



ABB AutoLink resettable  
electronic sectionalizer  
Protection and operation equipment  
for medium voltage distribution lines

# Product overview



## Design features

- End user programmable between 6 and 215 A, and from 1 to 4 counts
- The electronics analyze and discriminate between fault current and inrush current
- Prevents unnecessary supply outages by operating only under permanent fault conditions
- Maintains counts memory for up to 3.5 minutes during dead line
- Capable of identifying current as fault or inrush within one current cycle
- Analysis method detects symmetric and asymmetric inrush currents
- Improves distribution reliability and reduces outage duration by reducing the number of customers affected during an outage
- Only one style needed per voltage class (15, 27, and 33 kV)
- Saves time, effort, and money
- Fits on a standard ABB Type ICX cutout body
- Field resettable with no tools required
- Under-the-cap dip switches make end-user programming easy

## Application

The ABB AutoLink electronic sectionalizer is designed for use on overhead distribution lines to improve reliability and service continuity. Due to new technology introduced in the AutoLink sectionalizer, the actuating current and number of counts are customer configurable, which enhances the protection of the distribution system in a simple and economical way. The AutoLink operates in the same way as an expulsion fuse cutout. Its “drop-down” manner makes it easy for field staff to readily identify fault affected overhead lines.

The AutoLink sectionalizer operates independently of time-current base, thus offering an additional layer of protection and eliminating the need for an additional coordinating step to the protection scheme. The introduction of an AutoLink sectionalizer into a network does not affect the settings of upstream or downstream equipment. Unlike fused cutouts, the AutoLink can operate in areas where available fault current prevents coordination with fuses, or between protective devices that have close operating curves where an additional coordination step can be difficult to add.

## Description and operation

The AutoLink is designed for installation in traditional fused cutout mounts, in place of the fuseholder. It is also suitable for ganged cutout mounts providing two or three pole operation. The AutoLink incorporates electronic logic and trip circuits which are controlled and powered by two current transformers. The current transformers are mounted externally to the conductive tube and encapsulated in a durable weatherproof epoxy. The electronic circuit provides the necessary intelligence for counting recloser tripping operations and creates the opening of the sectionalizer at the appropriate time. The electronic circuit is encapsulated in epoxy, within the environmentally sealed conductive tube. The tube acts as a faraday cage, protecting the electronic circuit from the influence of magnetic fields.

The electronic circuit is also capable of performing spectral analysis of the current waveform to discriminate between a transformer inrush current and a fault current. This greatly reduces outages caused by temporary or transient faults. The AutoLink’s programming module is located under the cap. It consists of dip switches that allow the end user to set the desired actuating current and number of counts.

Tripping is achieved when a solenoid located in the lower half of the conductive tube is energized and the trip arm is released, enabling the hinged trunnion to collapse. In order to reset it, the AutoLink must be removed from its mount using a hookstick, similar to the removal of a fused cutout. Next, invert the unit, push the trip lever back and lock the flipper spring into place, then reinstall.

# Operating under fault conditions

## Operating under temporary fault conditions

In overhead electric distribution, 80-90% of faults are temporary faults, which are cleared by an upstream recloser or breaker.

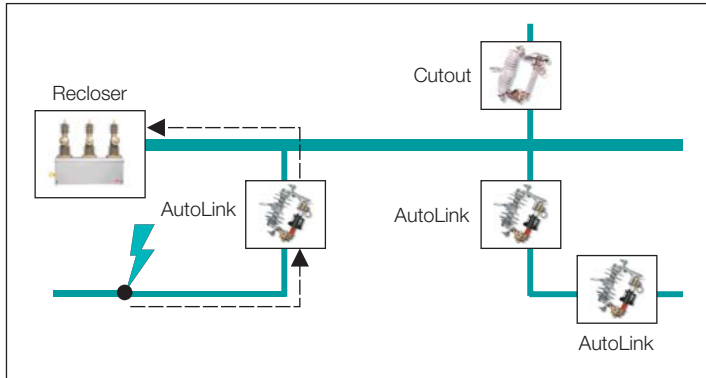


Diagram A: Typical distribution network.

