SIEMENS

Ingenuity for life

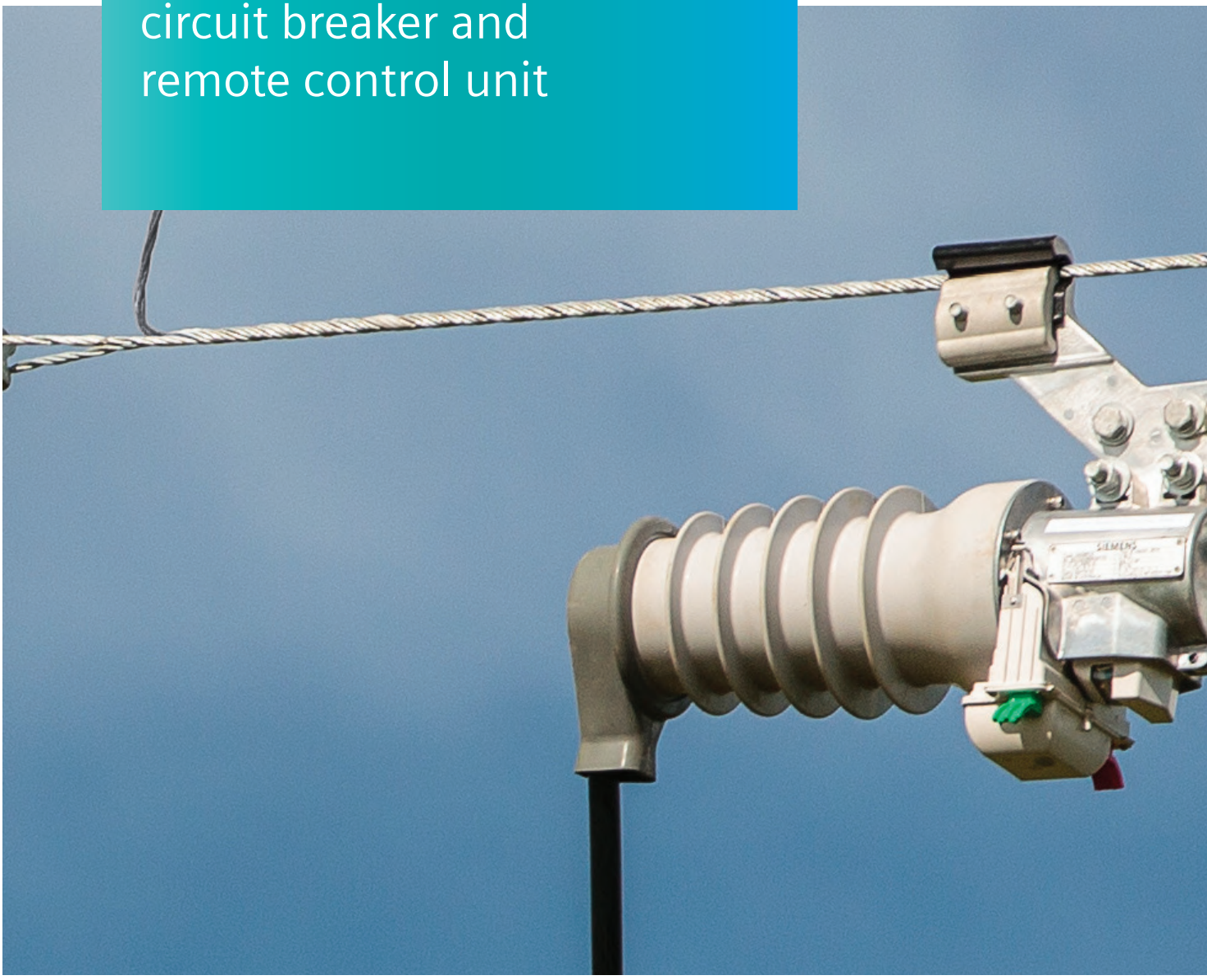
Catalog

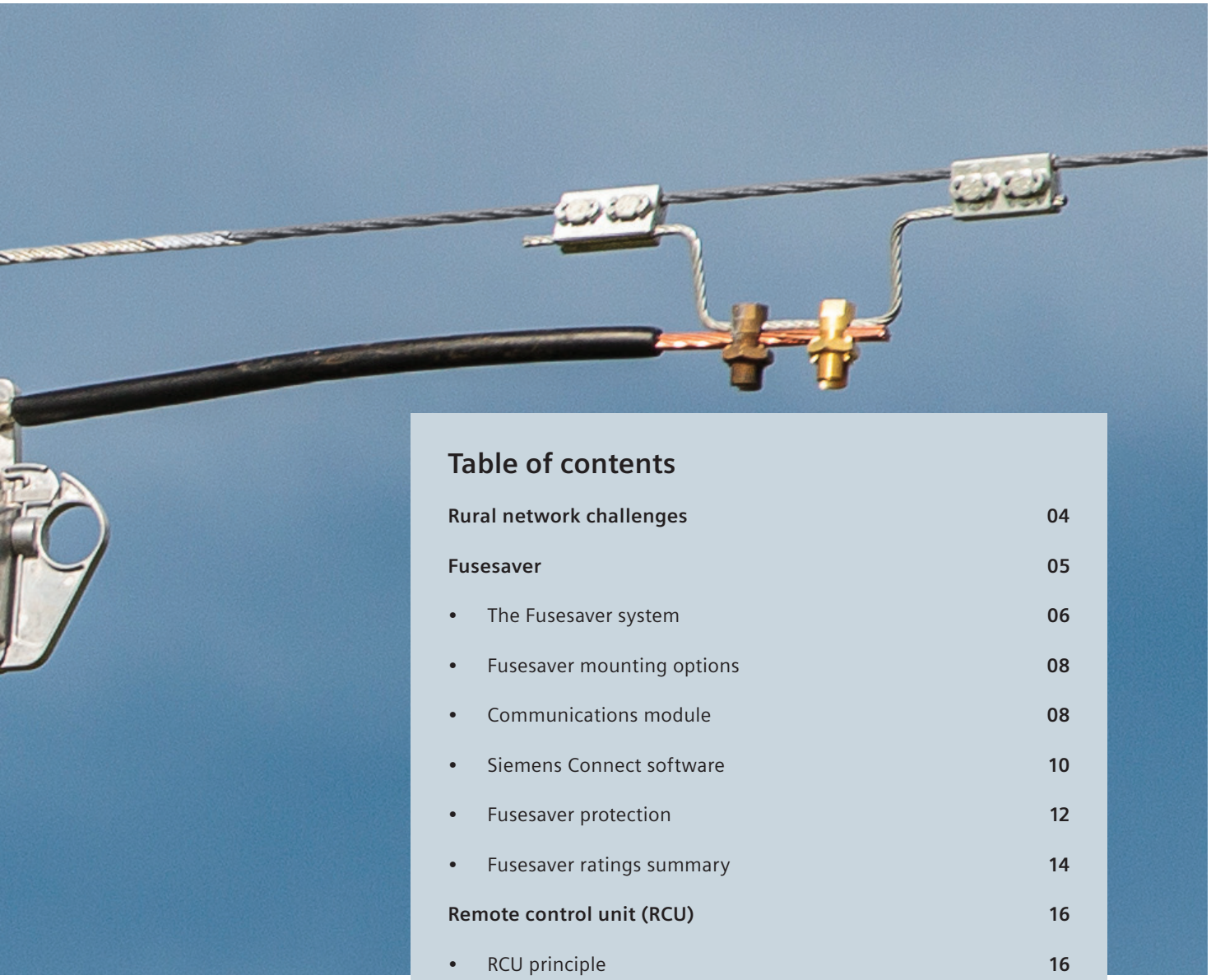
Fusesaver

Outdoor circuit breaker up to 27 kV and 200 A continuous current plus remote control unit

usa.siemens.com/fusesaver

Fusesaver® outdoor circuit breaker and remote control unit





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Rural network challenges

Since typically 80 percent of a rural network's faults are transient, 80 percent of its fuses are blown unnecessarily.

