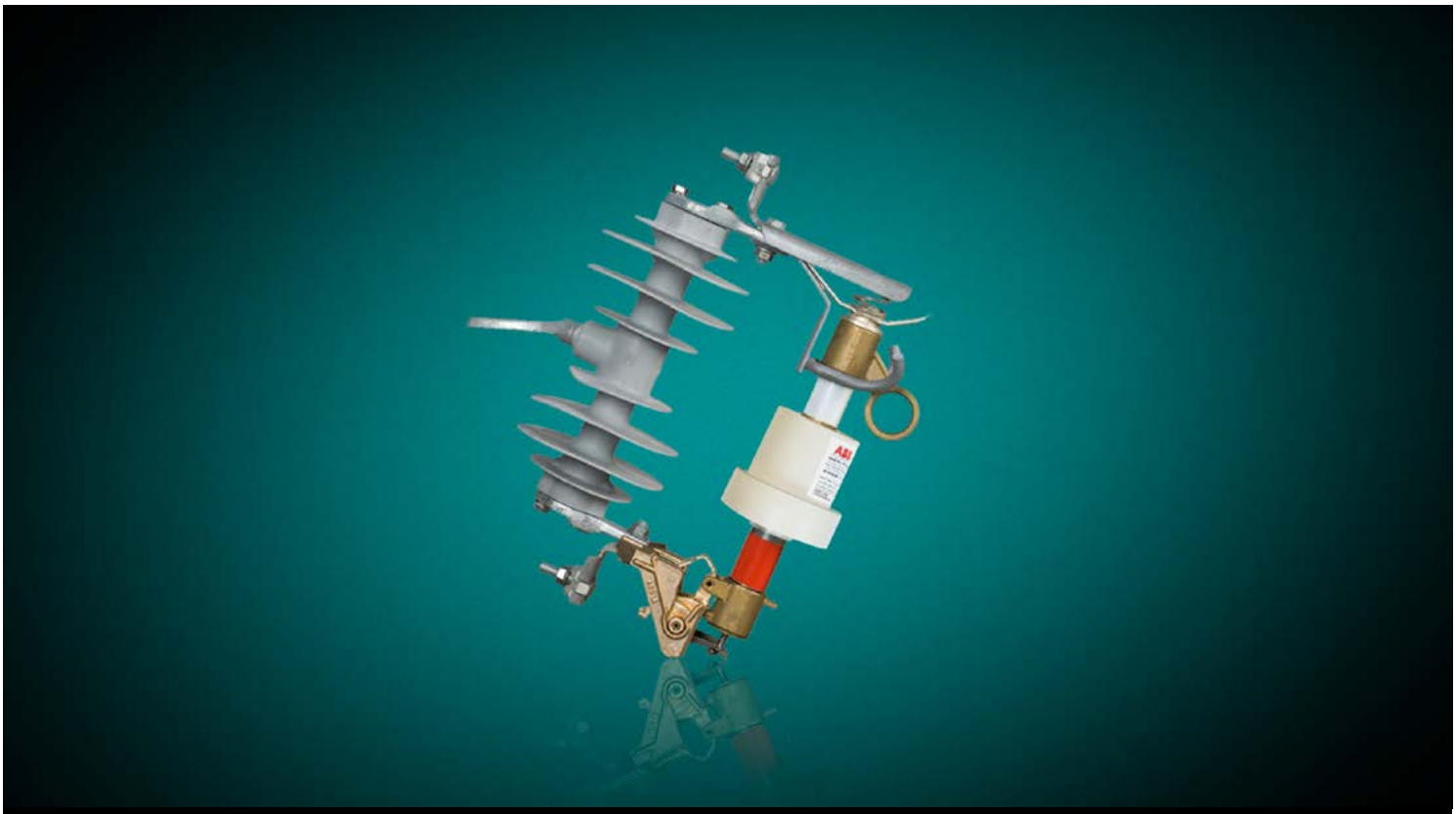


Medium voltage products

AutoLink family of electronic sectionalizers
Increase reliability and performance of overheadlines

Power and productivity
for a better world™

Table of contents

Overview

ABB seeks to introduce world class innovations that enable our partners and customers to achieve power quality and reliability. The AutoLink electronic sectionalizer is one of many solutions ABB offers to help making this happen. With only one style needed per voltage class (15, 27, and 38 kV) and with its different solutions, you will save time, effort, and money by reducing network downtimes and improving performance indexes such as System Average Interruption Duration Index (SAIDI) and Customers Average Interruption Duration Index (CAIDI).

