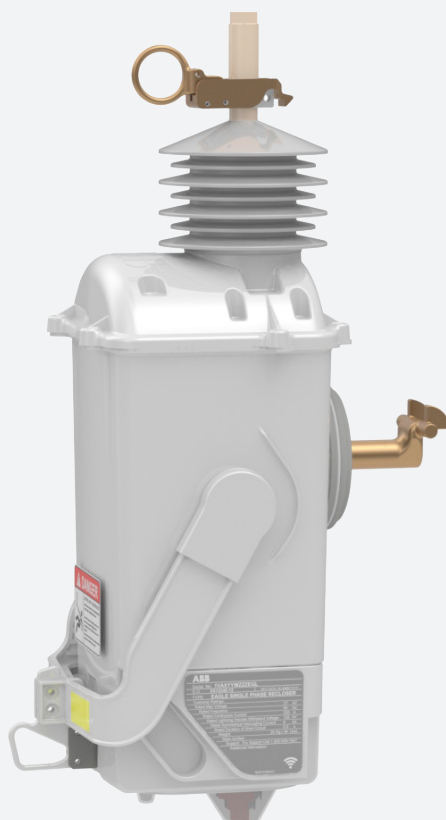


DISTRIBUTION SOLUTIONS

Eagle

Self-powered single-phase recloser
for up to 27 kV



Maximizing reliability with a safe and simple solution, the Eagle self-powered single-phase recloser helps improve reliability indices for utilities by eliminating many sustained and momentary customer outages. It also helps lower operational costs by reducing the number of service calls to address outages caused by transient faults.

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Overview

Eagle self-powered single-phase recloser for up to 27 kV

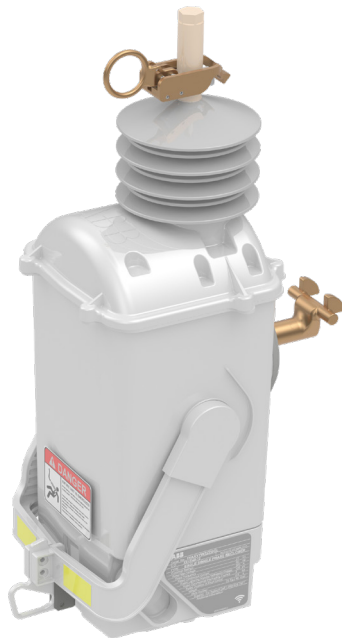
Fused overhead distribution lateral protection

Utilities have traditionally deployed fuse-blowing or fuse-saving protection techniques for lateral circuits. However, fuse-based lateral circuit protection has major drawbacks in terms of the outages experienced by customers for transient faults — which represent the majority of faults on overhead distribution circuits. This significantly affects SAIFI (system average interruption frequency index) and MAIFI (momentary average interruption frequency index). In addition, the crew dispatch, service calls and fuse replacement resulting from transient-fault outages cost time and money.

Superior overhead distribution lateral protection

ABB's Eagle self-powered, single-phase, vacuum-interrupting recloser helps improve reliability indices for utilities by eliminating many sustained and momentary customer outages. It also helps lower operational costs by reducing the number of truck rolls.

With the highest interrupting and continuous current ratings in its class, the Eagle recloser can be used in a wide range of feeder applications. It can be mounted directly to the pole as a new installation or as a replacement for hydraulic single-phase reclosers and fused cutouts. It can be installed individually on single-phase laterals or in a group of three for a three-phase lateral circuit.