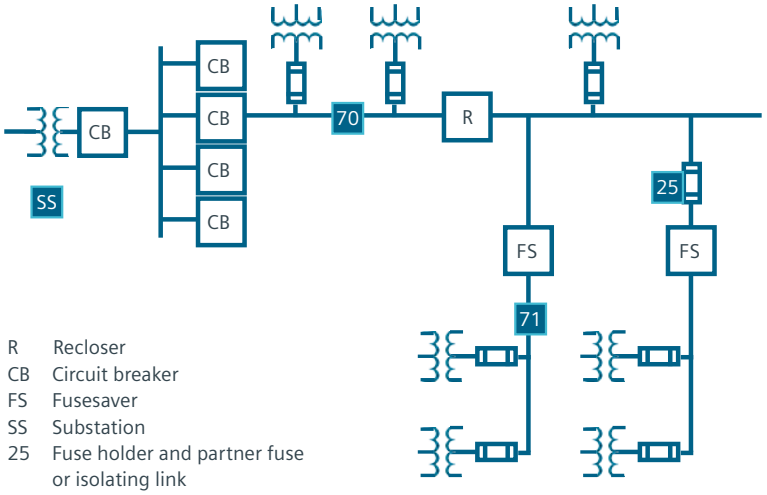
In most rural network configurations, the feeder is protected by a circuit-breaker or recloser. Lateral lines (also referred to as T-offs or spur lines) are usually protected by fuses.

As a fuse is unable to distinguish between temporary and permanent faults, it blows on all faults, causing downstream customers to lose power and requiring a line crew to replace the fuse.

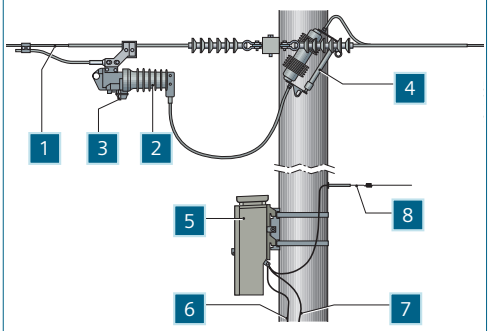
In rural networks it may take hours for the line crew to drive to site, patrol the line, replace fuses, and reconnect supply. This leads to unnecessary high operating costs for the utility.

Furthermore, downstream users are left without power for extended periods of time potentially resulting in financial penalties to the utility.

Due to the low customer numbers on rural lateral lines, it is often difficult for the utility to find a cost effective solution to this problem... until now!



R Recloser
CB Circuit breaker
FS Fusesaver
SS Substation
25 Fuse holder and partner fuse or isolating link
70 Feeder line
71 Spur line (also called lateral, T-Tap, or T-Off)



1. Conductor
2. Fusesaver
3. Communications module
4. Fuse or isolating link
5. Remote control unit
6. Ground connection
7. Auxiliary power connection
8. Antenna for long-range communications

Fusesaver

The world's fastest medium-voltage outdoor vacuum circuit breaker

Fusesaver is the most cost-effective solution for optimizing reliability while minimizing operating costs of rural overhead medium-voltage networks. It is capable of almost completely removing the impacts of temporary faults on lateral lines.

Fusesaver is a new class of intelligent, compact and low-cost, single-phase circuit-breaker.

With on-board microprocessor control and wireless connectivity, Fusesaver has configurable protection, multi-phase operation functions, on-board event history, load profiling and can be integrated into a SCADA system for remote control. It is an electrically floating device that hangs directly from the medium-voltage line.

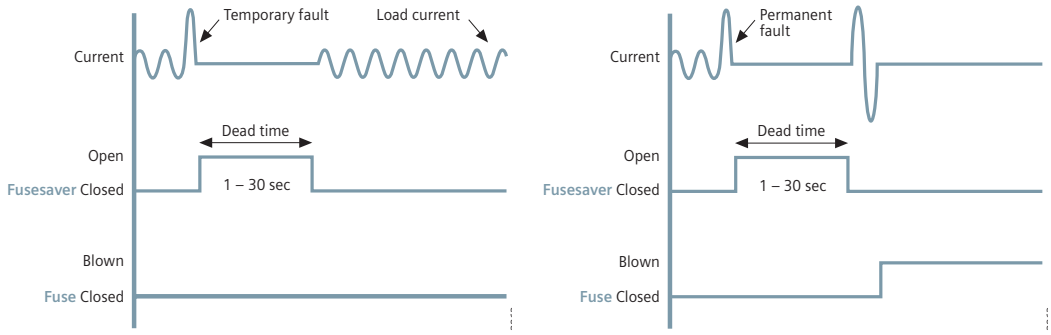
It self-powers by harvesting and storing energy from the line current. Fault detection is achieved with a cutting-edge, high-speed protection algorithm that is capable of clearing a fault in as little as a half-cycle making it the fastest medium-voltage circuit breaker in the world.

The Fusesaver can be customer configured to either be installed in conjunction with a partner fuse or as a standalone protection device.

Installed in series with the fuse. After tripping on a fault, the Fusesaver will stay open for a pre-determined time (dead time) to clear a transient fault. Then, the Fusesaver closes again reconnecting supply. If the line is still faulted, the fuse will now operate to clear the permanent fault. This is the traditional Open-Close (OC) Fusesaver approach.

Fusesaver [O-1s-C]* with partner fuse

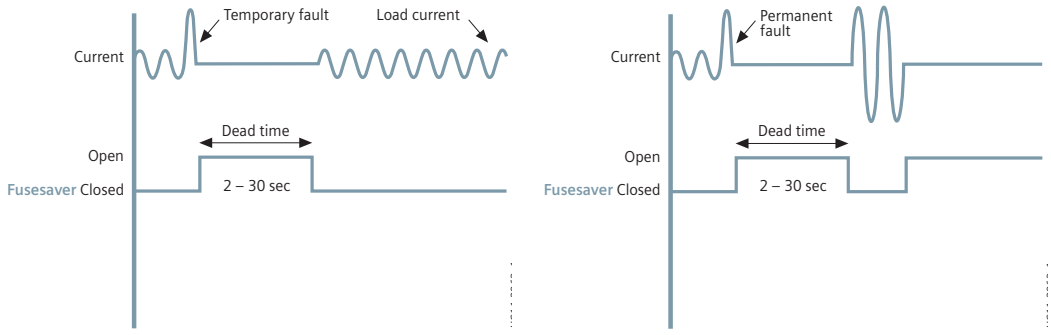
While the fuse protects the lateral line, the Fusesaver protects the fuse from transient faults.



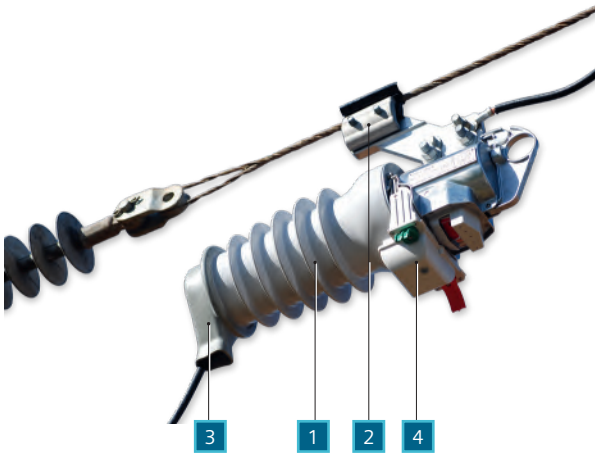
Replace the fuse altogether. When installed in this manner, the Fusesaver can perform the same Open-Close functionality as above to clear a transient fault but can also perform a second "Open" operation (O-CO) to clear a permanent fault.

Fusesaver [O-2s-C-O]* without partner fuse

The Fusesaver O-CO is the ultimate Fusesaver as the fuse is not required at all.

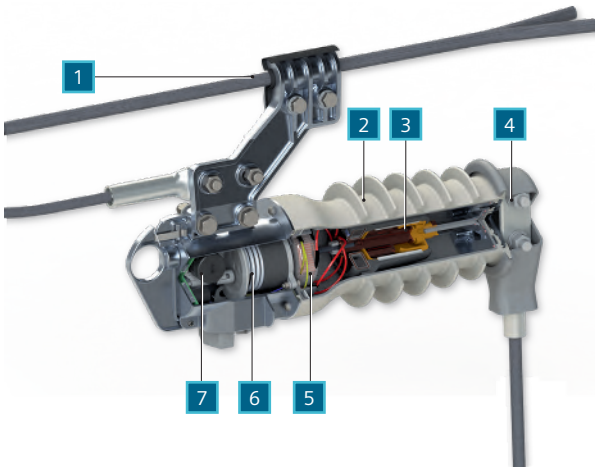


*Highest customer flexibility: One hardware platform, two selectable operating sequences and multiple other policy file settings.