Offering

- Single-phase AutoLink
- Wireless AutoLink
- Three-phase AutoLink
- Loadbreak AutoLink

Features and benefits

- End user programmable between 6 and 215 A, and from 1 to 4 counts
- Electronics analyze and discriminate between fault current and inrush current within one current cycle
- Prevents unnecessary supply outages by operating only under permanent fault conditions
- Maintains counts memory for up to 3.5 minutes during dead line
- Field resettable with no tools required, Wireless requires PC
- No external power source required
- Simple and quick installation
- Coordinates perfectly with reclosers, reducing operating costs and improving system reliability
- Event log in Wireless model
- Status LED in wireless version

Application

The ABB AutoLink sectionalizer is an isolating device that automatically isolates the faulted section of the network when a permanent fault occurs. If a temporary fault occurs, the AutoLink allows the upstream recloser or breaker to clear the fault without interrupting the circuit.

The AutoLink is designed for use on overhead distribution lines to improve reliability and service continuity. Due to new technology introduced in this 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 is similar to an expulsion fuse cutout, droping down makes it easy for crew staff to readily identify fault affected overhead lines.

The AutoLink sectionalizer operates independently of time-current base 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.

Wireless version adds unique features that allows an improved application. Among its most remarkable features, it has an event log and watchdog status led.

Description and operation

AutoLink description

Each AutoLink conductive tube 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 for durable weatherproof. The electronic circuit provides the necessary intelligence for counting recloser tripping operations and fault identification, and commands the sectionalizer opening at the appropriate time. The electronic circuit is encapsulated in epoxy, within the environmentally sealed conductive tube. Each tube performs 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 since it will not count if the inrush current is detected.

In addition, the AutoLink's programming module, located under the top, allows the end user to set the desired actuating current and number of counts, giving great flexibility to adjust the unit to the specific location demands. Standard version has dip-switches while Wireless has a mini USB port.

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 rotate and the AutoLink to drop open just as a traditional fuse cutout.

AutoLink operation

The AutoLink can be installed in branches, downstream of a recloser or reclosing device. When the value of the network current is at least 10% above the preset actuating current, the AutoLink begins counting the opening operations of the recloser. Once it reaches the preset count (1 to 4 opening operations of the recloser), it opens the circuit in the branch or phase while the recloser is open. The circuit is restored by manually restoring the mechanical device following the standard and safety procedures for repositioning of electrical equipments for overhead lines.

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. 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 10% higher than the preset actuating current and assuming the AutoLink counts to be set at more than one shot, the sectionalizer becomes active and it waits for an open operation from the upstream automatic recloser. At this occurrence, interpreted by the AutoLink as current zero, the sectionalizer records 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, ready for the next occurrence. At last, both the upstream device and the AutoLink remain connected and the circuit in service.

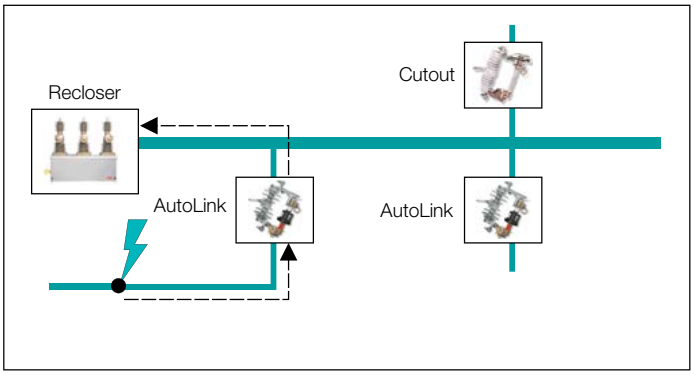


Diagram A: Typical distribution network.

