	2	2	1				
Number of trip relays (7ms trip time)*	4	4	4	4	4	4	3
System failure (SF) relay	1	1	1	1	1	1	1
Binary outputs (24 V DC)	1	1	1	1	1	1	3
Binary inputs (24/110/220V DC**)	2	2	2	2	2	2	6
Modbus communication			✓				
Push button	✓	✓	✓	✓	✓	✓	✓
Non-volatile memory	✓	✓	✓	✓	✓	✓	✓
Indication LEDs	19	20	25	11	12	12	17
Applicable sensors							
AQ-01 light sensor (a, b, c***)		✓	✓		✓	✓	✓
AQ-02 light and pressure sensor		✓	✓		✓	✓	✓
AQ-06 plastic fiber loop sensor (3...40 m)	✓	✓ (option)	✓ (option)	✓	✓ (option)	✓ (option)	
AQ-07 glass fiber loop sensor (3...50 m)	✓	✓ (option)	✓ (option)	✓	✓ (option)	✓ (option)	
AQ-08 glass fiber loop sensor (high temperatures, 3...15 m)	✓	✓ (option)	✓ (option)	✓	✓ (option)	✓ (option)	

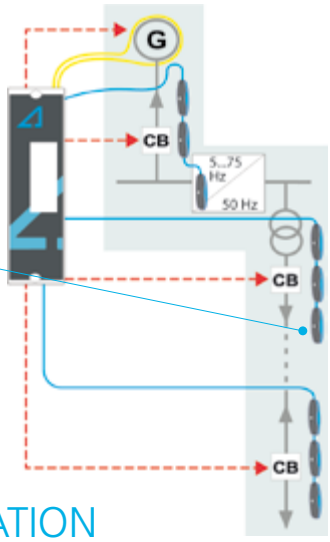
* Optionally, one of the trip relays can be selected to be normally closed (NC) / electronic lock-out.
** Please note that AQ-110P and AQ-110F can only have a threshold voltage of 24 V DC.
*** Activation threshold options: a = 8,000 lx, b = 25,000 lx, c = 50,000 lx.

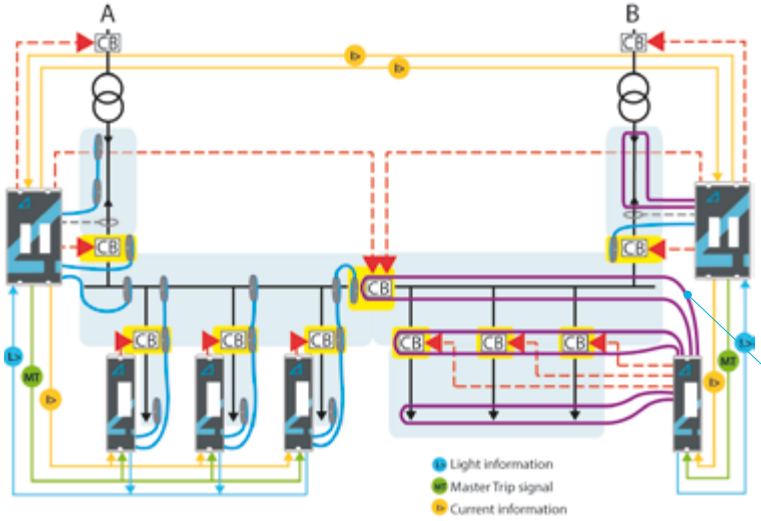
STAND-ALONE APPLICATION EXAMPLE

Any AQ-100 unit can be used as a stand-alone arc protection relay. AQ-101 provides a complete arc protection to a wind power turbine (see the diagram on the right).

✓ AQ-01 comes, by default, with an activation level of 8,000 lx and with a detection radius of 180 degrees. Typically, one AQ-01 sensor is installed in each closed compartment. A maximum of three (3) sensors may be connected in series to one channel (apart from AQ-103 which can have only one sensor per channel). Plug-in cable connectors allow for a quick installation and cost reductions.


AQ 01





SYSTEM APPLICATION EXAMPLE

AQ-100 units can be flexibly applied to even the most complex switchgear layouts to provide full or partially selective tripping. Using Standard Arc Schemes (AQ-SAS™) guarantees smooth project implementation.

✓ **AQ07** is an industrial grade flexible glass fiber loop sensor. It has a fixed activation level of 8,000 lx as well as a detection radius of 360 degrees. The sensor comes in lengths of 3 to 50 meters.

ARCTEQ RELAYABLE POWER

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