Ratings

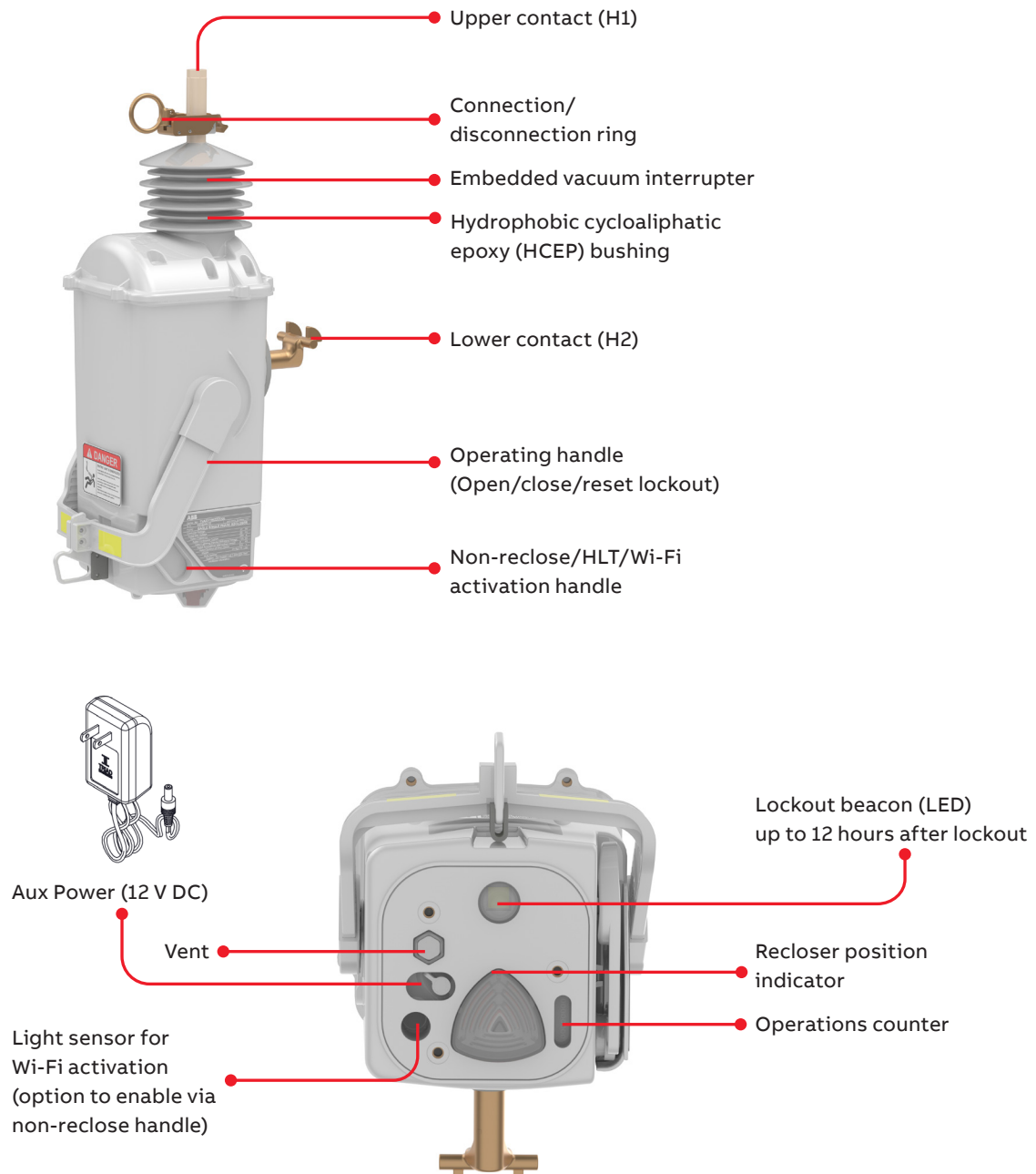
- Up to 27 kV
- 125 kV BIL
- 200 A continuous current
- 8 kA interrupting current
- 3 reclosing shots
- 10,000 operations

Highlights

- Self-powered
- No battery required – no maintenance
- Manual open/close operation
- Arc-free design helps improve personnel safety
- Built-in electronics for control, protection and communication
- Encrypted wireless communication for local operation and data retrieval
- Flexible mounting options allow for easy installation
- Simple, platform-independent, web browser-based HMI
- Key components made by ABB, leveraging decades of design and manufacturing experience

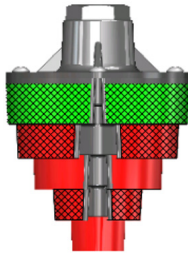
Interface

Intuitive and easy to use



Interface

Intuitive and easy to use



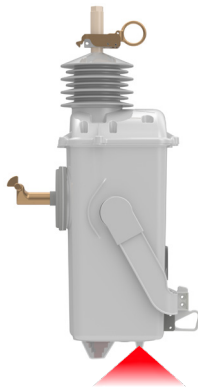
Status indication

The Eagle has a conventional and reliable status indicator semaphore, which is directly linked to the vacuum interrupter. The alternating material color bands make the indicator cup highly visible during both day and night.



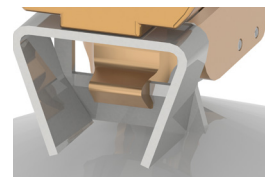
Current sensing

The Eagle uses a Rogowski coil current transformer (CT) for sensing the load and fault currents. This provides a highly accurate measurement for protection as well as load profiling. Since it is not a conventional CT, saturation is not a concern at the highest fault current levels.



Lockout

An LED is provided for lockout indication. Once the recloser goes into lockout state, the LED flashes periodically, giving an easily identifiable signal to the utility crew investigating the fault.



