Types PWE and PWVE Three-Phase Reclosers

Figure 1. PWE and PWVE electronically-controlled, padmounted, automatic-circuit reclosers feature three-phase vacuum interruption in weatherproof and tamper-resistant enclosures

Figure 2. Low-profile housing with wide double-doors provides easy access to all operating controls on PWE and PWVE 15- and 27-kV automatic-circuit reclosers

Powering Business Worldwide

General

Eaton provides reliable and economical over current protection for underground distribution systems utilizing its Cooper Power™ series Types PWE and PWVE pad-mounted, electronically controlled, three-phase automatic circuit reclosers. They feature vacuum interruption for long life and minimum maintenance. Using oil as the insulating medium contributes to the compactness of the weather-proof and tamper-resistant pad-mounted enclosure.

Types PWE and PWVE reclosers are designed for 15 and 27 kV system applications such as feeder protection, sectionalizing, and transformer high-side protection. Controlled by Eaton's Cooper Power series Form 6 electronic control, they offer coordination and application capability that is unmatched by other system protection apparatus.

Recloser operations are programmed on the Form 6 electronic control panel with accurate, preset tripping characteristics and reclosing times. Operating programs are precise and unvaried, enabling closer coordination with other protective devices on the system. When system requirements change, program settings are easily altered without sacrificing accuracy or consistency. Recloser and control accessories enable further tailoring of the protective program to achieve maximum system operating flexibility.

Type PWE and PWVE pad-mounted reclosers feature weather proof and tamper-resistant enclosures, providing an attractive, compact, and secure package for use in substations, commercial and residential areas, and other applications where low-profile construction is required. Side-hinged door offers easy access to conveniently located operating levers on the face of the recloser tank.

Eaton's reclosers in a distribution system protection scheme offer significant user advantages. Their broad application capabilities permit the user to select exactly the right recloser for the protection required. When needed, Eaton's application expertise, backed by worldwide recloser application experience, is readily available. Knowledgeable design capability, based on over 65 years of recloser manufacturing experience, provides the operating features required for effective over current protection of complex distribution systems. Progressive development programs using the latest technologies have resulted in the modern, efficient reclosers, which are designed and built in accordance with IEEE Std C37.60™ standard. Eaton's PWE and PWVE reclosers also meet the anti-tampering requirements of the Western Underground Specification 2.13.

Basic ratings

PWE reclosers protect three-phase systems rated 2.4 through 14.4 kV; PWVE reclosers can be applied to systems rated through 24.9 kV. Basic voltage and current ratings for these reclosers are summarized in Table 1. For ratings and basic application information on other Eaton reclosers, refer to other catalogs.

Basic characteristics

PWE and PWVE reclosers are electronically controlled protective devices in which tripping and closing are initiated by signals from the control. The signals produced by the control energize the operating circuits in the recloser and release the stored-energy trip mechanism when an overcurrent occurs.

Sensing-current transformers mounted in the recloser supply fault sensing information to the electronic control. Since there is a single CT ratio for all ratings, minimum trip values of the electronic control are independent of the continuous-current and interrupting ratings of the recloser. Flexibility in coordination with other protective devices is provided by dual time-current characteristics from a choice of available curves, minimum trip values, reclosing and resetting time settings, and a selection of accessories.

Closing solenoid

Contact-closing energy is provided by a closing solenoid which also stores energy in the trip mechanism. High-voltage closing solenoids are connected to the system on the source side of the recloser; selection of solenoid voltage rating is based on the system phase-to-phase operating voltage. Low-voltage closing solenoids can be employed; auxiliary voltage must then be supplied to the recloser.

Vacuum interruption

PWE and PWVE reclosers use vacuum as the arc-interrupting medium. Vacuum interruption provides long contact life and considerably longer duty cycles than oil interruption. A single break on each phase is accomplished by separating contacts inside the vacuum interrupter. All arcing is contained within the vacuum envelope. Low-energy arc interruption in a vacuum results in far less shock and demonstration than interruption in oil, thus extending the vacuum recloser mechanism life. Because interruption within the vacuum envelope does not add contaminants to the insulating oil, recloser maintenance is minimized and oil life is extended.

Ordering information

To order a PWE recloser:

1. Refer to Table 1, which describes the required basic recloser.
2. From Tables 4 through 9, specify the catalog numbers that describe the required accessories.
3. Order the required electronic recloser control. (Base catalog number of the control must be included when ordering a Type PWE recloser.)

