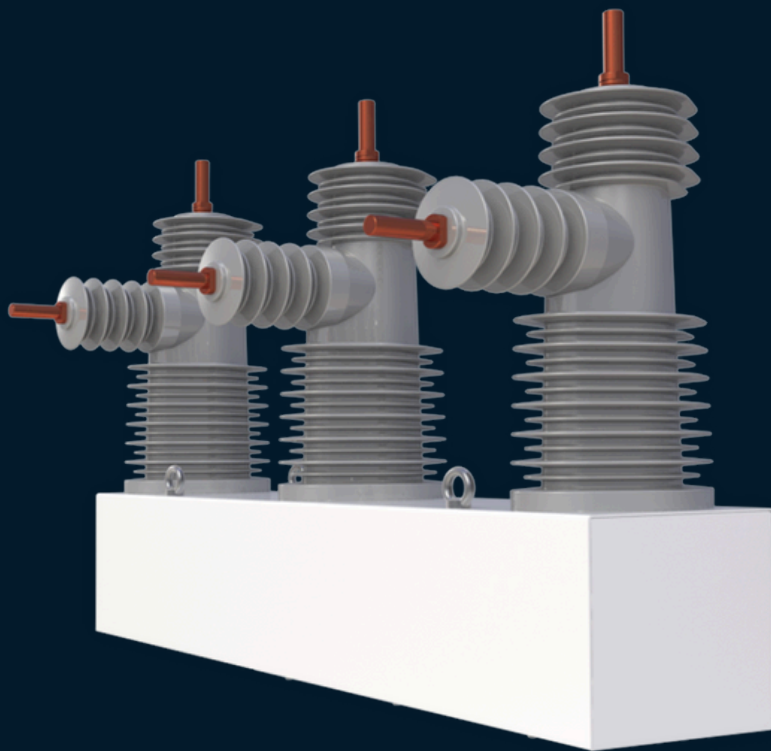


RECLOSER

AUTOMATIC THREE-PHASE CIRCUIT RECLOSER

Standards

IEC 62271-111, IEEE C37.60



RECLOSER

Description

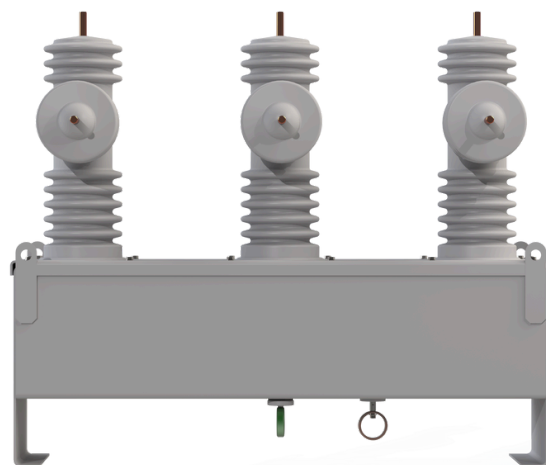
Equipped with load-switching technology thanks to the vacuum arc extinguishing element, the equipment can eliminate intermittent faults in pre-programmed activation cycles, providing greater robustness against locking failures.

A modern control platform, completely redesigned to meet a variety of customer profiles, regardless of the specific characteristics of the utility or the type of load. This includes extensive networks for industrial loads, as well as those requiring massive and coordinated operation (self-healing).

The equipment can be parameterized through its various communication buses. It supports DNP 3.0, IEC 60870-5-101, and IEC 60870-5-104 protocols.

Functionalities

- It features a three-phase structure, with each phase combined with a vacuum switch and sealed-pole operation isolator.
- The permanent magnet mechanism adopts a three-phase connection, mounted in a sealed stainless steel enclosure.
- The cabinet has an IP65 protection rating.
- The magnetic mechanism has a locking function to maintain the mechanism's operation in good condition and keep the ON/OFF condition by electromagnetic locking.
- Triggering is done by a capacitor existing in the control unit.
- This energy storage element can operate even in transient events and low battery conditions.
- It has a manual opening/closing function to operate the automatic recloser between ON/OFF positions, through the lever that indicates ON/OFF.
- Easy observation by the operator of the ground conditions.
- The main insulated pole is made of cycloaliphatic epoxy resin with a silicone insulating coating that is anti-ultraviolet and highly hydrophobic.
- Control panel in stainless steel with protected cables.