A typical Fusesaver application includes the following items for each phase:

1. Fusesaver
2. Line-clamp assembly
3. Bird guard
4. Communications module.



1. Dead end
2. Fault-detection current transformer
3. Vacuum interrupter
4. Bird guard
5. Power current transformer
6. Magnetic actuator
7. Electronic module

SIEMENS	
Type **3AD8423**	Year of manuf. 2018
No. NGJ 3AD8/0001000	Ir 200 A
Ur 27 kV 50/60 Hz	Ima 6.3 kA
Isc 6.3 kA, tk 1 s	M 5 kg
Ud/Up 60/125 kV	0 - 2s - CO / 0 - 1s - C
MADE IN AUSTRALIA	According to IEC 62271-100

The Fusesaver system

In order to minimize installation and operating costs, the Fusesaver was developed as part of an integrated system of tools and accessories. All system components work together, which permits easy installation, fast commissioning, and reliable operation in all conditions.

A typical Fusesaver installation includes the following items for each phase:

1. Fusesaver
2. Line-clamp assembly
3. Bird guard
4. Communications module.

Configuration of the unit is achieved through a wireless connection to a PC application called Siemens Connect.

Design of the switch unit

The Fusesaver is a fully integrated unit consisting of a vacuum interrupter driven by a magnetic actuator. On-board current transformers both power the Fusesaver and provide current measurement inputs into the built-in electronics control and protection module.

The external insulation is high-grade silicone rubber and the mechanism housing marine-grade aluminium for long outdoor life.

Self powering

The Fusesaver is capable of self powering from the very low line currents found on rural overhead networks.

Magnetic actuator

The magnetic actuator is an innvovation by Siemens applied to the Fusesaver to provide half-cycle interruption capability. The magnetic actuator can delatch in less than 2 ms and have the vacuum interrupter contacts fully open within another 4 ms.

The magnetic actuator is directly coupled to the position indicator, which is visible from ground level.

Nameplate

Note: For any request regarding spare parts, subsequent deliveries, etc., the following details are necessary:

- Type designation
- Serial No.
- Year of manufacture.

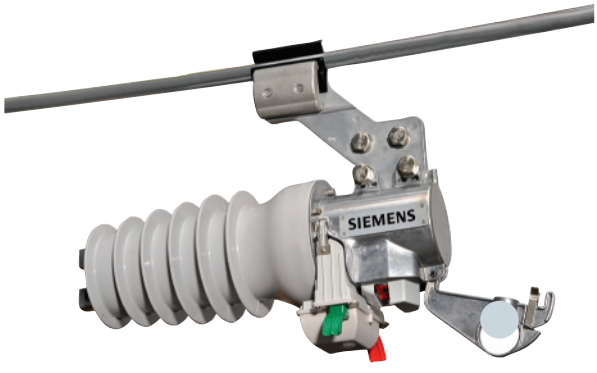
Vacuum interrupter
The Fusesaver relies upon Siemens well established vacuum interrupter technology. The vacuum interrupter utilized in the Fusesaver is a specific innovation by Siemens to facilitate the half-cycle fault interruption capability required to be able to successfully save fuses.

Position indicator
The indicator is directly coupled to the magnetic actuator and has red/green colors to indicate close/open status (colors can be reversed by special order).

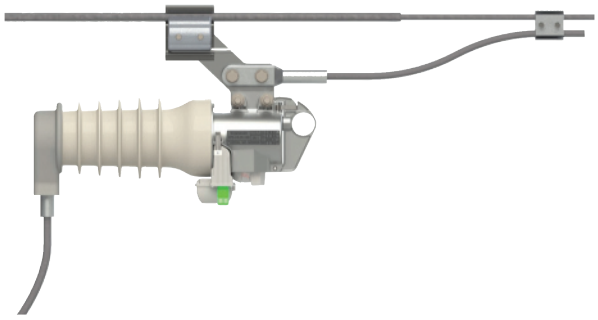
Fusesaver position indicator

External lever
The Fusesaver is fitted with an external lever that allows an operator to change the protection and other operational parameters of the Fusesaver.

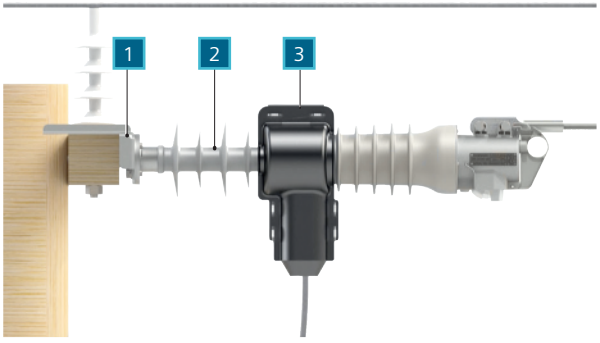
For example, when live-line work is performed downstream of the Fusesaver, the operator can pull the lever down to change the Fusesaver protection to a fast curve with single trip to lockout.



External lever shown in DOWN position



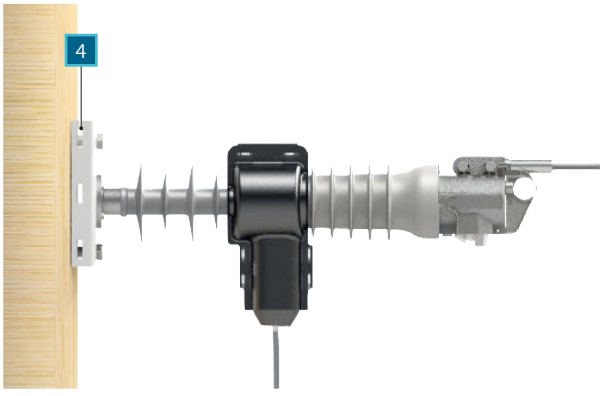
Line mounting



Crossarm mounting

1. Crossarm-mounting bracket
2. Stand-off insulator
3. Wildlife guard
4. Pole-mounting bracket

Pole mounting



Fusesaver mounting options

Fusesaver is an electrically floating device so requires no grounding. This product architecture allows for a number of different mounting options. In all cases the Fusesaver has been designed to be mounted horizontally.

Line mounting
The preferred method for mounting of the Fusesaver is to hang it directly from the line using the line-clamp assembly. The line-clamp assembly connects directly to the dead-end of the conductor and ensures that the Fusesaver is hung at its center of mass. A cable connects the Fusesaver terminals to the conductor.

Crossarm or pole mounting
For locations where it is impractical to line mount the Fusesaver, an alternative is to use a crossarm or the pole. A composite station post insulator with special end brackets is used to support the Fusesaver.

Line-tension mounting
The Fusesaver can be mounted as part of the line construction using the inline tension plate.

Communications module

The communications module plugs into the Fusesaver and provides a short-range wireless link between the Fusesavers and to other devices. It also has a built-in battery to provide a backup energy source to the Fusesaver during periods when there is no line current.

The communications module has multiple purposes.

- At time of commissioning to allow the Fusesaver to be configured and tested
- During service to allow Fusesaver to be manually operated, line data accessed and event logs downloaded.
- To enable multi-phase protection functionality
- To enable synchronous ganged manual operation
- To enable the above functions and also connection to the remote control unit (RCU) thereby integrating the Fusesaver into the user's SCADA network.

Wireless communications

The communications module includes an intelligent, short-range wireless transceiver, which enables encrypted communication using the public 2.4 GHz band.

Battery

The communications module includes a battery to provide power to run the communications module radio and to manually operate the Fusesaver when the line current is off. The communications module is available in two models:

1. The classic version with fitted-for-life, primary-cell battery.
2. The rechargeable version with battery cells that can be recharged by the Fusesaver's line current. The battery cells can also be replaced by the user through an access panel.