Table 1. Basic ratings

Recloser Type	Nominal Voltage (kV)	Maximum Continuous Current (A)	Maximum Interrupting Rating at Nominal Voltage (sym A)
PWE	14.4	560	12000
PWVE	24.9	560	12000

Table 2. Closing coil voltage code numbers

Phase-to-Phase Closing Coil Operating Voltage ±15% (kV)	Code No.
2.4	1
3.3	10
4.16—4.8	2
6.0	6
7.2 —8.32	3
11.0	9
12.0 —13.2	4
14.4	5
17.0	12*
20.0	11*
23.0 —24.9	13*
Low-Voltage Closing Coils (Vdc)	
125	7**
250	8**

* For KPWVE only.

** Requires either low-voltage DC closing accessory (KA61PWH) or AC operation of low-voltage DC coil accessory (KA60PWH) to operate. Order separately.

Example:

To order a PWE recloser for service on a 14.4-kV system, the catalog number would be constructed as follows:

Type PWE2 Recloser 2.4–14.4 kV Nominal

Type PWVE2 Recloser 24.9 kV Nominal

KPWE2 Basic letters for a Type PWE recloser
KPWE2 Basic letters for Type PWE recloser
KPWVE2 Basic letters for a Type PWVE recloser

-5 Closing coil code number
KPWE2 Select from Table 2 for the system on which the recloser is to be used.
KPWVE2 Select from Table 2 for the system on which the recloser is to be used.

KPWE2 -5

KPWE2-5 is the catalog number for the required PWE recloser with a 14.4 kV closing coil.

Accessories

Table 3. Control cable

Description	Catalog Number
Standard 12 ft control cable for double-size control cabinet mounted inside enclosure	KA1ME12

Table 4. Multi-ratio bushing-current transformers factory-installed on load-side bushings 2, 4, and 6

Description	Catalog Number
Three 600:5 BCTs with NEMA® five-tap connections	KA56PWHA
Three 1200:5 BCTs with NEMA® five-tap connections	KA56PWHB

Table 5. Remote operation and indication

Description	Catalog Number
Three-stage auxiliary switch (six independent contacts)*	KA54PWH
Low-voltage DC closing**	
125 Vdc	
Type PWE	KA61PWHE
Type PWVE	KA61PWHG
250 Vdc	
Type PWE	KA61PWHF
Type PWVE	KA61PWHH
AC operation of low-voltage DC closing solenoid**	
120 Vac	
Type PWE	PA60PWHE
Type PWVE	PA60PWHG
240 Vac	
Type PWE	KA60PWHG
Type PWVE	KA60PWHH

* Requires KA130PWH accessory panel; order separately. Supplied with an equal number of a and b contacts unless otherwise specified.
** Requires both KA130PWH accessory panel and KA128PWH wiring-and-receptacle assembly; order each separately. Recloser must be ordered with Code 7 (125-Vdc) or Code 8 (250-Vdc) closing coil; see "Table 2. Closing coil voltage code numbers".

Table 6. Transfer switch

Description	Catalog Number
Transfer switch accessory*	KA63PWHB

* Transfer switch accessory cannot be used on reclosers with low-voltage closing solenoids; Code 7 (125 Vdc), or Code 8 (250 Vdc).

Table 7. Bushings

Description	Catalog Number
200-amp universal bushing wells for loadbreak or non-loadbreak connector inserts*	
Load-side only	KA55PWHB
Load-side and source-side	KA55PWHC

* 600 amp deadfront type bushings on both load- and source-side are standard.

Table 8. Tank construction and finish*

Description	Catalog Number
304L Stainless steel constructions (in lieu of standard, mild steel construction)	(stainless)
Special paint color, top coat on external surfaces only (Specify color at time of order)	**

* Standard paint color included is Munsell Green 7GY (Bell Green).

** Consult factory.

Table 9. Miscellaneous

Description	Catalog Number
Hex-head door bolt accessory	KPA1056-1
Three 200 amp loadbreak bushing inserts†	
Type PWE	KPA1033-1
Type PWVE	KPS1034-1
Six 200 amp loadbreak bushing inserts††	
Type PWE	KPA1033-2
Type PWVE	KPA1034-2
Ground rod; 1/2 dia with 3" standoffs	KPA6595-2
Stainless steel drain plug	KA1203R
Decals	
Non-PCB decal	KPA1040
Danger High Voltage decal	KPA1063
Bi-lingual, internal "Mr Ouch" safety decal	KPV4H54-1
Bi-lingual, external "Mr Ouch" safety decal	KPV4H54-2

† For use with KA55PWHB, 200 amp load-side universal bushing wells, ordered separately.
†† For use with KA55PWHC, 200 amp source- and load-side universal bushing wells, ordered separately.

