



# WiAutoLink Frequently Asked Questions

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## 1 Background

### 1.1 What is the WiAutoLink Single Phase Electronic Sectionalizer?

The WiAutoLink Electronic Sectionalizer is a device that operates during the de-energized state of the network and under no load conditions to isolate a permanent downstream fault in the distribution line. It must be used together with an upstream recloser or substation breaker. The AutoLink is not a fuse tripping device, therefore it cannot be used as a protection device by itself. It has a build in event recorder, watchdog and wireless technology to operate in bi or three-phase mode.

### 1.2 What is the main function of the WiAutoLink?

The main function of the WiAutoLink is to discriminate between permanent and transient faults in the distribution line, making it possible for the upstream recloser or substation breaker to clear transient faults without permanent interruption to the customers. Thanks to its wireless technology it can trip other WiAutoLinks located in the same branch.

### 1.3 Does the WiAutoLink replace a fuse?

The WiAutoLink is not a fuse tripping device, it will operate to isolate a permanent fault on no load condition. The WiAutoLink fits into a standard fuse cutout and it directly replaces an existing fuse base. When it operates the WiAutoLink drops open like a fuse.

### 1.4 How does the WiAutoLink operate?

The WiAutoLink senses a current above a programmed pickup threshold and also zero current when the upstream recloser or substation breaker operates. If the fault is temporary it would be cleared by the reclose operation and the WiAutoLink reclose counter resets. If the fault is permanent the WiAutoLink will trip on the last open cycle of the recloser, isolating the permanent fault in its branch and allowing the recloser to close prior to going to lockout. When operating the WiAutoLink will send wireless commands to other WiAutoLinks located in the same branch.

### 1.5 How many reclose operations can the WiAutoLink see?

The WiAutoLink is user settable to detect 1 to 4 opening operations of the recloser.

### 1.6 What are the available pickup levels in the WiAutoLink?

The WiAutoLink is user settable to detect fault currents from 6A to 215A at 1A steps. Typical fuses have a current rating of up to 200A.

### 1.7 When does the WiAutoLink reset its counter?

The WiAutoLink default reset time is 30 sec and it starts counting from each pickup or dead line detection condition. The reset time is user settable between 10 and 300 sec.

## 1.8 What is the shortest open time?

The WiAutoLink minimum dead line detection time is 80 msec. If the dead line detection time is less than 80 msec, then the WiAutoLink will not advance its counter. For the WiAutoLink to operate it needs a minimum open time (reclose timer) of 500 msec. The 500 msec time is needed for the WiAutoLink to drop in the open position.

## 1.9 What is the longest open time?

The dead line condition (recloser open time) should be no longer than 3.5 minutes, for the WiAutoLink to have enough stored energy to trip.

## 1.10 How many models of WiAutoLink are available?

There are 3 models of WiAutoLink: 15kV, 27kV and 33kV. These 3 models have 3 different tube lengths, with exactly the same components to fit the respective standard cutout.

## 1.11 Where is the manufacturing located?

Manufacturing is at the ABB Argentina Medium Voltage Factory.

## 1.12 Where do I get support for the WiAutoLink?

AutoLink support is available from ABB Argentina Factory and/or local ABBs.

# 2 Technical features

## 2.1 What standard does the WiAutoLink comply with?

The WiAutoLink complies with ANSI C37.63 standard (IEEE Standard Requirements for Overhead, Pad-Mounted, Dry-Vault, and Submersible Automatic Line Sectionalizers for AC Systems up to 38kV).

## 2.2 What is the maximum pass-through current for the WiAutoLink?

The WiAutoLink is suitable for carry 4kA / 1 sec of short-circuit current and 10kA peak.

## 2.3 What type of faults does the WiAutoLink detect?

The WiAutoLink doesn't have curves. It detects any type of overcurrent faults as long as the fault current exceeds the WiAutoLink pickup setting for a cycle or longer.

## 2.4 What is the WiAutoLink life-span?

According to the ANSI C37.63 standard, the mechanical life must meet 200 operations and the WiAutoLink has been certified for 200 operations, as stated in the relative type test report.

## 2.5 Can the WiAutoLink be bench tested?

The WiAutoLink can be bench tested and a procedure is available for this purpose.

## 2.6 Does the WiAutoLink measure voltage?

The WiAutoLink doesn't have any voltage measuring or sensing, it measures current and uses it to power up.

## 2.7 When does the WiAutoLink know that the line is open?

The WiAutoLink detects a dead line when it measures a current that is below a user settable value between 200 and 700mA. If a current above this user settable value is present when the current is interrupted by the upstream recloser or substation breaker, the WiAutoLink will not advance its counter.