The AutoLink is inactive under normal load conditions. During a temporary fault, the electronic sectionalizer recognizes the fault as an overcurrent. If the fault current is higher than the preset actuating current, the sectionalizer becomes active. It awaits an open operation from the upstream automatic recloser. At the occurrence of a current zero, the sectionalizer registers the first count. If the upstream automatic recloser closes and no further fault is detected within the memory resetting time, the sectionalizer will time out and return to an inactive state.

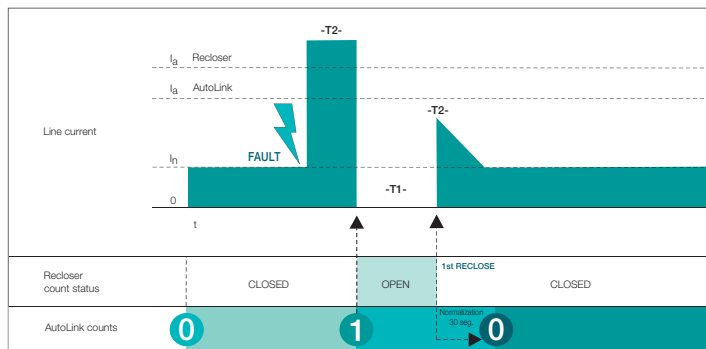


Diagram B: Two-counts setting, temporary fault.

## Operating under permanent fault conditions

The remaining 10-20% of fault events in overhead lines are permanent. During these events, the continuous cycling of the recloser does not clear the fault. This forces the AutoLink to reach its trip count setting, dropping out during the “dead” time of the upstream device and isolating the section of the network where the fault was detected. This will allow the recloser to successfully reclose and maintain power to the unaffected branches.

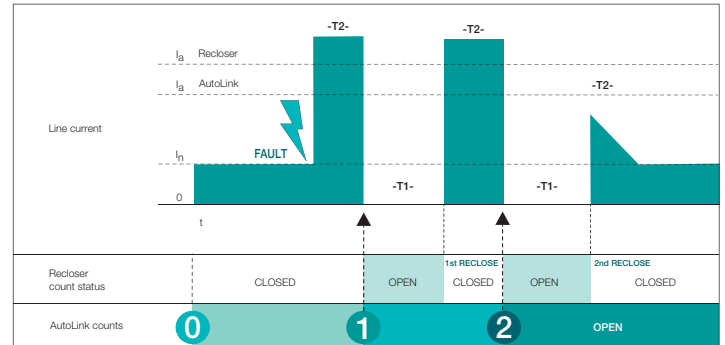


Diagram C: Two-counts setting, permanent fault.

The times shown in Diagrams B and C as T1 correspond to the time the recloser takes to reconnect the circuit. This “dead time” is usually adjustable up to 3 minutes. The AutoLink can operate while keeping the count performed with the current at zero for up to 3.5 minutes, above any possible dead line value configured in the recloser.

Due to the latest technological improvements recently introduced to reclosers, the time indicated as T2 is the time the recloser takes to open immediately after the fault event. These times are usually reduced to one or two cycles. The AutoLink, by means of the spectral analysis in the second harmonic, only needs one cycle to identify a current as a fault current, isolating it from symmetric and asymmetric inrush currents. This feature adds an outstanding technical advantage to the AutoLink.

A high percentage of unwanted openings in devices of this type are due to either failures in detecting the inrush currents or to the detection method used.

# Operating highlights and technical specifications

## Operating highlights

- Immune to temperature variations between -25°C & 65°C
- Immune to transformer connection inrush current
- Low threshold for dead line detection
- Shielded design prevents interference caused by electromagnetic induction
- Adaptable to any line protection configuration through the resetting capability
- Simplified stock management! Only one device is needed per kV class to adjust to all types of configurations
- No external power source required
- Reliable opening
- Simple and quick installation
- An effective, simple, and economical solution for operating selectivity with both temporary and permanent faults

## Proper selection and setting

In order to ensure a perfect coordination between the AutoLink and the upstream reclosers or breaker, the following requirements must be met:

- The actuating current of the AutoLink must be set below the actuating current of the recloser (both for phase fault and earth fault events)
- The actuating current of the AutoLink must be set between the short circuit current and the circuit rated current
- The 0.5 second total opening time of the AutoLink must be shorter than the reclosing interval of the recloser or recloser switch
- The set count of the AutoLink must be at least one count less than the set count of the corresponding recloser
- The useful life and proper operation of the AutoLink greatly depends on the correct setting of the equipment and on the waterproof closure of the setting module. This operation must be performed only by trained staff who adhere to the recommendations included in the mounting and calibration instructions provided with the device.