Figure 3. View of untanked PWE recloser shown from closing contactor side (low-voltage closing accessory shown). Construction of Type PWVE is similar

Basic recloser design

Types PWE and PWVE pad-mounted, electronically controlled reclosers (Figure 3) protect systems operating through 24.9 kV. (See Ratings and Specifications (Tables 11 and 12). The inherent flexibility of electronic control enables these reclosers to meet a wide variety of application requirements and simplifies coordination with other protective devices in the system.

PWE and PWVE reclosers utilize vacuum as the arc-interrupting medium. A single break on each phase is accomplished by separating a set of contacts within the vacuum chamber. Low-energy arc interruption in a vacuum extends the duty cycle and results in minimal shock and demonstration. Vacuum interruption provides longer recloser mechanism life and minimizes maintenance required. Oil is used as the insulating medium to provide a compact size.

Closing force is supplied by a closing solenoid, which is energized by line-to-line connections inside the recloser. This solenoid closes the main contacts of all phases while simultaneously charging the opening springs in preparation for a tripping-operation.

Fault currents are sensed by three 1000:1 sensing-current transformers located in the recloser. These CTs provide a continuous measurement of line current, monitored by the electronic control. When minimum-trip current value is exceeded and, after the programmed time delay, the control energizes the trip solenoid in the recloser. This releases the tripping springs, opening the main contacts of all three phases. If reclosing is programmed, the control then activates the closing mechanism.

The electronic recloser control provides simple determination of phase and ground trip sequences and operations to lockout. Minimum phase and ground-trip levels, clearing time-current curves, and reclosing and resetting times are adjustable at the control, without de-energizing the recloser. Application flexibility is enhanced by dual-timing characteristics from a choice of time-current curves for phase and ground-tripping levels.