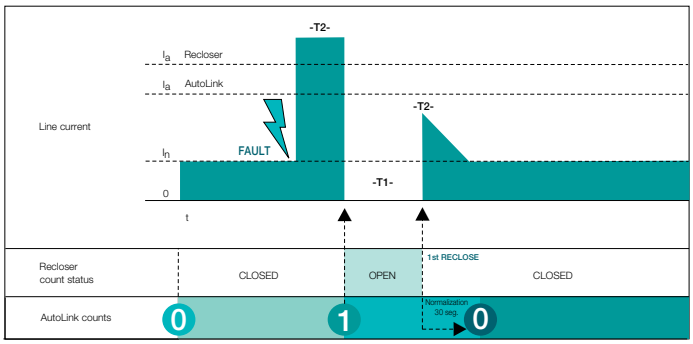


Diagram B: Two-counts setting, temporary fault.

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 opening time (called “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.

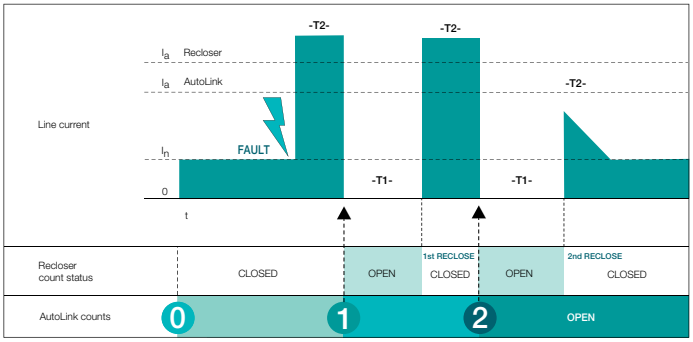


Diagram C: Two-counts setting, permanent fault.

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.

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.

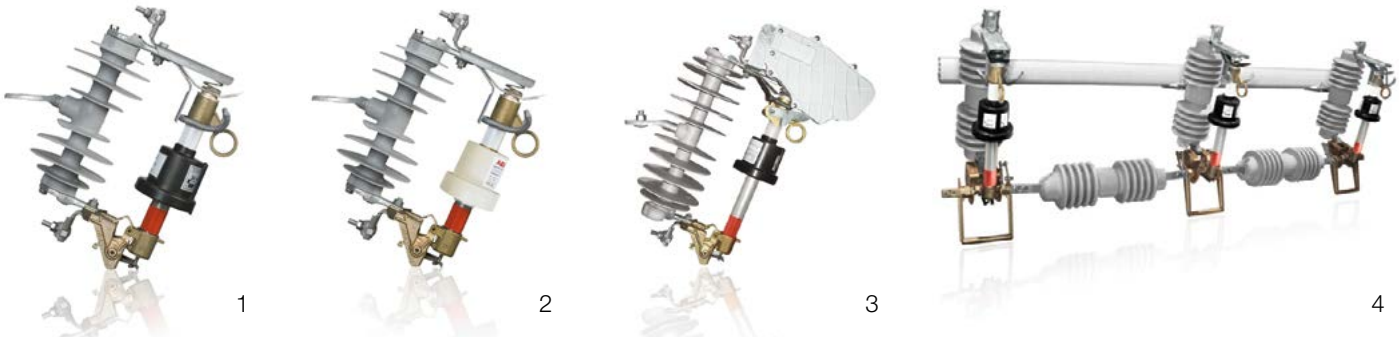
Configuration recommendations

In order to ensure a proper 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 at least 20% below the actuating current of the recloser (both for phase fault and earth fault events). The set count of the AutoLink must be at least one count less than the set count of the corresponding recloser or upstream device.
- Recloser opening time at the AutoLink tripping selection must be on a slow curve to ensure AutoLink opening without load, e.g. more than 0.5 seconds.
- The lifespan and proper operation of the AutoLink greatly depends on the correct setting of the equipment and the waterproof sealing of the setting module. This operation should be performed by trained technicians that follow the recommendations included in the mounting and calibration instructions provided with the device.
- As with other manually operated devices, opening the device under load is an operation that requires either a hookstick with loadbreak capabilities or a loadbreak version (available). At the same time, closing the device under load or fault is not recommended as it can translate into potential damage to the assets and/or to personnel. Contact ABB for more information on operating the units under these procedures.