RECLOSER

Funcionalities

- **For the consumer:**

Reduction in FEC and DEC, as the recloser will have the capability to restore service for temporary faults, whether they are single-phase, two-phase, or three-phase.

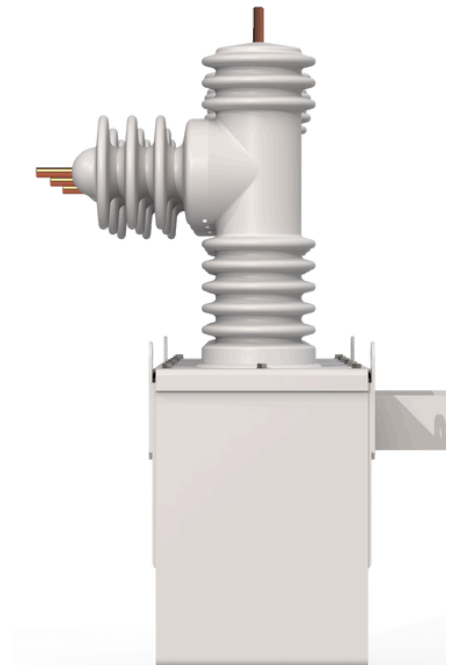
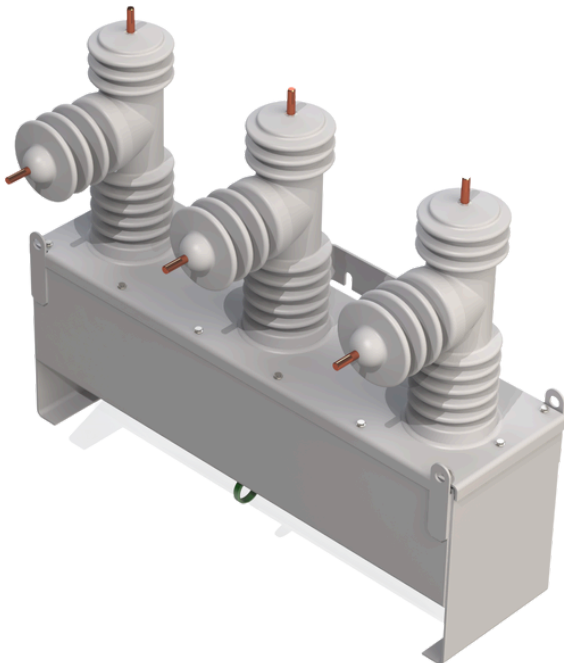
- **For the utility company:**

Improvement in their energy quality indicators and reduction in operation and maintenance costs.

Operation

The automatic three-phase recloser is a switchgear device designed for load switching that is parameterized and controlled to protect and restore the electrical system in case of a fault, considering that most issues in the electrical grid are transient and a brief outage followed by re-energization is sufficient to resolve such problems.

The recloser has a series of settings for its tripping conditions; if any of these conditions are met, the recloser switches open and initiate a cycle of reclosing attempts. If the reclosing is successful, the system is restored; however, if issues persist during reclosing, the device locks open, preventing fault propagation and safeguarding the rest of the electrical network.