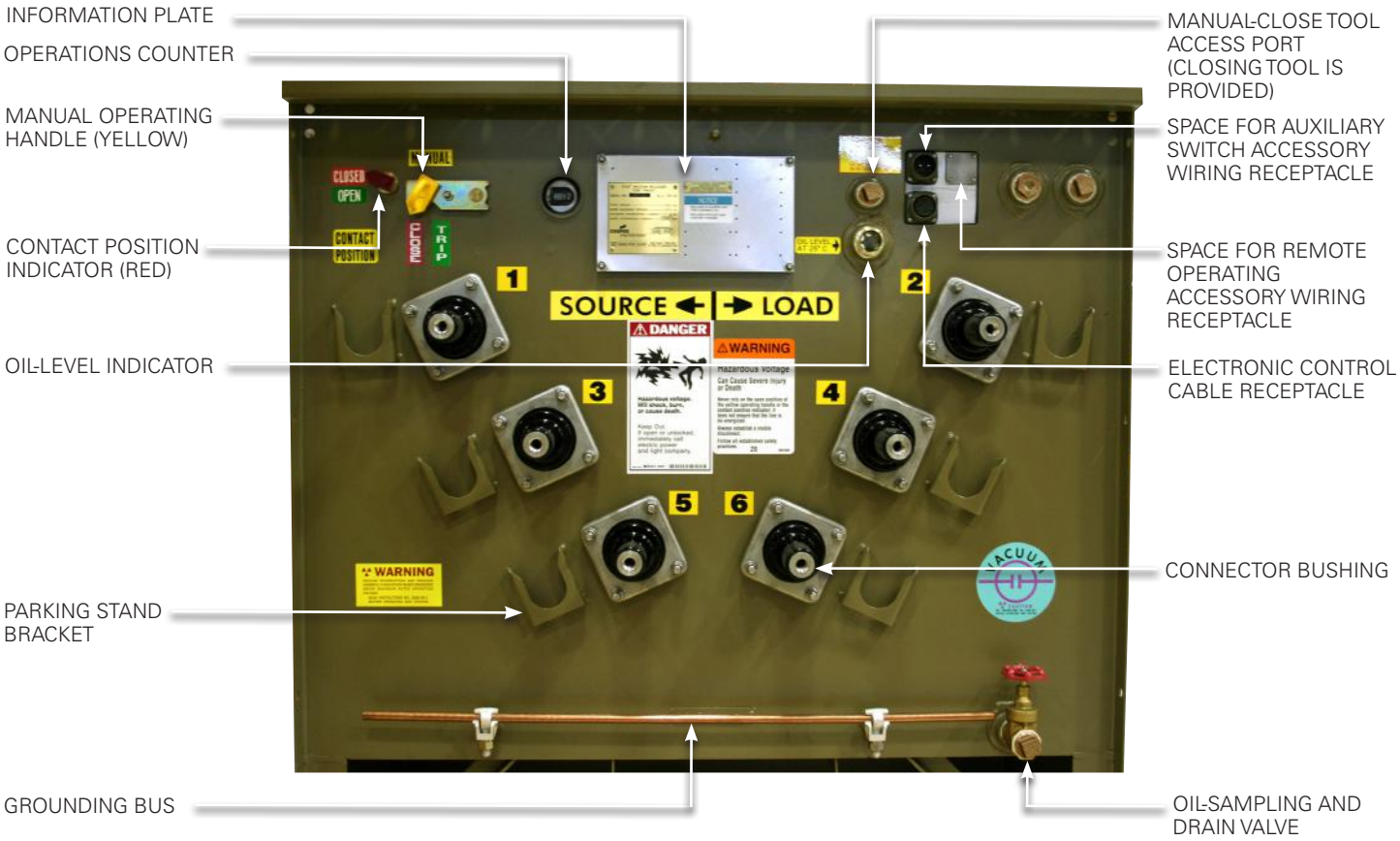


Figure 4. Manual operating handles and indicators for PWE and PWVE reclosers are located on the front of the recloser tank

Construction

Like all Eaton's reclosers, the PWE and PWVE reclosers are designed for long service life with little maintenance. The recloser tank is heavy-gage steel, treated with a corrosion-inhibiting epoxy primer, followed by a finish coat of thermo-setting acrylic paint. A square-section gasket, confined in a groove, assures an oil-tight seal between the cover and the tank.

The internal mechanism is suspended from the mechanism frame assembly so that the mechanism can be removed from the tank as a unit. The insulating supports from which the three interrupters are suspended are filament-wound glass epoxy for high electrical and mechanical strength and moisture resistance.

Housing

The recloser mechanism is housed in a rectangular, oil-filled tank which forms an integral part of the pad-mounted housing. The recloser bushings and operating controls (Figure 4) are brought out through the side of the tank into a cable terminations compartment to provide dead-front construction for operator safety. An overall roof completes the housing structure. Lifting lugs provide lifting capability for either the entire unit or the recloser tank only.

Construction is tamper-resistant and meets the requirements of the Western Underground Specification 2.13. PWE and PWVE enclosures (Figures 1 and 2) are provided with blind-hinged, single-side door with three-point latch and pentahead locking bolt to prevent unauthorized access. Provisions are also made for a customer supplied padlock for added security. The housing is weatherproof to protect the recloser, connections, and metering and has a weather-resistant finish (baked acrylic enamel with epoxy-base primer undercoating; color is guardian green, Munsell No.7.0GY3.29/1.5).

Connector bushing construction

The dead-front bushings conform to NEMA® Standards Proposal, publication No.CC-P2-1971, *Separable Insulated Connectors*. They are compatible with separable dead-front elbow connectors rated for 600 A, 15 and 27 kV service.

PWE and PWVE reclosers can also be equipped with universal bushing wells which are compatible with all industry-standard plug inserts for load-break-and non-load-break-separable UD cable connectors rated for 200 A, 15 and 27 kV service. Both the bushing and the well are molded with an integral flange which provides the clamping surface. They are clamped to the recloser tank with a bolted stainless-steel ring. A gasket groove molded into the flange confines an O-ring seal under controlled pressure to seal the bushing to the tank. Connector parking-stand brackets are provided at each bushing. The recloser can be supplied with the following bushing arrangements: 600 A bushings, source and load; 600 A bushings, source, 200 A wells load; or 200 A wells, source and load. A grounding rod near the bottom of the recloser tank provides for grounding cable terminations and connectors.