Mount latching mechanism

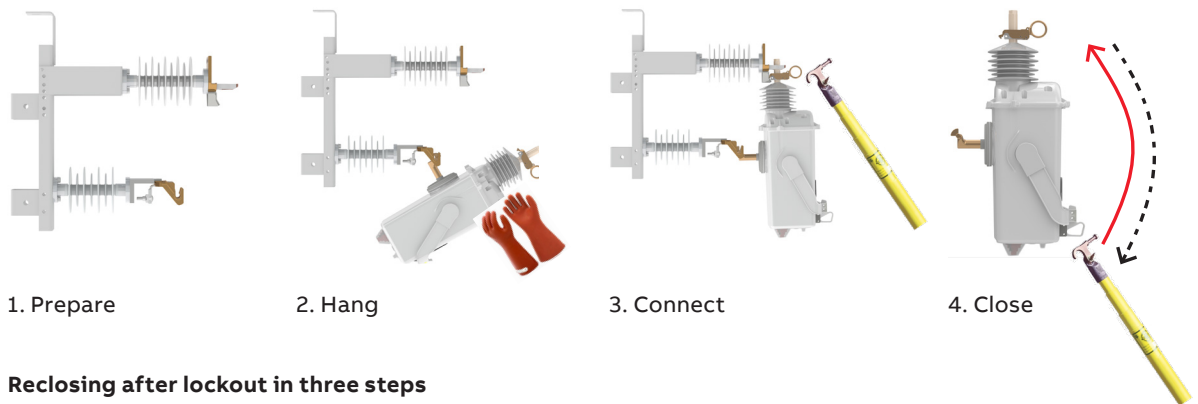
A mechanism on the Eagle's H1 terminal latches to the mounting clip. The fuse clip and latch ensure that the Eagle does not drop open unless it is engaged at the H1 terminal ring.

Arc-free design

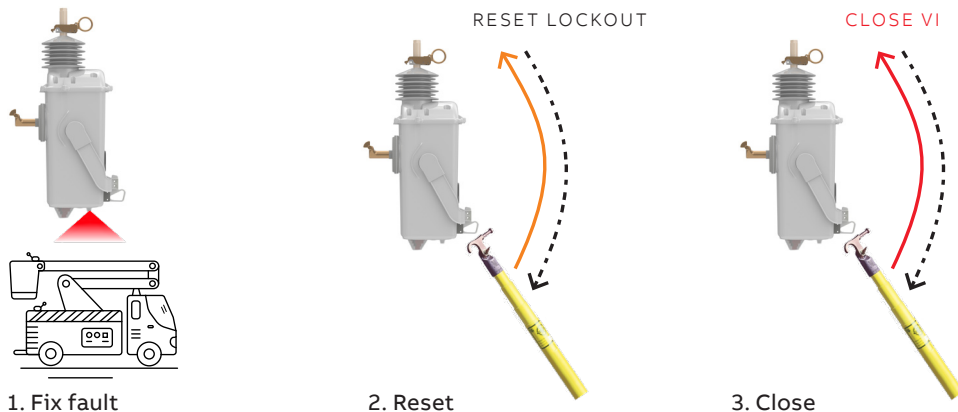
Easy to use and safer to operate

The Eagle is designed so there is no arcing during installation, closing or opening. The opening occurs in the vacuum interrupter prior to disconnection, and closing happens in the vacuum interrupter after connection.

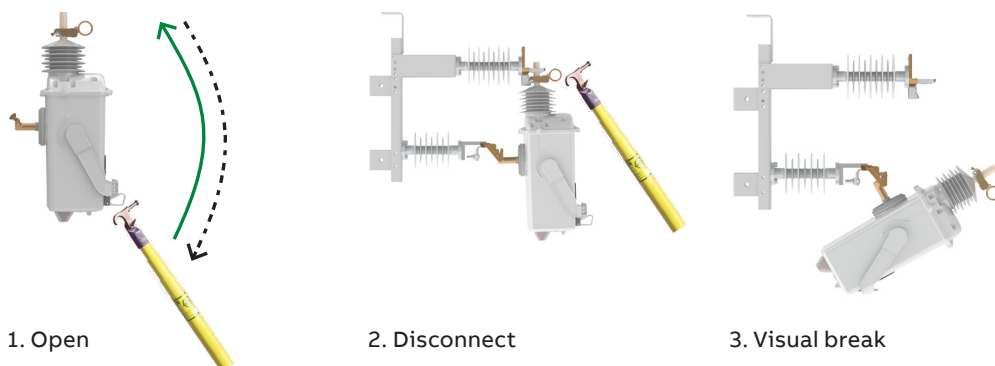
New installation in four steps



Reclosing after lockout in three steps



Manual opening with visual break in three steps



Battery-free operation

Mechanical closing operation without relying on batteries

Conventional recloser designs often rely on batteries for closing operation, communication and lock-out indication. Batteries have a limited service life, which can be reduced further by extreme temperatures, particularly cold. A failing battery can render a recloser ineffective in closing its vacuum interrupter after an extended lockout period.