## 2.8 Does the WiAutoLink detect transformer energization inrush currents?

The WiAutoLink detects and discriminates inrush currents thanks to a 2<sup>nd</sup> harmonic restraint algorithm. This allows the WiAutoLink not to pick up upon an inrush current in the distribution line and also being coordinated with the upstream recloser for this functionality. This Inrush detection feature is user settable between 10% and 40%.

## 2.9 What is the WiAutoLink Ingress Protection rating?

The WiAutoLink has been tested and rated to IP65.

# 3 Installation and Operation

## 3.1 Which cutout bodies are suitable for WiAutoLink installation?

WiAutoLink fits on ABB ICX, AB Chance, Delmar, Cooper, S&C, Lorenzetti and Delmar. For other brands, we recommend to send the cutout body to the factory, where the WiAutoLink can be tested in order to verify its mechanical operation.

## 3.2 What is the minimum load current required for the WiAutoLink to be operational?

The WiAutoLink has no minimum load current requirement as it will power up with the pass through fault current. Nevertheless a minimum load current of 6A is recommended.

## 3.3 Are there spare parts available for the WiAutoLink?

Since WiAutoLink is a sealed device, there are no spare parts required for maintenance purposes, therefore the only components that may be replaced are the upper cap, O-ring, silicone grease, current and count labels.

## 3.4 Can the WiAutoLink be opened under load?

The WiAutoLink is not a fault-operation device. It doesn't have an arcing chamber or an extinguishing medium to prevent electrical arcing, therefore it is not designed or safe for the operator to open it under load. A load buster tool may be used to open the WiAutoLink under load.

The Load Break WiAutoLink provides an arcing chamber which allows safe load breaking with a standard hot stick.

### 3.5 Can the WiAutoLink be closed in an energized line?

The WiAutoLink is not a fault-operation device. It doesn't have an arcing chamber or an extinguishing medium to prevent electrical arcing, therefore it is not designed or safe for the operator to close it in an energized line.

The ANSI C37.63 standard has no recommendations regarding closing in live line conditions and therefore there are no tests or safe practices defined.

While a common practice in utilities is to close a fused cutout or an WiAutoLink in live line conditions, there is no way to run a test and certify that the closing operation can be done since the possibilities of speed, operator force, hot stick and environmental conditions vary from case to case.

ABB does not recommend to close the WiAutoLink in live line conditions as there is no protection for the operator and there is a possibility to be closing into a fault. The user should follow safe practices which do not put the operator at risk.

The arc chamber of the Load Break WiAutoLink was only designed for opening under load conditions and not for closing into a live line.

### 3.6 What are the recommendations for setting the WiAutoLink?

There are two settings for the WiAutoLink: current and count setting. The current setting should be at least 10% below the pickup current of the upstream recloser or substation breaker to ensure that WiAutoLink will see the fault.

The count setting should be one count less than the upstream recloser or substation breaker to isolate a permanent fault downstream from the WiAutoLink preventing the recloser from going to lockout.

### 3.7 How does the WiAutoLink trip?

The WiAutoLink is equipped with an electronic control and a mechanical tripping mechanism. By means of the current sensing the electronics determines when the WiAutoLink should trip on the faulted phase. When this happens the tripping mechanism operates and releases a lever that unlocks the WiAutoLink from its cutout and it falls by gravity, having its pivot in the lower contact. If the WiAutoLink is programmed in 3-phase mode, at the same time this WiAutoLink will send a wireless trip message to the other WiAutoLinks that are in the other phases. The WiAutoLink remains hanging in the cutout by means of its lower contact. This gives visual confirmation of the opening of the MV circuit.

### 3.8 How do I reset the WiAutoLink after a trip?

The WiAutoLink is field resettable. To reset the WiAutoLink please follow the instructions given in the manual. No special tools are needed for resetting the WiAutoLink. A hot stick is needed to reach the WiAutoLink in its cutout.

## 4 General

### 4.1 Does WiAutoLink improve quality measures and costs?

The WiAutoLink improves SAIDI and SAIFI indexes and costs as it facilitates clearing of transient faults without permanent interruption to the customers.

In a distribution line, 80% of the faults are transient and 20% are permanent. With WiAutoLink the crew must first be dispatched to remove the permanent fault and then reset the wiAutoLink (only 20% of the total faults).

It also increases revenue of energy as there is no interruption on temporary faults and decreases the operational costs for dispatching crews to reset fuses.

### 4.2 Can the WiAutoLink work in 3-phase mode?

The 3-Phase mode in WiAutoLink is user settable. There is also the possibility to setup 2-phase and single-phase modes.

This application is commonly used in networks with MV motors that require a secure 3 phase operation even when there is a single or two phase fault.