Technical Specifications 15 kV

| | |
|---|--|
| Maximum voltage | 15 kV |
| Current | 630 / 800 A |
| Short-circuit current | 20 kA |
| Duration of the short-circuit current | 20/4 kA/S |
| Frequency | 50/60 Hz |
| Sustainable peak current | 50 kA |
| Short-circuit peak current | 50 kA |
| Operational sequence | 0-0.2s-C0-2s-CO-2s-CO-30s |
| 1 minute withstand voltage | 50 kV (Phase to ground, phase to phase, open circuit) |
| Lightning impulse withstand voltage (peak) | 110 kV (Phase to ground, phase to phase, open circuit) |
| 1 minute withstand voltage on the load side | 2 kV |
| Mechanical life | 30000 operations |
| Maximum openings at rated short-circuit current | 50 |

Technical Specifications 24 kV

| | |
|---|--|
| Maximum voltage | 24 kV |
| Current | 630/800 A |
| Short-circuit current | 16/20 kA |
| Duration of the short-circuit current | 20/4 kA/S |
| Frequency | 50/60 Hz |
| Sustainable peak current | 50 kA |
| Short-circuit peak current | 50 kA |
| Operational sequence | 0-0.2s-C0-2s-CO-2s-CO-30s |
| 1 minute withstand voltage | 60 kV (Phase to ground, phase to phase, open circuit) |
| Lightning impulse withstand voltage (peak) | 145 kV (Phase to ground, phase to phase, open circuit) |
| 1 minute withstand voltage on the load side | 2 kV |
| Mechanical life | 30000 operations |
| Maximum openings at rated short-circuit current | 50 |

Technical Specifications 36 kV

| | |
|---|---|
| Maximum voltage | 38 kV |
| Current | 630 / 800 A |
| Short-circuit current | 16 / 20 kA |
| Short-circuit current duration | 20/4 kA/S |
| Frequency | 50/60 Hz |
| Peak withstand current | 50 kA |
| Short-circuit peak current | 50 kA |
| Standard operating sequence | O-0.2s-CO-2s-CO-2s-CO-30s |
| Withstand voltage for 1 min | 70 kV (Phase-to-ground, Phase-to-Phase, Opening) |
| Withstand voltage for atmospheric impulses (peak) | 170 kV (Phase-to-ground, Phase-to-Phase, Opening) |
| Withstand voltage for 1 minute on the load side | 2 kV |
| Mechanical life | 30000 operations |
| Maximum number of openings at nominal short-circuit current | 50 |

Technical Specifications of the magnetic mechanism

| | |
|---------------|---------|
| Voltage input | 220 VAC |
|---------------|---------|

| | |
|------|---|
| Type | Single capacity and stability coils (220/110/24 VDC) |
|------|---|

| | |
|-------------------|-------------------------|
| Capacitor voltage | 75 ~ 300 VDC (optional) |
|-------------------|-------------------------|

| | |
|------------------------------|------------|
| Maximum current of the coils | 80 ~ 150 A |
|------------------------------|------------|

| | |
|-------------------------|--------|
| UPS backup power supply | 24 VDC |
|-------------------------|--------|

| | |
|-----------------------|--------|
| Maximum holding power | 5000 N |
|-----------------------|--------|

| | |
|----------------|-------|
| Maximum stroke | 30 mm |
|----------------|-------|

| | |
|--|------------------------------|
| Maximum time of impulse current for CO coils | 80 ms (automatic adjustment) |
|--|------------------------------|

| | |
|-----------------|-------|
| Failure counter | 1 ~ 3 |
|-----------------|-------|

| | |
|-------------------|----------|
| Operation counter | 0 ~ 9999 |
|-------------------|----------|

| | |
|-------------|-------------------------|
| Temperature | - 25 ~ 70 °C (Standard) |
|-------------|-------------------------|

| |
|------------------------|
| - 40 ~ 80 °C (Special) |
|------------------------|

Technical Specifications Control Cabinet

| | |
|---------------------------------|---|
| Type | Control panel with protection relay |
| Power supply | 24 VDC (20 to 29 VDC) |
| Maximum power consumption | 10 W |
| Frequency | 50 Hz / 60 Hz |
| Analog input | <ul style="list-style-type: none">• 4 for Current• 6 for Us Voltage• 2 for U0 Voltage |
| Current Transformer input ratio | 1 A or 5 A |
| Binary inputs | 8 |
| Binary input rated voltage | 24 VDC |
| Binary input threshold voltage | 18 VDC |
| Binary input reaction time | < 20 ms |
| RTD/mA inputs | 4 mA to 20 mA |
| Binary outputs | 4 |
| Binary output rated voltage | 250 VAC |
| Relay dimensions | 253 x 172 x 167 mm |
| Temperature | <ul style="list-style-type: none">• Operation: -25°C a 70°C• Storage: -40°C a 85°C |
| Relay weight | 3,5 kg |
| Protection degrees | <ul style="list-style-type: none">• Front panel: IP54• Back panel: IP20 |