Considerations such as degrading battery performance, guaranteed maintenance and operational inefficiency of battery-reliant reclosers inspired ABB engineers to develop a completely battery-free design for the ABB Eagle recloser. This self-powered recloser features a mechanical closing mechanism, and the main operating handle can be used to manually close the recloser.

Self-powered, battery-free mechanical closing eliminates:



Battery performance and replacement cost concerns



Stocking, shelf-life and battery inventory



Additional battery charging kits



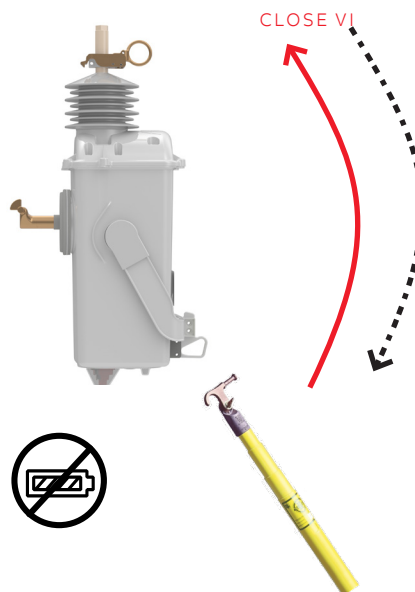
Special hot stick tools and hardware



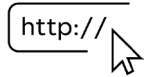
Battery replacement training for linemen



Taking down the unit to close when battery fails



Hassle-free and secure Wi-Fi communication



The Eagle recloser uses a platform-independent, web browser-based interface that allows secure communication over Wi-Fi without the need for:

- Recloser attachments
- Specialized hot stick tools
- USB dongles or transceivers
- Software or driver installation
- IT department clearances or administrator rights
- Specialized training



Wi-Fi network access options

- Always keeping Wi-Fi network ON
- Hiding the SSID - hidden network connection
- Auto-disable Wi-Fi after 15 minutes of inactivity (or other user-selectable time period)
- Re-activation of Wi-Fi using light pulses OR re-activation of Wi-Fi using non-reclose handle (hot stick operation)
- 50 ft range in direct line of sight



The Eagle recloser provides communication options that allow from simple to highly sophisticated device access steps to meet utility-specific guidelines without compromising security

- 128-bit encryption with WPA2 level security
- System-level cyber security implementation
- Security logs with accurate time stamp



Web-HMI access options

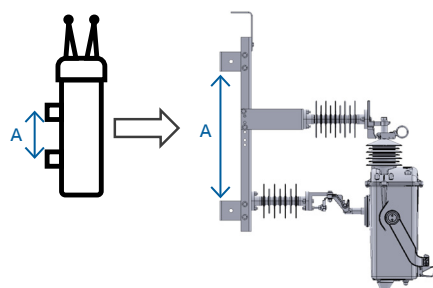
- Role-based user access password
- Varying access to settings per user role
- Automatic logout after 15 minutes of inactivity

Mounting

Easy replacement of existing equipment

Pole-mounted hydraulic recloser replacement

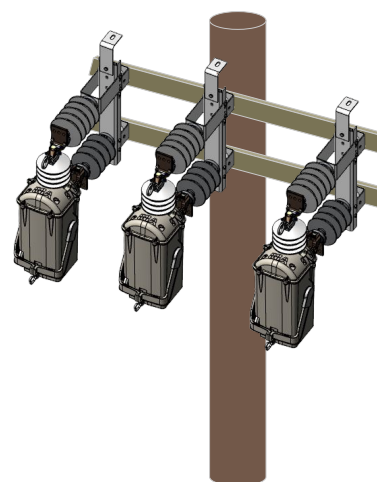
Easily replace an existing hydraulic single-phase recloser by using a standard double insulator mount with varying mount spacing configurations.



Dimension A (in)	Replaceable Cooper reclosers
12	Type E, 4E, V4E, 4H, V4H, L, V4L
11.25	Type D
23.25	Type DV

Mounting variations

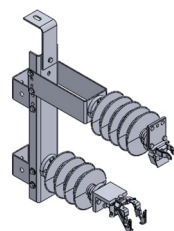
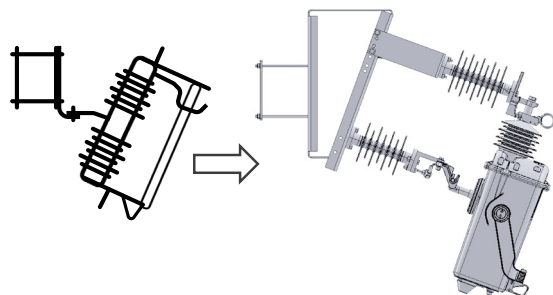
Three reclosers - one for each phase - can be mounted on the same pole for a three-phase configuration.