LED and fault-passage indication

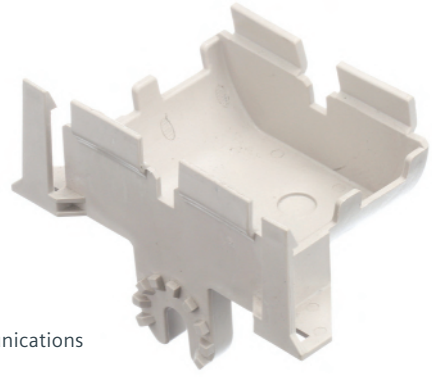
The communications module has a transparent window on the underside behind which is a high-intensity LED. When illuminated, this LED is visible from the ground in daylight. The LED is used to assist the operator during commissioning and when manually operating the Fusesaver. In the event of a line fault, the LED flashes for up to seven hours to indicate a fault current has passed through the Fusesaver.

Tripping and closing

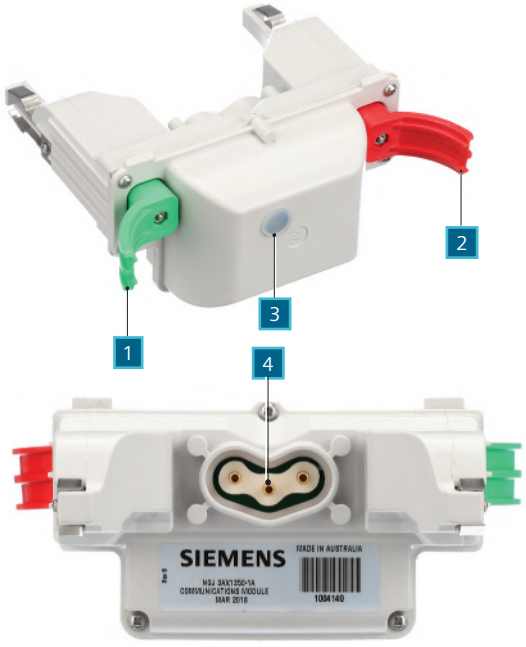
The communications module is fitted with external actuators that may be used to trip or close the Fusesaver. Using the wireless communications between the Fusesavers, it is also possible to synchronously trip and close Fusesavers on adjacent phases.

Attachment tool

An attachment tool is available for each model of communications module to allow a user with a live-line stick to insert and remove the Communications module from ground level.

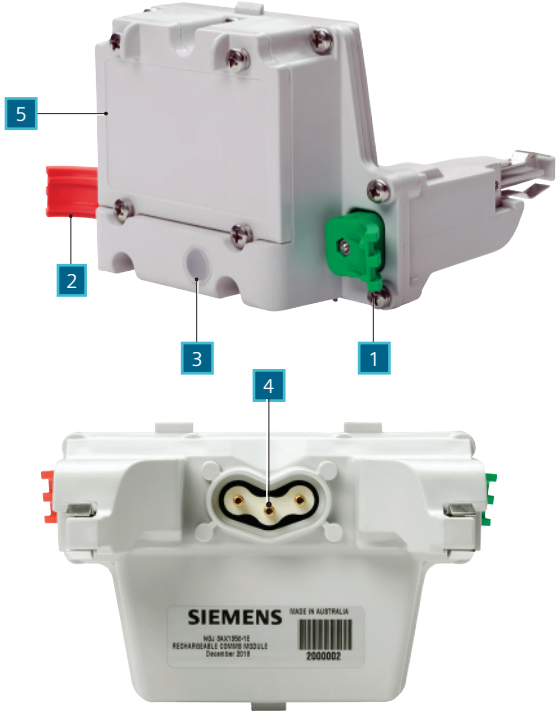


Communications module attachment tool



Classic communications module

1. Trip actuator
2. Close actuator
3. LED
4. Three-pin Fusesaver connection
5. Access panel

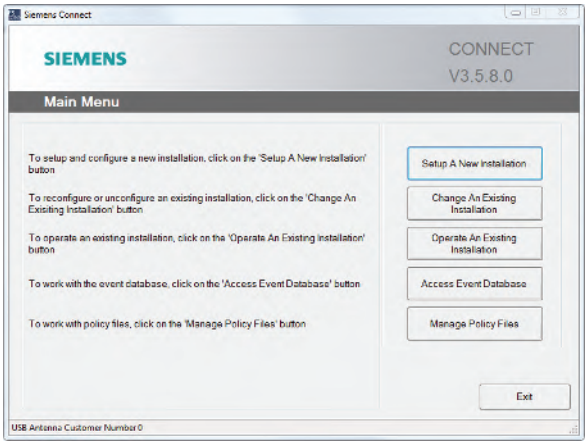


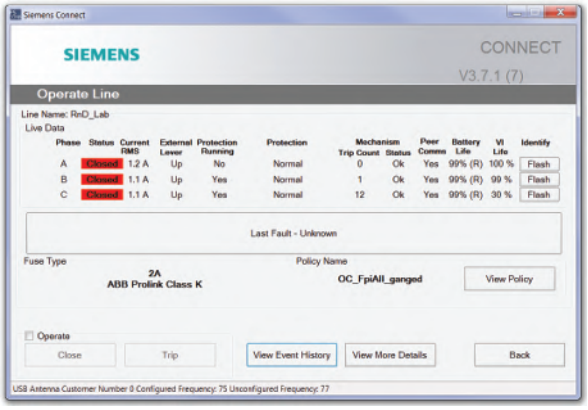
Rechargeable communications module

Siemens Connect software

Communication with the Fusesaver circuit breaker is performed using a PC application called Siemens Connect and a USB radio antenna. With these items, a local operator has short-range (approximately 60 ft (20 m)) access to the Fusesaver over the encyrpted radio link.

Fusesaver plus communications module communicates with USB antenna





Configuration

The Fusesavers are configured wirelessly through the Siemens Connect PC application. All the user needs to do is to identify the Fusesavers to be configured together as a site, load the policy file that includes the protection settings defined by the utility and tell the Fusesaver the type and rating of its partner fuse. The entire process is completed within a few minutes.

If network requirements change, the Fusesaver can be reconfigured with new protection and operational settings while remaining in service.

Operation

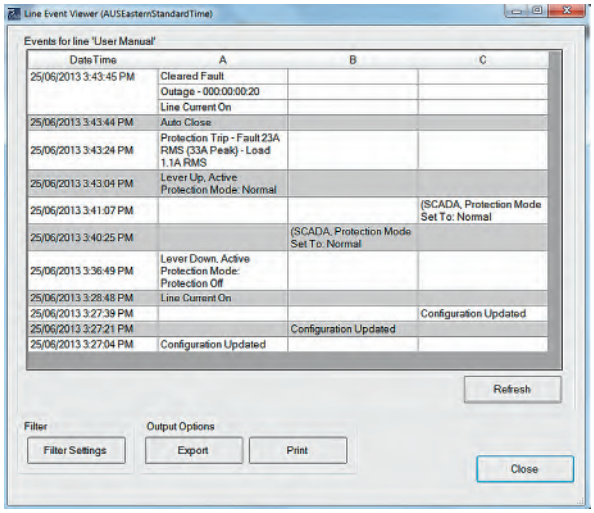
When on-site, the line crew can access the live data in the Fusesaver using the Siemens Connect PC application.

The operators also have the ability to trip and close the Fusesaver using controls from the PC.

Event data

Fusesaver stores a time-stamped history of the major events in its on-board memory. The event record contains a history of up to 3,000 events including protection operations, fault data, outage durations, and configuration changes.

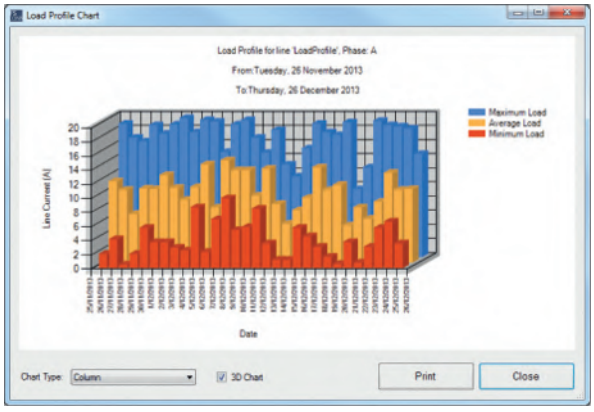
The event data can be viewed using the Siemens Connect PC application. Data can be filtered and exported as required.