Technical Specifications Control Cabinet

| | |
|---------|--|
| Records | <ul style="list-style-type: none"> • Faults • Disturbances • SOE (Sequence of events) |
|---------|--|

| | |
|------------|---|
| Protection | <ul style="list-style-type: none"> • Alarm • Trip |
|------------|---|

Ports

| | |
|-----------|----------------------|
| Debbuging | Ethernet RJ45(Front) |
|-----------|----------------------|

| | |
|---------------|--|
| Communication | <ul style="list-style-type: none"> • Serial RS232/485 • 10/100 Base-T Ethernet RJ45 (Back) |
|---------------|--|

| | |
|-----------|--|
| Protocols | <ul style="list-style-type: none"> • IEC 101/104 • DNP3.0 • Modbus (RTU/ASCII - TCP/IP) |
|-----------|--|

| | |
|---------|---|
| Control | <ul style="list-style-type: none"> • Opening • Closing • Battery test • Authorization level |
|---------|---|

| | |
|--------------------|---|
| Automation schemes | <ul style="list-style-type: none"> • Loop • Auto-changeover |
|--------------------|---|

Interface

| | |
|-----|--------------------------|
| LCD | 10 lines x 20 characters |
|-----|--------------------------|

| | |
|-------|---|
| LED's | <ul style="list-style-type: none"> • 16 programmable • Fault indicator • Self-check, Pick-up, Trip |
|-------|---|

| | |
|-------------|--------------------------|
| Date format | 12h/24h day, month, year |
|-------------|--------------------------|

| | |
|--------------------------|---|
| Protection setting group | 5 |
|--------------------------|---|

Protection Functions (ANSI)

50 P|N

Instantaneous overcurrent

51 P|N

Time overcurrent

67 P|N

Directional overcurrent

64 N-SEF

Sensitive earth fault

46

Negative sequence overcurrent

59

Overvoltage

27

Undervoltage

79

Reclosing

25

Synchronism-Check

81 O|U|R

Frequency (Over, Under, Rate of change)

EF

Earth fault

IR

Inrush Restraint

CLP

Cold Load Pick-up

HLT

Hot Line Tag

LGC

Protection settings group: 5

 Measurement and Monitoring

| | |
|--------------------------------------|---|
| I | Phase, Earth, Sensitive earth Current |
| 3I | Three-phase Current |
| I ₀ | Residual Current |
| I _{1/2} | Sequence component Currents |
| U | Phase, Line Voltages (Power/Load sizes) |
| 3U | Three-phase Voltage (U _a , U _b , U _c /U _r , U _s , U _t) |
| U ₀ | Residual Voltage (Power/Load) |
| U _{1/2} -U _{1'/2'} | Sequence component Voltages |
| VDC | Battery voltage |
| P/Q/S | Power (Active, Reactive, Apparent) (Single/Three-phase) |
| EP/EQ/ES | Energy (Active, Reactive, Apparent) (Single/Three-phase) |
| PF | Power Factor (Single/Three-phase) |
| f | Frequency |
| PQM3I | Current Harmonic Distortion (THD) (2nd a 11th) |
| PQM3U | Voltage Harmonic Distortion (THD) (2nd a 11th) |
| Synchronizing Difference | Amplitude, Frequency, Angle |
| True RMS | Voltages / Currents |

Measurement and Monitoring

Demand

Currents, Voltages, Power, Energy, PF, Frequency,
Harmonics

Additional

Power Quality, Load profile, Disturbance records, Graphs

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