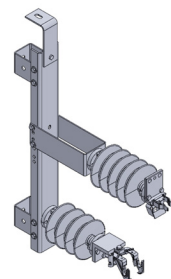
3-phase configuration

Crossarm-mounted fused cutout replacement

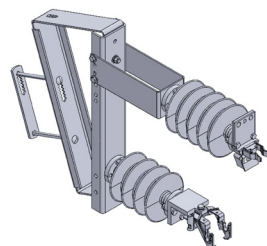
Easily replace an existing fused cutout by using a 20° double insulator mount or simply add the ABB Eagle recloser in parallel to the existing cutout (with the fuse tube removed).



Double insulator with 11.25" and 12" mount spacing



Double insulator with 23.25" mount spacing



Double insulator with 20° leaning crossarm mount

Technical specifications

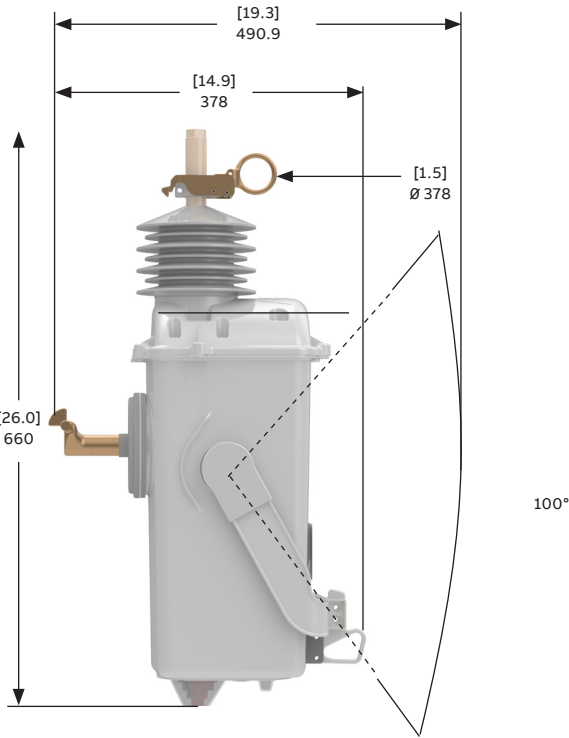
Technical specifications for hardware	
Nominal operating voltage	15/27 kV
Rated max. Voltage	27 kV
Rated power frequency	60 HZ
Rated continuous current	200 A
Rated symmetrical interrupting current	8 kA RMS
Rated short-time withstand current	8 kA
Rated short-time withstand duration	1 sec
Rated peak-withstand current	20.8 kA
Rated lightning impulse withstand voltage (BIL)	125 kV
Rated power frequency dry/wet withstand (60 s)	60 kV
Creep distance H1 to H2 terminal	668 mm
Recloser unit weight	20 kg (44 lb)
Auxiliary power	12 V DC (for programming)
Operating temperature	-25 °C to +60 °C
Rated number of operations	10,000 operations
Ingress protection	IP65
Standards compliance	IEEE C37.60/IEC 62271-111
Technical specifications for electronics and software	
Modes of operation	Autorecloser Sectionalizer Breaker/switch
Rated operating duty	Min O 0.2 s CO 2 s CO 2 s CO lockout Max O 5 s CO 5 s CO 20 s CO lockout
Minimum pickup fault current	10 A
Minimum current for WI-FI communication	5 A ⁽¹⁾
Minimum power-up time	25 ms
Protection functions	50/51P
Other functions	Second harmonic inrush restraint Cold load pickup Non-reclose/hot line tag Switch on to fault
TCC curve accuracy	> 50 A: ±1% > 20 A: ±2.5% > 10 A: ±5% < 10 A: ±1.6 A
Operating curves	ANSI/IEC, recloser, fuse, hydraulic and custom curves
Records	Events and fault records (1000) Internal device events (100) Disturbance records (250) Load profile (60 days) Security log (1000)
Communication	Wi-Fi with WPA2 128 Bit-Encryption Auto Disable Feature Hide SSID Feature

⁽¹⁾ Tripping/reclosing capability is not dependent on availability of a specific minimum preload current.