Family of AutoLink sectionalizers installed in silicon cutout bodies:

1 Single-phase AutoLink | 2 Wireless Electronic Sectionalizer | 3 Loadbreak AutoLink | 4 Three-phase AutoLink



1 2 3 4

Cutout insulators are also available from ABB in several materials (please contact ABB for more information).

Single-phase AutoLink electronic sectionalizer

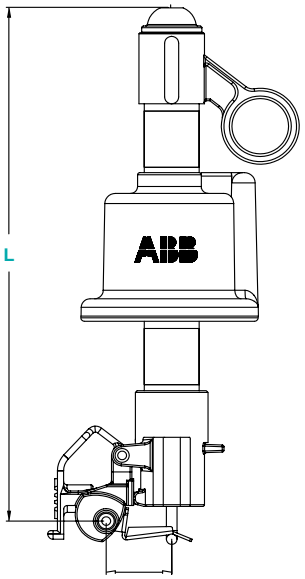
Overview

The single-phase AutoLink electronic sectionalizer provides an economical solution for sectionalizing overhead distribution lines, thus improving system reliability and providing users with unique flexibility. The use of the single-phase AutoLink in branches allows better coordination in the event of faults, decreasing operating costs and power outages.

Benefits:

- Prevents temporary faults from causing outages
- Reduces replacement of fuses
- Reduces operating costs
- 'One kV rating fits all' design minimizes inventory
- Fits on any interchangeable type cutout body
- Field configurable and resettable as many times as needed between 6 and 215 A, and from 1 to 4 counts
- Detects and discriminates inrush current
- Trip arm reset with no tools required
- Does not require an auxiliary power source

Unit dimensions



kV class	kV BIL	Length L (in)	Length L (mm)
15	110	11.375	289
27	125	14.69	373
27/38	150	14.69	373
38	170	18.385	467

Technical specifications

Rated voltage	**15 kV**	**27 kV**	**38 kV**
Insulation level	110 kV BIL	125 & 150 kV BIL	170 kV BIL
Length (mm)	289	373	467
Rated frequency		50 or 60 Hz	
Nominal current		< 200 A	
Actuating current		Resettable 6 - 215 A	
Number of counts before operation		Resettable 1 -4	
Types of inrush currents detected		Symmetric and asymmetric	
Inrush detection time		< 1 cycle	
Ambient Temperature Operating range		-40° C to +55° C	
Opening time for single phase		<0,1 sec	
Short time current, 1 sec (effective)		4 kA	
Asymmetrical initial (peak)		10 kA	
Dead line detection		< 200 mA	
Dead line verification time		80 ms	
Max. memory time with dead line		> 3.5 min	
Memory reset		30 s	
Weight (lb/kg) *	5/2.2	5/2.3	5/2.4
Packaging dimensions (in) *	4 x 4 x 12.5	4 x 4 x 15.75	4 x 4 x 20
Packaging dimensions (mm) *	105 x 105 x 320	105 x 105 x 400	105 x 105 x 500

* Fuse cutout available upon request in porcelain, silicon and polymer concrete.

Wireless electronic sectionalizer

Overview

ABB seeks to introduce world class innovations that enable our partners and customers to achieve power quality and reliability. WiAutoLink, wireless electronic sectionalizer, is one of many solutions ABB offers to help making this happen. With only one style needed per voltage class (15, 27, and 38 kV), you will save time, effort, and money by reducing network downtimes and improving performance indexes such as System Average Interruption Duration Index (SAIDI) and Customers Average Interruption Duration Index (CAIDI).