Load-profile data

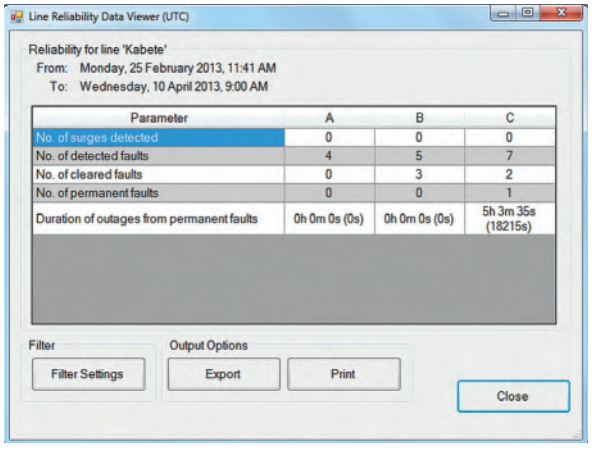
The Fusesaver can collect data on the current flowing in each phase of an installation. The Fusesaver can report the following data for each 24 hour period:

- The minimum current (with time stamp)
- The maximum peak current (with time stamp)
- The average daily current.

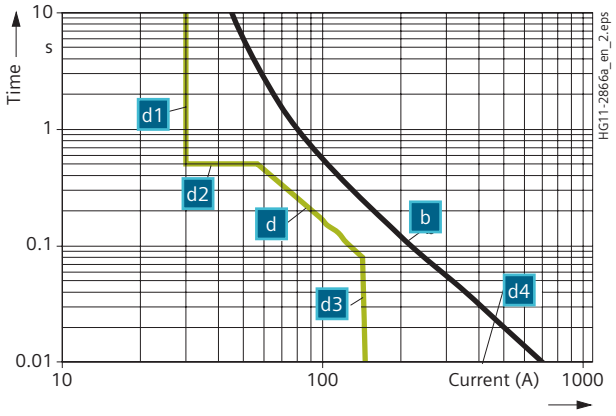


Reliability data

The line reliability analysis tool allows the user to generate reliability performance data for a particular line.

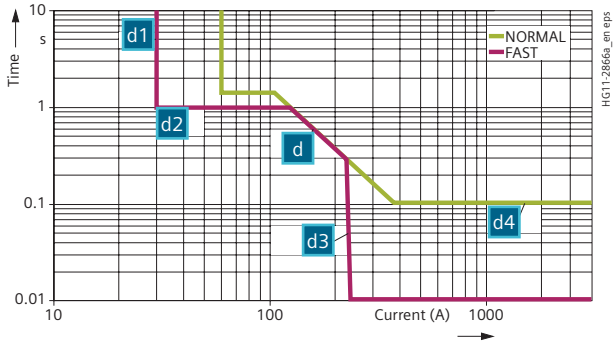


Fusesaver with partner fuse – time-current curve
(a FAST protection curve can be added as shown in the lower figure)



b K-type 15 A fuse
d Fusesaver set to coordinate with a 15 A K-type fuse
d1 Minimum trip-current multiplier (x2)
d2 Maximum fault time (0.5 sec)
d3 Instantaneous multiplier (x10)
d4 Minimum fault time (OFF)

Fuse replacement protection - time-current curve



d Fusesaver set to coordinate with a 30 A K-type fuse
d1 Minimum trip-current multiplier (x2/x1)
d2 Maximum fault time (1.5 sec/1 sec)
d3 Instantaneous multiplier (x20/x8)
d4 Minimum fault time (0.1 sec/OFF)

Fusesaver protection

Time-current curve

Fault detection is achieved with a cutting-edge, high-speed protection algorithm that is capable of detecting faults within 2 ms. On the first trip, the Fusesaver can clear the fault in the first half-cycle after contact part when required.

The default Fusesaver protection algorithm uses an inverse protection curve that is based upon an i^2t value.

The Fusesaver can store two protection curves, a NORMAL and a FAST protection curve. The inverse part of the curve (d) is defined by the i^2t of the fuse type the Fusesaver is protecting or replacing and is common to both curves. Additional configuration items required for each curve are the pick-up level (d1), the maximum time element (d2), the instantaneous multiplier (d3), and the minimum time element (d4).

Inrush restraint

On line re-energization after any outage, short-term inrush currents associated with motors starting and transformer core-magnetization occur. The Fusesaver can be configured to apply an inrush pick-up multiplier to temporarily increase the fault pick-up threshold to avoid unnecessary tripping on inrush currents.

Cold-load pickup

Due to the loss of load diversity during an extended outage, the current on restoration can be higher than normal until diversity returns. The Fusesaver can be configured to apply a cold-load multiplier to temporarily increase the fault pick-up threshold for a configurable period to avoid unnecessary tripping on higher than normal load currents.

Dead-time setting

The dead time is the period after the Fusesaver has tripped on a fault and before it closes. In general, the longer the dead time the greater the chance that a transient fault will be cleared by the operation of the Fusesaver. Dead time is configurable in the range of 1-30 s.

Pseudo three-phase trip and reclose

When all the Fusesavers on a line at a single location are fitted with communications modules, it is possible to configure them so that if one detects a fault and trips, the other two phases will trip shortly afterwards. All three phases will then reclose simultaneously after the dead time of the Fusesaver that tripped first. This feature may be used to block backfeed current on a delta load circuit.

Three-phase lockout protection

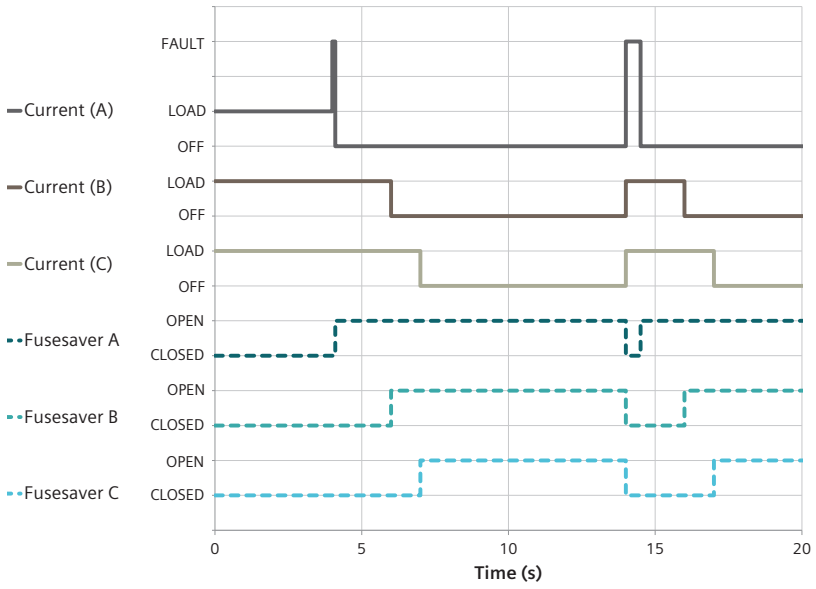
When all the Fusesavers on a line at a single location are fitted with communications modules, it is possible to configure them so that if any one of them does a trip to lockout then all three phases will trip to lockout after a short delay. Fusesaver may be configured with both pseudo three-phase trip and three-phase lockout enabled.

Protection modes

The operation of the Fusesaver protection can be altered by changing the protection mode. The modes available depend upon whether the Fusesaver is used with a partner fuse or as a fuse replacement. Further, the Fusesaver will store a mode selection that is applicable if the external lever is in the UP or DOWN position to allow users to adjust to different operational requirements when a live line crew is working downstream of a Fusesaver. The protection modes are:

Mode	OC	OCO	Functionality
Protection OFF	Yes	Yes	The Fusesaver will not trip on a fault.
Normal	Yes	No	The Fusesaver trips based on the NORMAL curve settings and recloses after the dead time.
Fast	Yes	No	The Fusesaver trips based on the FAST curve settings and recloses after the dead time.
Normal-normal	No	Yes	The Fusesaver trips based on the NORMALcurve settings. The Fusesaver recloses after the dead time. If the fault is still present, the Fusesaver trips a second time based on the NORMAL curve settings and then stays in the open state.
Normal-fast	No	Yes	The Fusesaver trips based on the NORMAL curve settings. The Fusesaver recloses after the dead time. If the fault is still present, the Fusesaver trips a second time based on the FAST curve settings and then stays in the open state.
Fast-normal	No	Yes	The Fusesaver trips based on the FAST curve settings. The Fusesaver recloses after the dead time. If the fault is still present, the Fusesaver trips a second time based on the NORMAL curve settings and then stays in the open state.
Fast-fast	No	Yes	The Fusesaver trips based on the FAST curve settings. The Fusesaver recloses after the dead time. If the fault is still present, the Fusesaver trips a second time based on the FAST curve settings and then stays in the open state.
Normal-single	Yes	Yes	The Fusesaver trips based on the NORMAL curve settings. The Fusesaver does not reclose and stays in the open state.
Fast-single	Yes	Yes	The Fusesaver trips based upon the FAST curve settings. The Fusesaver does not reclose and stays in the open state.