Figure 5. Vacuum interrupter

Vacuum interrupter construction

The vacuum interrupter in PWE and PWVE reclosers (Figure 5) is produced and tested at Eaton's Distribution Switchgear plant. This interrupter owes its high degree of reliability to the same vacuum technology and development programs that are responsible for the industry's broadest line of vacuum reclosers.

Major interrupter insulation is provided by a high-alumina ceramic cylinder. Ceramic, rather than glass, is used because ceramic is far stronger and withstands the higher vacuum bakeout temperature required for interrupter cleanliness and long life. The vacuum-melted alloy end cups and outer envelope are joined to the ceramic by a butt seal brazing method of proven strength and reliability. A Monel® bellows completes the vacuum enclosure, permitting the moving contact to travel its 1/2-in. stroke while maintaining envelope integrity.

The copper-alloy contact material, chosen for its anti-welding and high current-interrupting capabilities, is processed in specialized vacuum equipment. Extensive precautions are taken during manufacturing, including the use of clean-room facilities, to assure the production of reliable vacuum interrupters that are free of contamination from the atmosphere and handling.

Recloser operation

Tripping

When current flow exceeds the minimum trip value needed to actuate the programmed timing characteristics, the control battery energizes a trip solenoid in the recloser. This solenoid releases a latch, and a spring-loaded toggle assembly opens the recloser contacts.

Closing

Closing force, as well as the force to charge the opening springs, is supplied by a high-voltage closing solenoid connected phase to phase (Figure 6). When the recloser contacts are closed, the solenoid plunger is latched in the down position. The latch is tripped simultaneously with the release of the recloser-opening springs, and the solenoid plunger moves upward for a closing operation.

At the programmed reclosing time, the electronic control energizes a rotary solenoid in the recloser. Movement of the rotary solenoid allows a high-voltage contactor to close momentarily, connecting the closing solenoid to the line. The plunger is pulled into the solenoid, closing the recloser contacts and charging the opening springs. Plunger movement also opens the high-voltage contactor (Figure 7), deenergizing the closing solenoid. Closing operation of the recloser mechanism activates a switch (b contact) in the recloser, disconnecting the rotary solenoid from the electronic control.

The closing solenoid is designed for repeated-momentary rather than continuous operation. If a malfunction of the solenoid plunger or the closing-coil contactor results in the closing solenoid energizing for an extended period, closing-solenoid fuses within the recloser open the high-voltage circuit, protecting the closing solenoid from thermal damage.

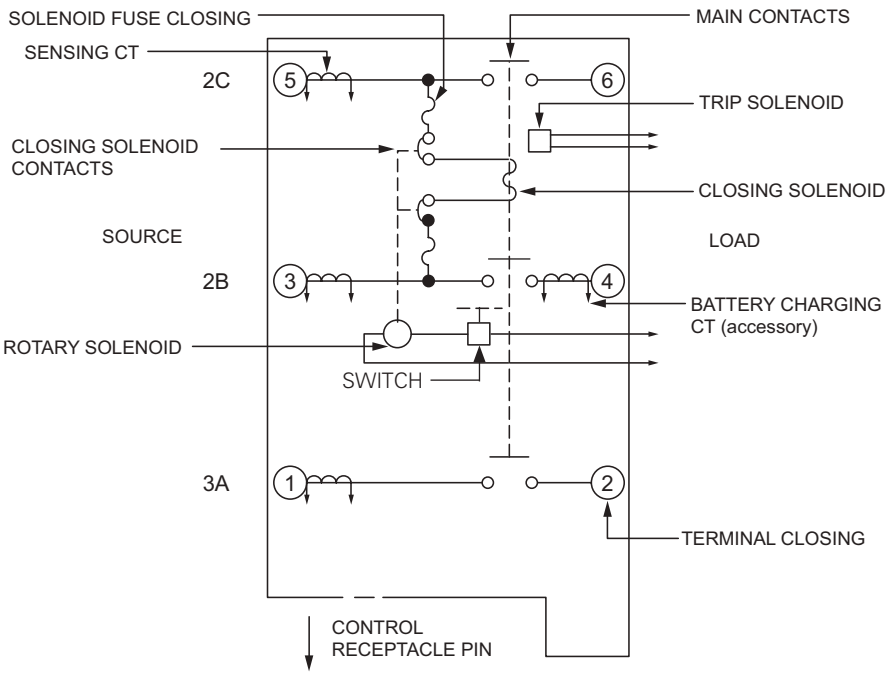


Figure 6. Phase-to-phase connection of high-voltage closing solenoid

Manual operation

The recloser can be manually tripped at any time by lowering the yellow manual operating handle located in the upper left hand corner of the front of the recloser tank (Figure 4). With the handle down, the control cannot close the recloser. Raising the handle permits closure, provided the connected and energized control is not in the lockout position. Similarly, the recloser can be operated from the manual control switch on the electronic control panel, provided the manual operating handle is up. A red flag adjacent to the manual operating handle provides contact position indication.