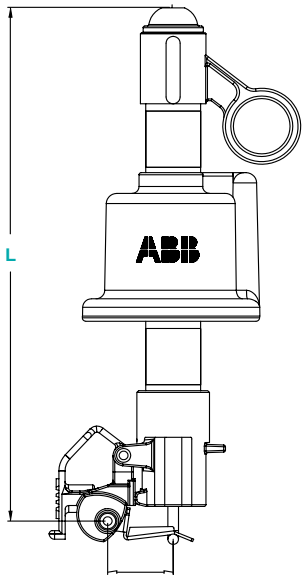
Description

The device consists of a fuseholder base identical to the one used for simple fused cutouts. This base is fitted with a tube that houses an electronic circuit, which discriminates permanent from temporary faults. The electronic circuit also sets the mechanical opening of the sectionalizer if the fault current is determined to be permanent or continuous. A wireless electronic board allows communication with other WiAutoLink to operate in conjunction.

The device´s configuration port is found under the tube`s upper contact cap. Through this port standard mini - USB, the operator can configure and reconfigure the sectionalizer`s pickup current and number of counts among other values to obtain the desired combination for system protection.

When placed in a network with a recloser (or a reclosing switch), the AutoLink installed on a downstream service connection counts the operations and, once it reaches the preset count (1 to 4 opening operations of the recloser), it cuts the circuit while the circuit is being opened by the recloser. The circuit is restored by manually resetting, without the need of special tools, the mechanical device.

Unit dimensions



Benefits

- Prevents temporary faults from causing outages
- Reduces replacement of fuses
- Reduces operating costs
- ‘One kV rating fits all’ design minimizes inventory
- Fits on any interchangeable type cutout body
- Field configurable and resettable as many times as needed between 6 and 215 A, and from 1 to 4 counts
- Detects and discriminates inrush current
- Trip arm reset with no tools required
- Does not require an auxiliary power source
- Status LED
- Event log
- Single, bi or three phase configuration
- All parameters are configurable by software

Wireless electronic sectionalizer

Application

The ABB WiAutoLink sectionalizer is a isolating device that automatically isolates the faulted section of the network when a permanent fault occurs. If a temporary fault occurs, the WiAutoLink allows the upstream recloser or breaker to clear the fault without interrupting the circuit.

The WiAutoLink electronic sectionalizer is designed for use on overhead distribution lines to improve reliability and service continuity. Due to new technology introduced in the WiAutoLink 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 WiAutoLink is similar to an expulsion fuse cutout, droping down makes it easy for crew staff to readily identify fault affected overhead lines.

The WiAutoLink sectionalizer operates independently of time-current base eliminating the need for an additional coordinating step to the protection scheme. The introduction of an WiAutoLink sectionalizer into a network does not affect the settings of upstream or downstream equipment. The WiAutoLink 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.

Technical specifications	Dim			
Model		**WiAutoLink-15**	**WiAutoLink-27**	**WiAutoLink-38**
Nominal current	A	200		
Rated maximum voltage	kV	15.5	27.0	38.0
Rated Frequency	Hz	50 / 60	50 / 60	50 / 60
Actuating current range	A	Resettable between 5 and 200 A in steps of 1A.		
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	mA	Configurable between 200 to 700		
Dead line verification time	msec	Max. 80		
Total opening time single phase	sec	<0,1		
Maximum operation time for bi-phase or three-phase operation	sec	<0,5		
Memory resetting time	sec	Programmable between 10 and 300 seconds.		
Minimum pre-current in the line required to operate	A	Minimum requirement: 3 A		
Insulation level	kV	110	125/150 (*)	150/170 (*)
Short-time current (1 sec)	kA sym	4		
Current (peak value)	kA	10		
Maximum distance between each unit of the three-phase set of AutoLink	m	10		
Operating temperature range (guarantee up to 200A)	°C	-40 to +55		
LED Feature		LED Blinking to check Electronics Status		
Firmware Upgradable		Using MS Windows Desktop App		
Maximun Altitude		3000 m		
Potection Class (IP)		IP68		
Certified Radio Module		FCC, IC and ETSI		
Enviromental Information		RoHS Complaint, WEEE Complaint		
Loadbreak capability		Yes	Yes	No