Pseudo three-phase trip and three-phase lockout protection



Fusesaver ratings summary

Fusesaver is available in a number of models determined by load current, fault current, and self powering from line-current capability as follows:

Model type	Unit	Low range	Standard range	High range
Minimum line current for operation	A	0.15	0.5	1.0
Rated current	A	40	100	200
Rated short-circuit breaking current I_{sc}	kA	1.5	4	6.3
Rated short-circuit making current I_{peak}	kA	3.75	10.4	16.4
Rated short-time current	kA	1.5	4	6.3
Rated short-time current duration	s	0.2	0.2	0.5
Fault-break operations at 100%	No.	300	70	30
Rated line-changing current	A	20	20	20
Mechanical operations	No.	2,000	2,000	2,000
IP rating		67	67	67

All Fusesaver models are each available with the following voltage rating options:

Rated voltage	kV	15.5	27
Rated lightning-impulse withstand voltage U_p	A	110	125
Rated power-frequency withstand voltage U_d (60 s)	A	50	60

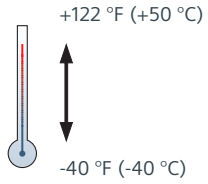
Standards

The Fusesaver conforms to the relevant sections of IEC 62271-100.

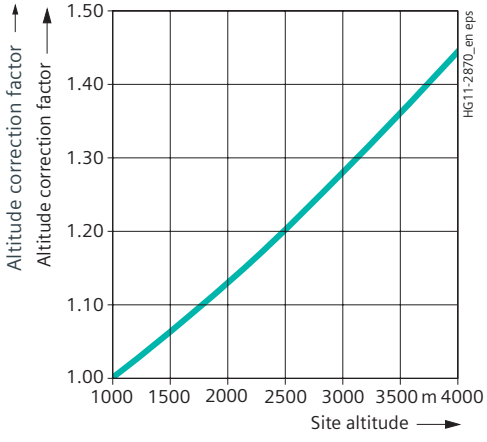
Ambient conditions

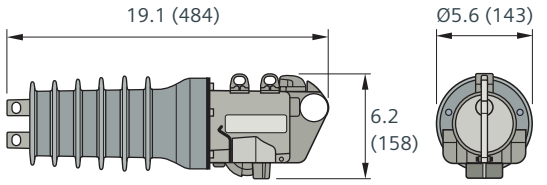
The Fusesaver is suitable for use in outdoor environments with ambient temperatures in the range of -40 °F to +122 °F (-40 °C to +50 °C) and relative humidity in the range of zero percent up to 100 percent.

Ambient conditions

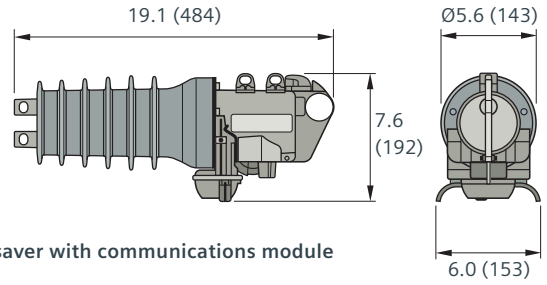


Altitude correction factor

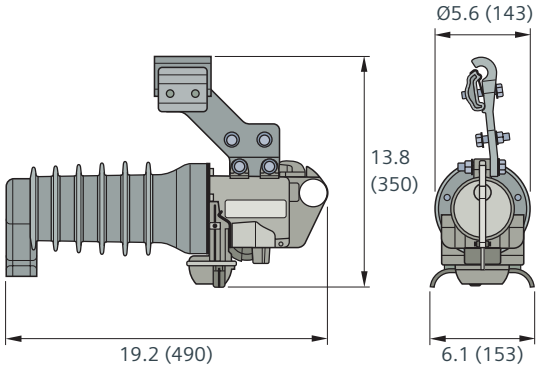




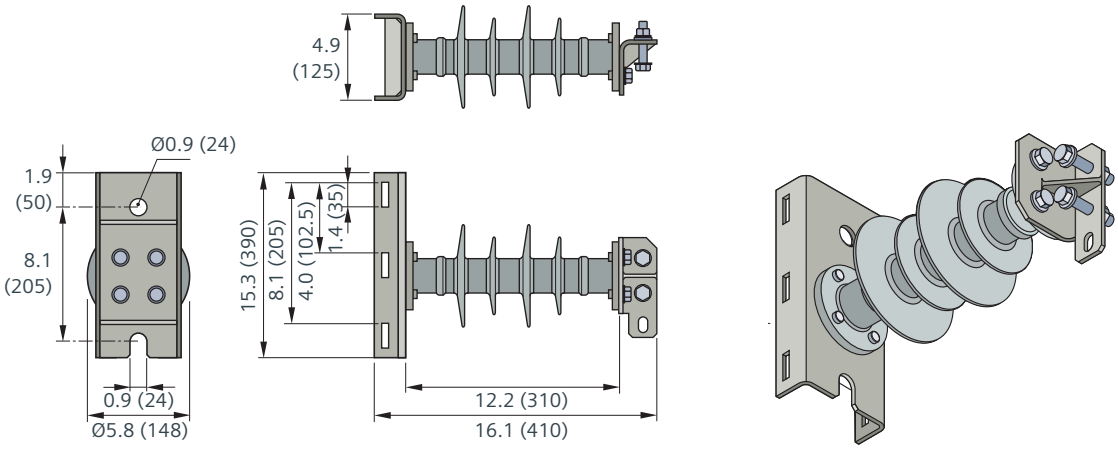
Fusesaver



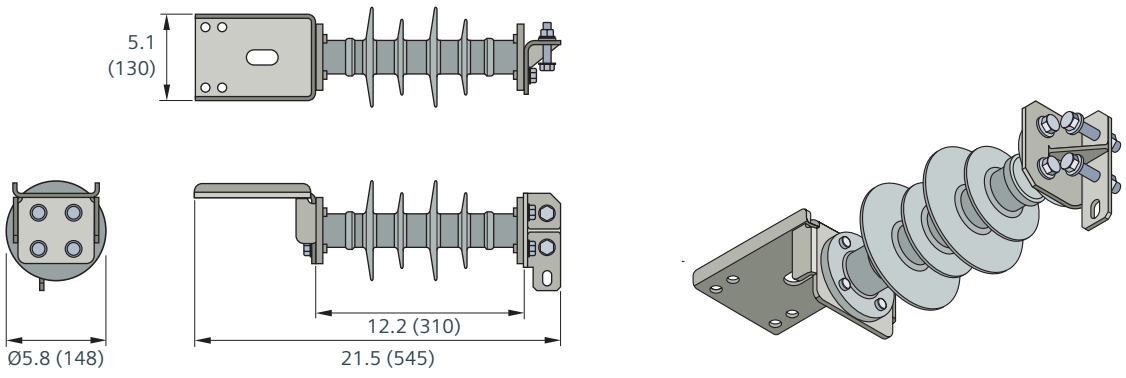
Fusesaver with communications module



Fusesaver, communications module and line-clamp assembly



15.5 – 27 kV Fusesaver pole-mounting assembly – composite insulator



15.5 – 27 kV Fusesaver crossarm-mounting assembly – composite insulator

Remote control unit

A typical Fusesaver and RCU installation includes:
1. Fusesavers with communications modules
2. Remote control unit
3. Solar panel.