Current sensing

The recloser is provided with three 1000:1 sensing-current transformers, providing both phase and ground (zero sequence) currents. They are connected to the electronic control cabinet by means of a plug-in cable, which can be up to 125 ft. in length, thus permitting mounting of the control remote from the recloser.

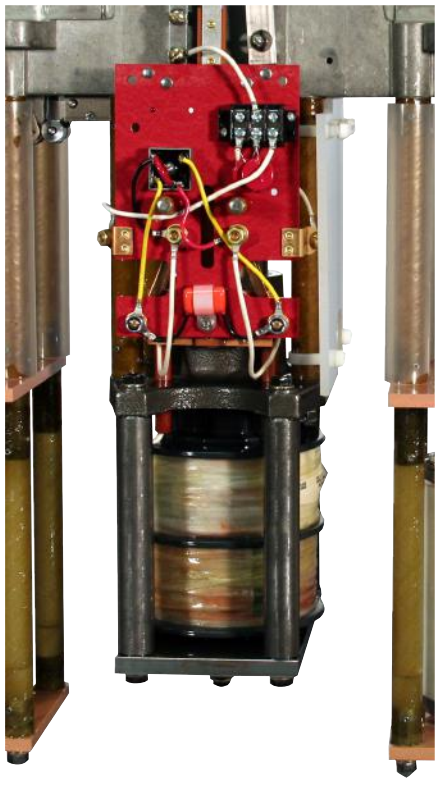


Figure 7. High-voltage closing solenoid contactor

Electronic control

Type PWE and PWVE reclosers are controlled by a Form 6 electronic recloser control. The control cabinet is mounted inside the pad-mount enclosure (see Figure 8 and Figure 9).

The Form 6 microprocessor-based recloser control incorporates microprocessor technology to provide enhanced versatility of application and ease of operation. It includes system-ready design, while also allowing for customized manual and programmed operations which can be standardized on one platform for distribution protection. The controller uses DNP 3, Modbus, IEC 60870-5-101, and 2179 resident protocols.

The control is equipped with directional functionality to maintain system coordination from multiple sources and circuit reconfiguration for each profile for phase, ground, and negative sequence protection. The intuitive programming and simplified setup dialog provides a simple, graphical method for programmable logic applications. Microsoft® Windows® Operating System-based ProView interface software is included along with detailed help screens for easy programming.

The control includes a Virtual Test Set feature to test protection logic prior to actual field exposure, a Graphical TCC Editor with improved ease of use and capabilities, accurate contact life prediction with Duty Cycle Monitor, and a time-tagged event recorder and front panel display of last 25 events in the sequence of events log. Multiple communication ports are available including: RS-232 serial port (standard), RS-485 (optional), three ethernet options to support DNP3 and the ProView software (fiber, wire, or combination), and serial fiber optic.

The control front panel provides live application display of all logic elements, voltages, currents, watts, and vars; summary of distribution system; and active control functions. Oscillographic display of current and voltage waveforms are also included. The IDEA Workbench can be used to customize hardware and status points, front-panel function keys, serial communication points, and LED status indicators.

Customized data collection using Data Profiler can also provide voltage, current, and power metering. The controller is a platform common to the Form 6 control and Edison Idea relay for standardized automation with extensive functionality.

Other features of the front panel include one-touch function keys, nested menu systems, effective troubleshooting, LCD display, LED status indicators, user-configurable inserts for customized applications and one-touch analysis keys to access control programming and monitoring features via the LCD display without the need for a PC connection.