Three-phase AutoLink electronic sectionalizer

Overview

The three-phase AutoLink electronic sectionalizer improves the reliability and flexibility of medium voltage overhead lines. It prevents network interruptions devices. In addition, the three-phase opening prevents network unbalanced loads when a single-phase fault occurs. Due to its easily reconfigurable design, the three-phase AutoLink can help save installation time and costs and it can be reset without the need for special tools, ensuring visual mechanical opening of the three phases and allowing the crew to identify faulty phases.

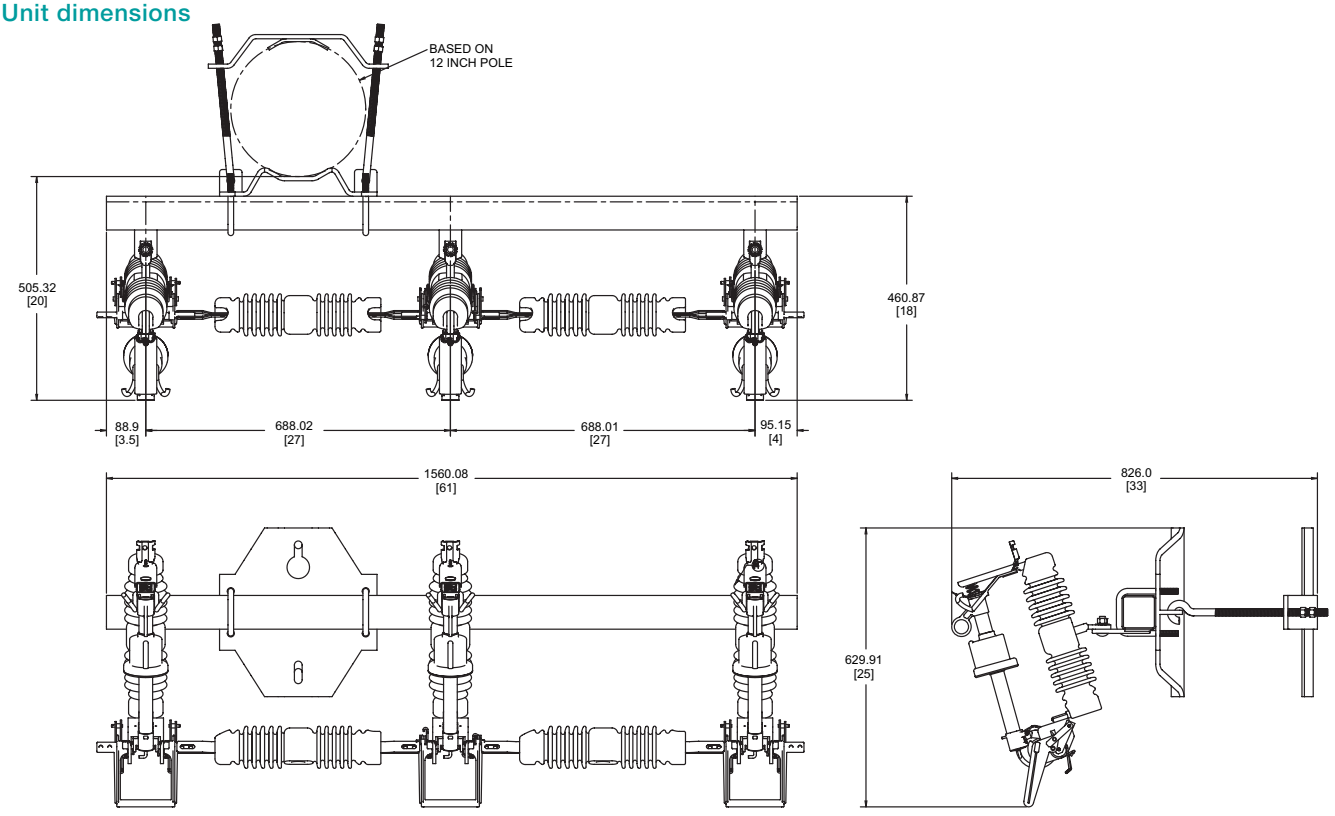
Benefits:

- Improves network reliability
- Isolates temporary faults, preventing extensive outages
- Reduces operating costs
- 'One kV rating fits all' design minimizes inventory
- Field configurable as many times as needed between 6 and 215 A, and from 1 to 4 counts
- Detects inrush current
- Trip arm reset with no tools required
- Does not require an auxiliary power source
- One simple pole mounting arrangement

Technical specifications

Rated voltage	15, 27 and 38 kV
Insulation level	125 and 150 kV BIL
Insulator material	Porcelain
Rated frequency	50 or 60 Hz
Nominal current	< 200 A
Actuating current	Resettable 6 - 215 A
Number of counts before operation	Resettable 1 -4
Types of inrush currents detected	Symmetric and asymmetric
Inrush detection time	< 1 cycle
Temperature range	-40° C to +55° C
Short time current, 1 sec (effective)	4 kA
Asymmetrical initial (peak)	10 kA
Dead line detection	< 200 mA
Dead line verification time	80 ms
Max. memory time with dead line	> 3.5 min
Memory reset	30 s
Weight (lb/kg)	160/353
Packaging dimensions (in)	26 x 33 x 69
Packaging dimensions (mm)	660 x 820 x 1760
Maximum operation time for three phase operation	0,5 sec

Unit dimensions



Loadbreak AutoLink electronic sectionalizer

Overview

The loadbreak AutoLink adds to the function of automatic sectionalizing, the manual opening option under load during maintenance operations, without the need to open the upstream device. Only a simple hookstick is needed to operate the loadbreak AutoLink. Both the number of counts and the actuating current can be reconfigured by the user as many times as necessary, according to the particular requirements of coordination. These features translate into a greater network flexibility and reliable independence of the branches.

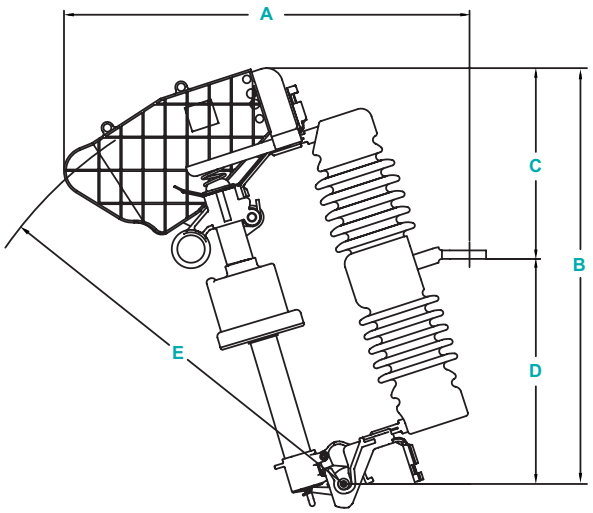
Benefits:

- Prevents temporary faults from causing outages
- Improves network reliability
- Grants greater safety to the personnel
- Isolates temporary faults preventing extensive outages
- Reduces replacement of fuses
- Reduces operating costs
- Field configurable as many times as needed between 6 and 215 A, and from 1 to 4 counts
- Detects inrush current
- Does not require hookstick with loadbreak accessory
- Does not require an auxiliary power source