The remote control unit (RCU) is an optional addition to the Fusesaver system used to connect the Fusesaver to a utility's SCADA system. The RCU is a pole-mounted enclosure containing a microprocessor, a short-range (approximately 60 ft (20 m)) radio used to communicate with the Fusesaver. The utility fits a long-range radio (or modem) to communication with the SCADA center.

RCU principle

Fusesavers are installed on each of the phases of the power line and are organized to work as a set to control that line. One, two, or three Fusesavers can be organized in this way for a single-phase, two-phase or three-phase line.

The RCU acts as an interface between a set of Fusesavers on the power line and a utility SCADA system. To do this, the RCU uses its configuration to find and access installed and running Fusesavers. It communicates with the Fusesavers using its built-in short-range radio.

In operation, the RCU will acquire data from the Fusesavers and save in its database ready for re-transmission over a long-range radio (or modem) back to the utility SCADA system master station using the DNP 3 protocol. The long-range radio (provided by utility) is mounted in the radio tray by the utility and is powered by the RCU. Data in the RCU database includes information about the Fusesavers and the RCU itself. Usually a subset of this data is mapped into the protocol used by the SCADA system.

The RCU system

In order to minimize installation and operating costs, the Siemens RCU was developed as part of an integrated system of tools and accessories. All system components work together, which permits easy installation, fast commissioning, and reliable operation in all conditions.

A typical Fusesaver and RCU installation includes the following items for each phase:

1. Fusesavers with communication modules installed permanently
2. RCU
3. Power supply for RCU.

Configuration of the RCU is achieved through a wireless connection to a PC application called RCU Connect.

RCU cubicle

The RCU enclosure in mounted to the pole using the pole-mounting bracket and is manufactured from powder-coated stainless steel for long service life. Material options are available at time of ordering including 304 (standard) and 316 grade stainless steel.

The RCU enclosure has a handle with internal three-point locking mechanism. An external padlock can be fitted to restrict access.

On the top of the RCU enclosure is a high-grade, UV-stabilized plastic shade hood. This shade hood is to reduce solar heating and to provide an aperture for the short-range radio.

At the rear of the RCU enclosure, there is a ground stud and a number of openings fitted with cable glands to allow external wiring to access the internals of the RCU.

Electronics housing

The electronics housing contains the microprocessor, battery, power connection terminals, data connection points, and the user interface for the RCU. The RCU has a simple user interface for operations and maintenance purposes. The RCU front panel has a number of LED indicators. The LEDs are normally off (to reduce power consumption) and turn on automatically while the door is open as controlled by the position of the door switch.

The electronics housing also holds the 12 V, 7.2 Ah lead-acid battery. The electronics housing is normally powered by a selectable 115/230 Vac low-voltage supply.

Radio tray

The radio tray is available for the installation of the utility-specific radio, modem, or other means to connect to the utility's SCADA system.

The radio tray hinges down and allows access to the radio behind. When in the hinged up position, the tray provides a degree of protection from driving rain.

RCU accessories

Operator panel

The Fusesaver operator control panel is an optional accessory mounted on the radio tray and plugs into the RCU's electronics compartment. The operator control panel allows a local user to trip and close the Fusesavers or to change the active protection mode in the Fusesavers. It also provides additional status information.

There are two operator panels available, one panel for use when Fusesaver is configured in OC mode (with a partner fuse) and another for when Fusesaver is configured in the O-CO mode (without a partner fuse). As the O-CO mode has protection modes and features different from those for OC mode, the associated panel buttons are different. Even though Fusesaver is capable of being used in either OC or O-CO mode, the correct panel must be selected for the mode that will be commissioned.

Low temperature option

The low temperature RCU includes a heater mounted behind the radio tray. It has a positive temperature coefficient element which acts as a thermostatic heater keeping the battery and electronic compartment above 5 °F (-15 °C) for ambient temperatures as low as -22 °F (-30 °C).

Solar panel

In environments where good sunlight is available all year, it is possible to power the RCU using a solar power kit option.

This includes the solar panel, mounting bracket, and cable. Solar powering of the RCU is also dependent upon power consumption of the utility's radio or modem being less than 100 mW on average.

The solar panel is connected into the terminal compartment to a dedicated set of terminals as an alternative to the mains supply.

Solar ratings	Value
Power ratings	65 W
Nominal voltage	18 V
Cell type	Polycrystalline

Voltage transformer

Where low-voltage mains is not available and solar powering is not practical, the RCU sould be powered by a voltage transformer connected to the medium-voltage line on which the Fusesaver is installed.

RCU communications

Communications interface

In order to communicate with the SCADA system master station, a long-haul radio or modem is required. The RCU electronics provide a serial, asynchronous data interface (RS232) and an Ethernet port (RJ45) for this purpose.

A purpose-built cable connects the radio/modem to the RCU interface. The design and construction of this cable may be carried out by the customer or as a value-added service provided by Siemens.

Communications protocol

The RCU supports DNP 3.0 over both serial link and IP protocol. The RCU has over 200 digital points and more than 40 analog points providing status information on the Fusesavers and RCU. The RCU can also receive a wide variety of controls from the SCADA master.

RCU configuration

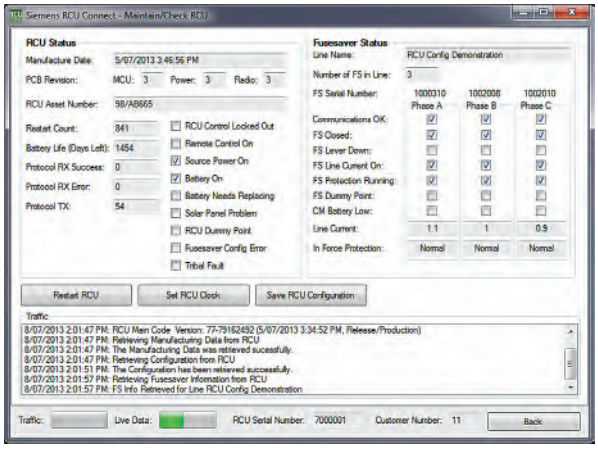
The RCU is configured wirelessly over the short-range radio using the RCU Connect PC application.

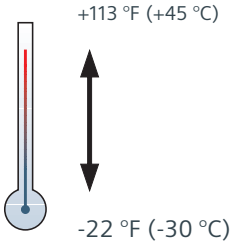
Standards

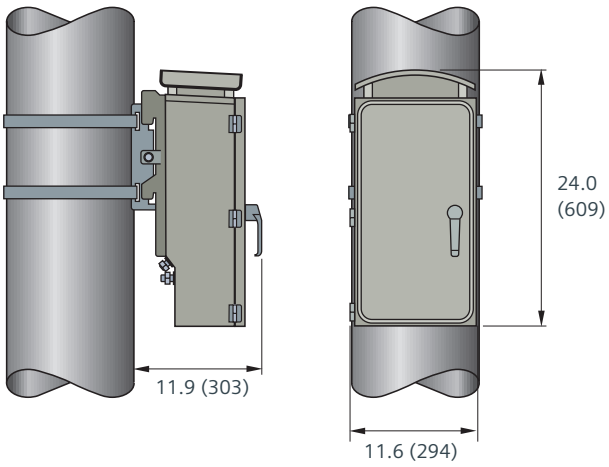
The design and testing of the RCU is according to the relevant parts of IEC 60950-1: 2005 Information technology equipment – Safety.