Dimensions

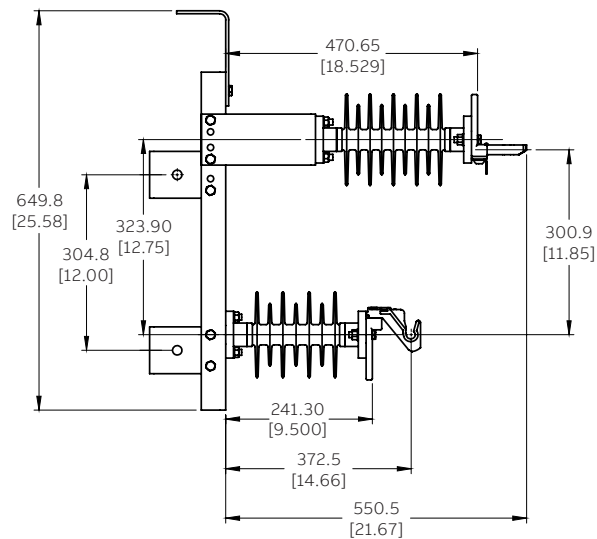
Eagle recloser dimensions



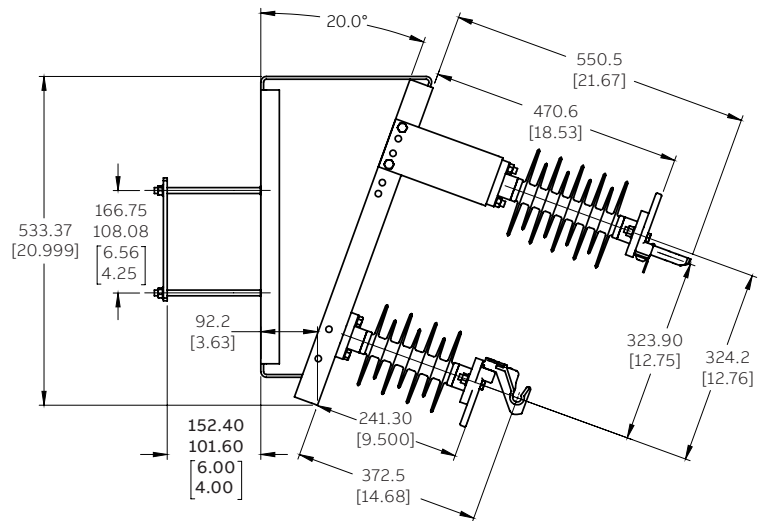
Note: Dimensions shown on drawings above are in mm [in].

Mounting bracket dimensions

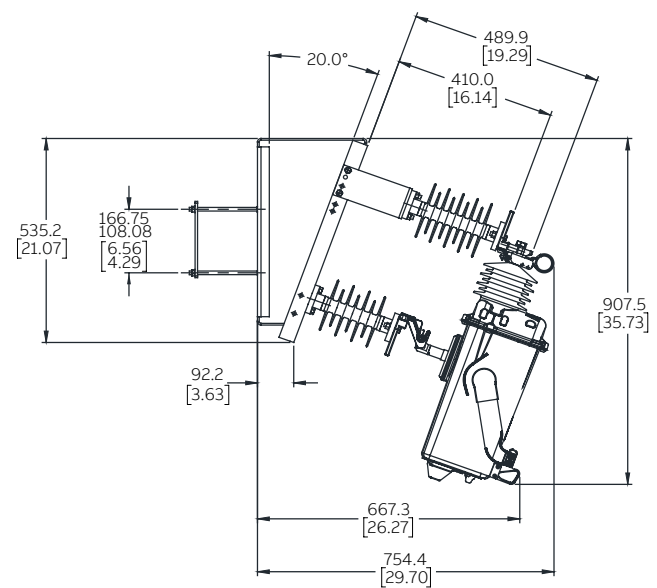
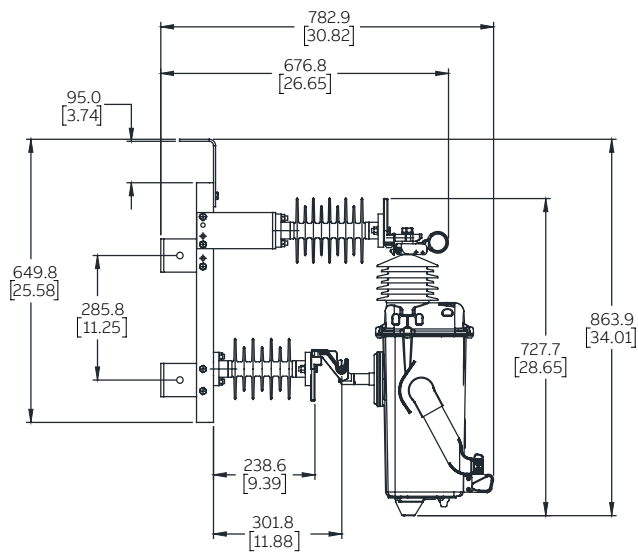
Straight mount double insulator 12" spacing
(11.25" and 23.25" spacing also available)