Technical specifications

Rated voltage	15 and 27 kV
Insulation level	110, 125, and 150 kV BIL
Insulator material	Porcelain/silicone
Rated frequency	50 or 60 Hz
Nominal current	< 200 A
Manual loadbreak	200 A
Actuating current	Resettable 6 - 215 A
Number of counts before operation	Resettable 1 - 4
Types of inrush currents detected	Symmetric and asymmetric
Inrush detection time	< 1 cycle
Short time current, 1 sec (effective)	4 kA
Asymmetrical initial (peak)	10 kA
Dead line detection	< 200 mA
Dead line verification time	80 ms
Max. memory time with dead line	> 3.5 min
Memory reset	30 s

Unit dimensions



		Unit dimensions (mm)					Weight (kg)	
kV class	BIL (kV)	A	B	C	D	E	Porcelain	Silicone
15	110	484	505	220	286	470	10.50	8.00
15/27	125	484	505	220	286	470	10.50	8.00
15/27	150	484	505	220	286	470	14.10	8.05

		Unit dimensions (in)					Weight (lbs)	
kV class	BIL (kV)	A	B	C	D	E	Porcelain	Silicone
15	110	19.05	19.88	8.65	11.24	18.50	23.15	17.64
15/27	125	19.05	19.88	8.65	11.24	18.50	23.15	17.64
15/27	150	19.05	19.88	8.65	11.24	18.50	31.08	17.75

Packaging details

Model	Material	Qty per box	Weight (kg)	Dimensions (mm)
15 kV, 110 kV BIL	Porcelain	1	8.4	375 x 184 x 527
15 kV, 110 kV BIL	Silicone	1	6.6	375 x 184 x 527
15/27 kV, 125/150 kV BIL	Porcelain	1	9.8	381 x 188 x 616
15/27 kV, 125/150 kV BIL	Silicone	1	7.0	381 x 188 x 616

Packaging details

Model	Material	Qty per box	Weight (lbs)	Dimensions (in)
15 kV, 110 kV BIL	Porcelain	1	18.5	14.75 x 7.25 x 20.75
15 kV, 110 kV BIL	Silicone	1	14.5	14.75 x 7.25 x 20.75
15/27 kV, 125/150 kV BIL	Porcelain	1	21.5	15.00 x 7.38 x 24.25
15/27 kV, 125/150 kV BIL	Silicone	1	15.5	15.00 x 7.38 x 24.25

AutoLink selection guide

Description	Code	Definition
Product	A	AutoLink
Style	L	Standard
	B	Loadbreak
	W	Wireless
Type	1	Standard single-phase AutoLink
	3	Three-phase AutoLink[1, 3]
System voltage (BIL)	1	15 kV, 110 kV BIL
	2	27 kV, 125 kV BIL[1]
	3	15/27 kV, 125 kV BIL (only loadbreak) [2]
	4	27 kV, 150 kV BIL (only porcelain) [1]
	5	38 kV, 150 kV BIL (only porcelain) [1]
	6	15/27 kV, 150 kV BIL (only porcelain, only loadbreak) [2]
	7	38 kV, 170 kV BIL (only porcelain) [1, 2]
Frequency	50	50 Hertz
	60	60 Hertz
Insulator type	A	Electronic module only[1, 2]
	N	Porcelain insulator
	J	Silicone insulator [2]
Mounting options	A	Electronic module only [1, 2]
	B	NEMA B bracket [2]
	E	Extended bracket [2]
	X	Crossarm with pole mounting bracket (three phase mechanical only)[1]
	N	No bracket [1, 2]
Terminal options	A	Electronic module only [1, 2]
	C	Parallel groove
	E	Eyebolt
Special option	N	No option
	S	Seacoast design (SST)
	1	ESKOM version (ZA)
	2	Special 3mm upper tap (AU)
	Z	Contact factory
Option	N	No option
	Z	Contact factory

Example: Order AL1250NBENN for an AutoLink with the following features: standard single-phase, 27 kV, 125 kV BIL, 50 Hz, porcelain, NEMA B bracket, and eyebolt.

1 - not available for loadbreak: option AB
2 - not available for three-phase mechanical: option AL3
3 - not available for wireless: option AL3

Contact us

For more information please contact your local ABB office.

Add your contact information

www.abb.com.ar/mediumvoltage
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