Ambient conditions

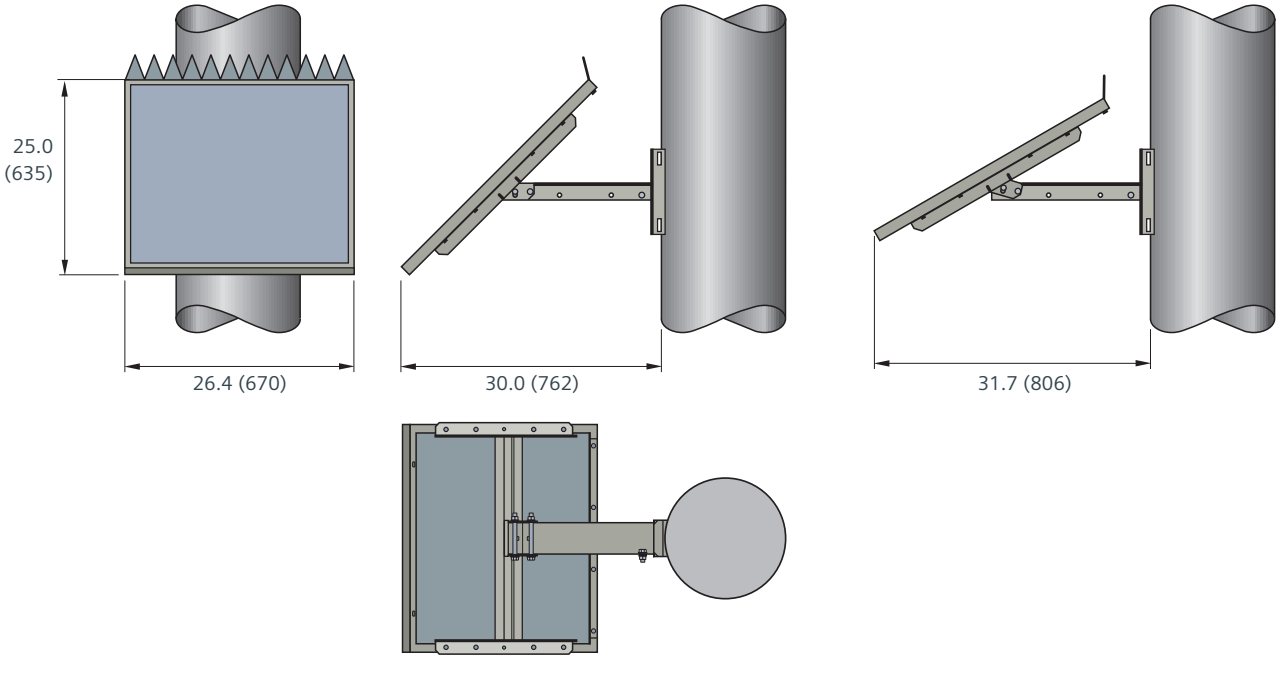
The RCU is suitable for use in outdoor environments with ambient temperatures in the range of -22 °F (-30 °C) to 113 °F (+45 °C) and relative humidity in the range of five percent to 95 percent. For temperatures below 5 °F (-15 °C), the low-temperature version will be required.







Remote control unit (RCU)

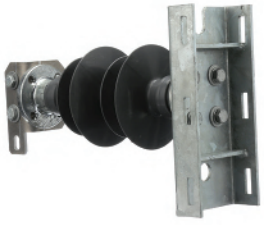


Solar panel (RCU powering option)

Product selection

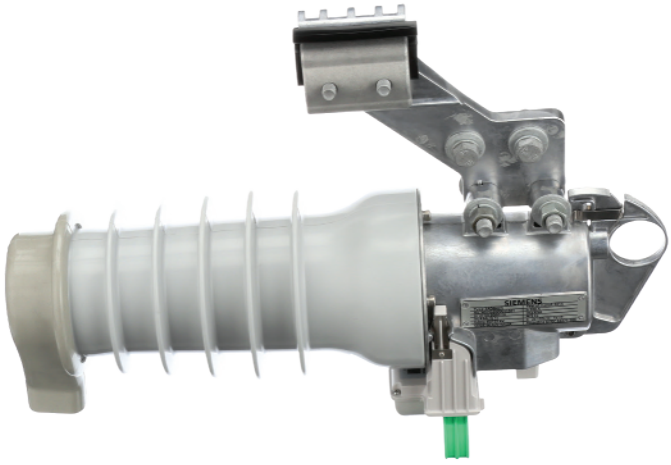
Photos and part numbers information

Remote control unit



Pole-mount bracket assembly

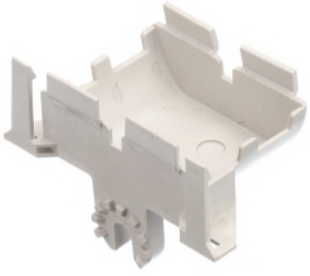
Wildlife guard



Fusesaver with communications module, line clamp, and bird guard

PC communications kit

Communications module



Communications attachment tool

Order number structure

The Fusesaver order number configures a Fusesaver or a remote control unit plus desired accessories.

Prefix	**Fusesaver P3RFSR**
1st position	**Voltage rating:** **1** = 15.5 kV **2** = 27 kV
2nd, 3rd, 4th, and 5th positions	**Short-circuit breaking current and rated normal current:** **4100** = 4 kA, 100 A **6200** = 6.3 kA, 200 A
6th position	**Packaging type:** **S** = switch only* **K** = kit includes switch and accessories in the same box
7th position*	**Mounting type:** **0** = no mounitng bracket included **C** = cross-arm bracket **L** = line clamp **P** = pole-mounted bracket
8th position*	**Wildlife mitigation:** **0** = no wildlife guard **B** = bird guard** **W** = wildlife guard
9th position*	**Plate:** **0** = No fishplate **F** = Fishplate for cross-arm mounting
10th position*	**Communications:** **0** = No communications module **C** = Communications module (classic) **R** = Communications module (rechargeable)
11th position*	**Mounting bracket material:** **Blank** = Standard material **4** = 304 stainless steel **6** = 316 stainless steel

*If position 6 = S, then remaining part numbers are 000 and additional positions do not apply.

** Bird guard can only be used with line-clamp mounting.

Fusesaver configuration examples:

Example A switch:	P	3	R	F	S	R	1	4	1	0	0	S	0	0	0	
Example B kit with stainless steel:	P	3	R	F	S	R	1	6	2	0	0	K	C	W	F	C	4
Example C kit standard:	P	3	R	F	S	R	1	6	2	0	0	K	C	W	F	C	

Fusesaver accessories

Accessories sold separately if not selected as part of the above kit options.

Part number:	Mounting brackets with Imperial hardware:	Part number:	Other available items:
P3RFSAPOLEBRGI	Pole galvanized	P3RFSABIRDG	Bird guard accessory
P3RFSAPOLEBR4I	Pole 304 stainless steel	P3RFSAWILD1	Wildlife guard kit
P3RFSAPOLEBR6I	Pole 316 stainless steel	P3RFSAWILD3	Wildlife guard kit (set of three)
P3RFSACROSSBRGI	Crossarm galvanized	P3RFSAISET	Current injection set
P3RFSACROSSBR4I	Crossarm 304 stainless steel	P3RFSAPCCOM	PC communications kit
P3RFSACROSSBR6I	Crossarm 316 stainless steel	P3RFSACOMTOOL	Communication module attachment tool
P3RFSAFISHPLGI	Crossarm fishplate galvanized	P3RFSACOMCASE	Communication module carrying case; can carry up to three modules
P3RFSAFISHPL4I	Crossarm fishplate 304 stainless steel		
P3RFSAFISHPL6I	Crossarm fishplate 316 stainless steel	P3RFSACOMMOD	Communication module with fault passage indicator
P3RFSALINECLAI	Line-clamp aluminum		

Prefix	**Remote control unit P3RRCU**
1st, 2nd, and 3rd, positions	**Enclosure type:** **04G** = 304SS enclosure with galvanized mounting bracket, **044** = 304SS enclosure with 304SS mounting bracket, or **166** = 316SS enclosure with 316SS mounting bracket
4th position	**Temperature:** **L** = low temperature (below -5 °C) or **S** = standard temperature
5th and 6th positions	**Operator panel:** **PC** = OC operator panel, **PO** = O-CO operator panel, or **XX**= No operator panel

RCU configuration example:

Example A: P 3 R R C U **0 4 G L P O**

RCU accessories

Accessories sold separately.

Part number:	Description:
P3RRCUBAT	Replacement battery
P3RRCUCNC	Communication cable with no power connector
P3RRCUCM2MO	Communication cable with two-pin medium Molex connector
P3RRCUCS4MO	Communication cable with four-pin small Molex connector
P3RRCUOPOC	Operator panel open-close (OC)
P3RRCUOPO-CO	Operator panel open-close-open (O-CO)
P3RRCUSOLAR	Solar panel kit

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For more information, including service or parts, please contact our 24/7 Customer Support Center. Phone: +1 (800) 333-7421

www.usa.siemens.com/fusesaver

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