Figure 8. Recloser control cabinet - door open

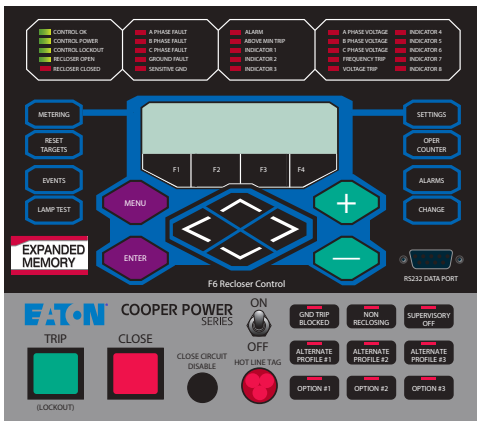


Figure 9. Form 6 microprocessor-based recloser control

Recloser accessories

Types PWE and PWVE reclosers can be supplemented with a number of accessories to provide added application flexibility. Accessories are available that modify the normal operating functions, increase operating versatility, and provide indicating functions. For each accessory installed on a particular recloser, a description plate is mounted on the information plate of the recloser.

Bushing-type, multi-ratio current transformers

Multi-ratio current transformers for operating meters or separate relays can be mounted on load-side bushings .

These current transformers have only one primary turn, the bushing rod. They are available with secondary windings that provide primary/secondary-current ratios of either 600:5 or 1200:5. Different ratios can be obtained by connection to appropriate taps on their secondary windings. The ratios obtainable from 600:5 and 1200:5 transformers are shown in Table 10.

Table 10. Bushing-type multi-ratio current transformer ratios and terminal connections

Ratio	Ratio	Terminals
600:5	1200:5	X1—X5
500:5	1000:5	X2—X5
450:5	900:5	X3—X5
400:5	800:5	X1—X4
300:5	600:5	X2—X4
250:5	500:5	X3—X4
200:5	400:5	X4—X5
150:5	300:5	X1—X3
100:5	200:5	X1—X2
50:5	100:5	X2—X3

For ease of connection and ratio selection, secondary taps are factory-wired to terminal blocks on the control panel. Wiring from meters or relays is routed into the enclosure by the customer and joined to two of the five terminals on each block to obtain the ratio desired. Two thumbscrews in each of the blocks, positioned to short and ground the current transformers for shipping, are then removed and repositioned to complete electrical connection of the device (see Figure 10).

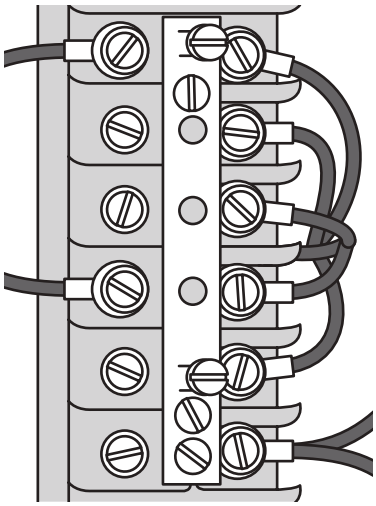


Figure 10. Terminal block for one multi-ratio bushing current transformer shown with thumbscrews in grounding bar positioned to short and ground CTs for shipping

Auxiliary switch

Remote indication of recloser contact position or switching of other devices can be accomplished with an auxiliary switch. A three-stage switch is mounted on the recloser frame (Figure 11). Each stage or section has two independent contacts a and/or b.

When the recloser's main contacts are open, the *a* contacts are also open and the *b* contacts are closed. Table 11 shows the recloser switch contact relationship.

Switch contacts are insulated for 600 V and have a continuous current rating of 10 A. The interrupting ratings of the auxiliary switch contacts are shown in Table 12.

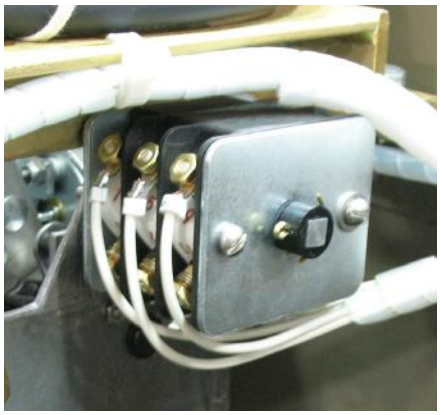


Figure 11. Three-stage auxiliary switch accessory

Table 11. Related recloser/switch contact positions

Recloser Contacts	Auxiliary Switch Contacts
closed	*a* are closed *b* are open
open	*a* are open *b* are closed

Table 12. Interrupting ratings of auxiliary switch

Volts	Inductive AC	Non-Inductive AC	Inductive DC	Non-Inductive DC
24	–	–	15.0	20.0
48	–	–	7.5	10.0
120	50.0	80.0	–	–
125	–	–	1.50	2.0
240	25.0	40.0	–	–
250	–	–	0.45	0.5

Low-voltage DC closing

With the substitution of a special DC closing solenoid and associated wiring, the recloser can be closed by an externally controlled low-voltage DC power source rather than from the primary high-voltage source. Low voltage is especially desirable in loop and load-transfer schemes when the recloser can be operated regardless of which side of the unit is energized. Current requirements for DC closing are 55 A at 125 Vdc, 30 A at 250 Vdc.