## Technical specifications

Rated voltage	15, 27, and 33 kV
Rated frequency	50 or 60 Hz
Nominal current	<200 A
Actuating current range	Resettable between 6 and 215 A
Number of opening counts	Resettable between 1 and 4 counts
Inrush current detection method	Harmonic analysis
Types of inrush currents detected	Symmetric and asymmetric
Inrush detection time	<1 cycles
Dead line detection	<200 mA
Dead line verification time	80 msec
Maximum memory time with dead line	>3,5 minutes
Total opening time	0.5 seconds
Memory resetting time	30 seconds
Insulation level	110, 125, 150, and 170 kV BIL
Short-time current (1 sec)	4 kA symmetric
Current (peak value)	10 kA

## Packaging details

Model	Quantity per box	Weight (lbs.)	Dimensions (in.)
AutoLink-15	1	5	4.72 x 16.53 x 3.94
AutoLink-27	1	5	4.72 x 16.53 x 3.94
AutoLink-33	1	5	4.72 x 20.86 x 3.94

## Packaging details

Model	Quantity per box	Weight (kg)	Dimensions (cm)
AutoLink-15	1	2,2	12 x 42 x 10
AutoLink-27	1	2,3	12 x 42 x 10
AutoLink-33	1	2,5	12 x 53 x 10

## Ratings

Model	Rated voltage (kV)	Insulation level (kV BIL)*	Actuating current	Number of counts
AutoLink-15	15	110		
AutoLink-27	27	125	Resettable	Resettable
AutoLink-27	27	150	between	between
AutoLink-33	33	150	6 & 215 A	1 and 4 counts
AutoLink-33	33	170		

\* applicable to equipment with fuse support base

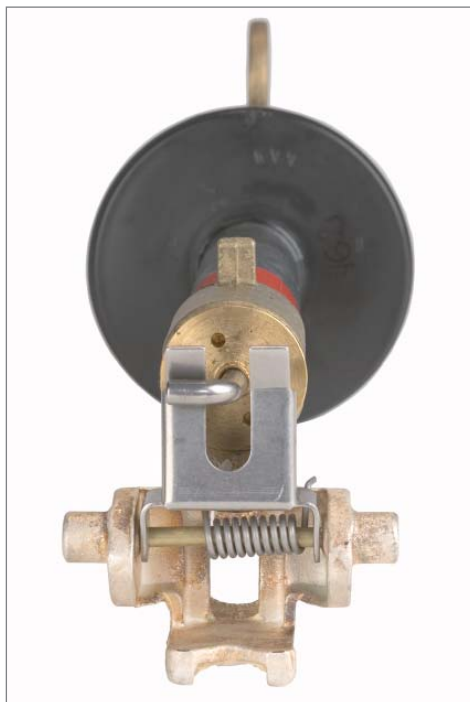
# Selection guide

## Selection guide

Description	Code	Definition
Type	AL1	Type AutoLink
	1	15 kV, 110 kV BIL
	2	27 kV, 125 kV BIL
System voltage/BIL	4	27 kV, 150 kV BIL
	5	33 kV, 150 kV BIL
	7	33 kV, 170 kV BIL
Frequency	50	50 hertz
	60	60 hertz
Insulator type	A	Electronic module only
	N	Porcelain insulator
	J	Silicone insulator
	Z	Polymer concrete
Mounting options	A	Electronic module only
	B	NEMA B bracket
	E	Extended bracket
	N	No bracket
Terminal options	A	Electronic module only
	C	Parallel groove
	E	Eyebolt
Option	N	No option
Option	N	No option

Example: To order a 15 kV AutoLink without insulator or mounting bracket, order AL1160AAANN

### 1 AutoLink in down position | 2 End | 3 Inside



# Contact us

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