20° leaning crossarm mount
Double insulator



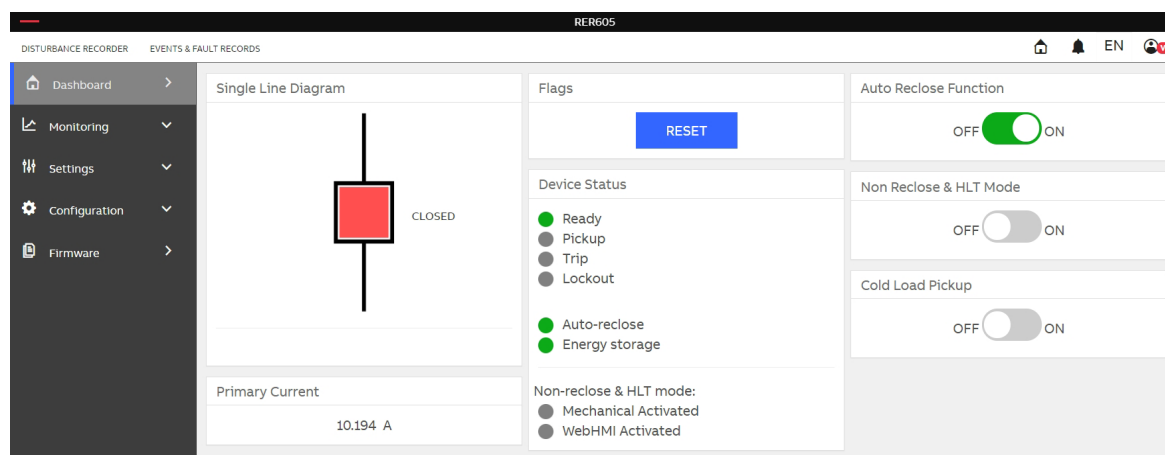
Overall dimensions when installed



Note: Dimensions shown on drawings above are in mm [in].

Software features

Feature	Description
Current protection functions	Three selectable delayed curves (50/51P) with time dial, time delay and blocking <ul style="list-style-type: none"> – ANSI/IEEE curves and definite time – Recloser curves (electronic and hydraulic) – Fuse curves – Custom curves
Cold load and inrush blocking	Cold load pickup and inrush inhibit (second harmonic) feature available for each curve
Convenient dashboard view	<ul style="list-style-type: none"> – Bird's eye view on device status – Carry out operations right from the dashboard – Single line diagram with recloser status – Compatible with all web browsers on all platforms including hand-held devices
Self-supervision	Operation counter, diagnostics and wear monitoring alarms
Security log	Record of logins, changes, and unauthorized access attempts
Role based access	Permissions based on user roles <ol style="list-style-type: none"> (1) Viewer – log on and view status (2) Operator – operate the unit (3) Engineer – setting changes (4) Administrator – access management
Firmware upgrade	Simple and secure firmware upgrade over Wi-Fi



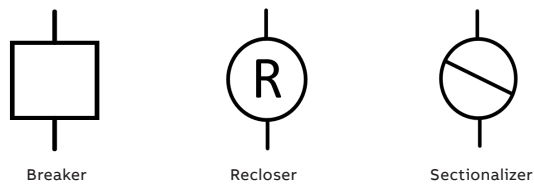
Eagle RER605: Web Interface HMI - Dashboard



Simple, platform-independent, web browser-based intuitive interface

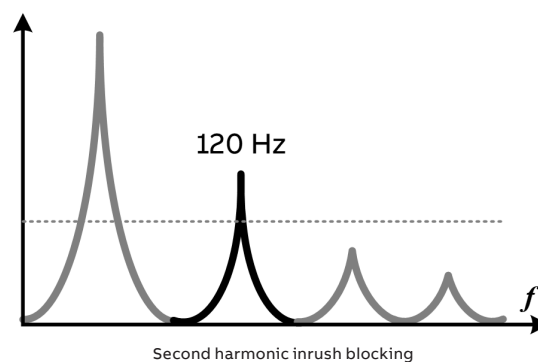
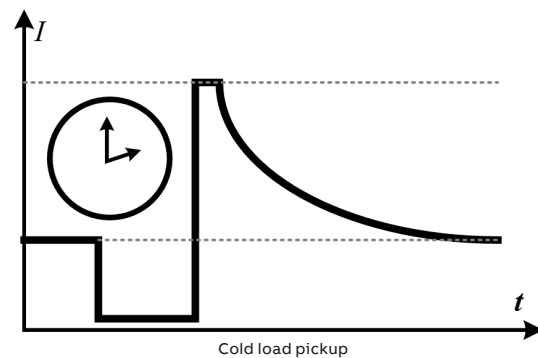
Modes of operation

The Eagle recloser can be configured to operate as a simple single-phase breaker, sectionalizer or a recloser. A single configuration can be used in multiple applications at various levels of a feeder.



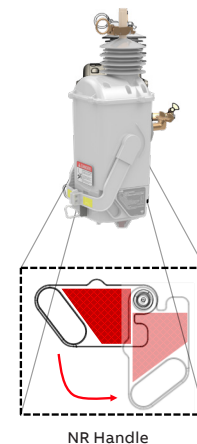
Cold load pickup and second harmonic inrush restraint

Depending on the protection philosophy, a simpler cold load pickup can be set up or a more sophisticated second harmonic inrush blocking can be configured to avoid nuisance tripping from load picking up after a sustained outage.



Adaptive non-reclose and hot line tag modes

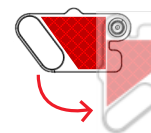
Toggling the “non-reclose” (NR) handle triggers the recloser into non-reclose / hot line tag mode. By default, the recloser enters the non-reclose mode when the NR handle is engaged. It uses the fastest available tripping curve to trip and then stops auto-reclosing. Alternatively, if hot line tag settings are enabled, the recloser enters hot line tag mode when the NR handle is engaged. The protection can be made more sensitive by using the pickup and time multiplier settings. The NR handle is clearly visible from ground level when engaged.



Non-reclose mode

$$X_{HLT} = 1.0$$

$$t_{HLT} = 1.0$$

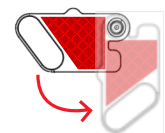


Non-reclose mode

Non-reclose mode

$$X_{HLT} < 1.0$$

$$t_{HLT} < 1.0$$



Hot line tag mode

Ordering guide

Digit	Description	Code	Definition
1-3	Product name	EGL	Eagle single-phase recloser
		1	15 kV - 200 A - 125 kV BIL - 8 kA IR
		2	27 kV - 200 A - 125 kV BIL - 8 kA IR
4	Rating	N	No HV unit
		A	ANSI (Green = Open, Red = Closed)
		E	IEC (Green = Closed, Red = Open)
5	ANSI/IEC	N	No HV unit
		D10	Double insulator, 11.25" mount
		D20	Double insulator, 12" mount
		D30	Double insulator, 23.25" mount
		C02	Double insulator, crossarm mount 20°
6-8	Mounting frame	NNN	No mounting frame
		A	Arrester bracket provided
9	Arrester bracket	N	No arrester bracket
		M	Animal guard for Eagle mount only
		E	Animal guard for Eagle mount + arrester
10	Animal guard	N	No animal guard
11	Auxiliary power	C	12 V DC auxiliary power adapter (custom qty.)

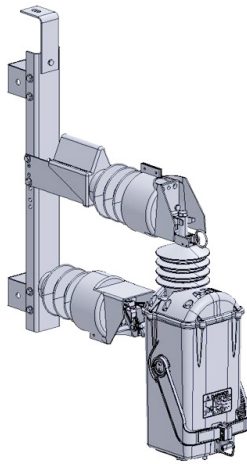
Example: EGL1AD20AEA = Eagle recloser, 15 kV/125 kV BIL/8 kA, ANSI, double insulator 12" mount, arrester bracket, animal guard for Eagle mount + arrester, 12 V DC auxiliary power adapter

Note: not all combinations are valid. Contact your ABB sales representative for details and part number validity.

Note: The 12VDC adapter is required for enabling Wi-Fi communications to allow RER605 relay programming and fault data retrieval when the Eagle is not energized. Please include at least one (1) power adapter when ordering Eagle units.

Accessories

Animal guards

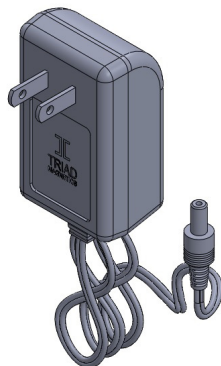


Disconnect and bypass switch



12VDC auxiliary power adapter

Note: The power adapter is required for RER605 relay programming and/or data retrieval when the Eagle is not energized.



Service and support



Product warranty

3-year standard warranty



Training

For factory-based training, contact ABB customer service



On-site training, commissioning assistance, and migration training

On-site training sessions are offered upon request and can be arranged at the customer facility. For more information, contact the Lake Mary, FL, office directly.

ABB can provide commissioning assistance during installation, including migration support for developing protection settings.



Notes

Additional information

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