Low-voltage AC closing

With the addition of a modified closing contactor equipped with a full-wave diode bridge (Figure 12), the DC closing solenoid can be operated from a low-voltage AC source. Current requirements for AC closing are 50 A at 120 Vac, 34 A at 240 Vac.

Closing-coil contactor-and-transfer-switch

The closing-coil contactor-and-transfer-switch accessory allows the high-voltage closing solenoid to be energized from either side of the recloser. This accessory consists of a mechanically operated combination DPST closing contactor and DPDT transfer switch and is an alternative to the standard closing-solenoid contactor of the recloser. It mounts in the same position (Figure 13) and is operated in a similar manner. No external customer connections are required to operate the closing-coil contactor-and-transfer switch.

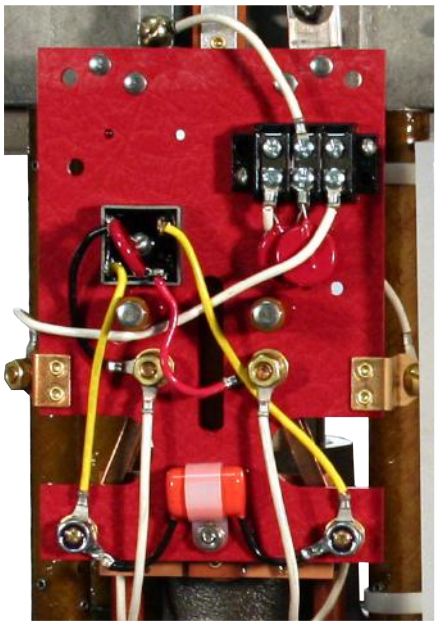


Figure 12. Low-voltage AC closing accessory

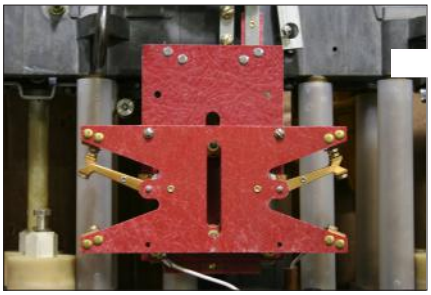


Figure 13. Closing solenoid coil contactor-and-transfer switch accessory is mounted in recloser mechanism in place of standard closing solenoid contactor

Ratings and specifications / weights and oil capacity

Table 13. Voltage Ratings

Voltage	Type PWE	Type PWVE
Nominal voltage class (kV rms)	14.4	24.9
Rated max voltage (kV rms)	15.5	27.0
Rated impulse withstand voltage (BIL; kV crest)	95	125
Low-frequency withstand voltage (1 min; kV rms)	35	40
DC withstand voltage (15 min; kV)	53	78
Partial discharge level (corona extinction at 20 pC; kV)	11	19

Table 14. Current Ratings

Voltage	Type PWE	Type PWVE
Rated continuous current (A)	560	560
Max interrupting current at rated max voltage (sym A)	12000	12000
Max momentary current (asym A)	20000	20000
Rated magnetizing interrupting current (A)	19.6	19.6
Rated cable-charging current (A)	10	25

Table 15. Interrupting Current

Minimum-Trip Current (A)	Interrupting Current (symmetrical A)	
	Phase	Ground
25	–	3000
35	–	4200
50	–	6000
70	–	8400
100	3000	12000
120	3600	12000
140	4200	12000
170	5100	12000
200	6000	12000
240	7200	12000
280	840	12000
300	9000	–
340	10200	12000
400	12000	12000
480	12000	12000
560	12000	12000
600	12000	12000
680	12000	12000
800	12000	12000
960	12000	12000
1120	12000	12000

Table 16. Duty Cycle

% of Interrupting Rating	X/R Ratio	Number of Operations	
		Type PWE	Type PWVE
15–20	4	88	44
45–55	8	112	56
90–100	12	32	16
	Totals	232	116

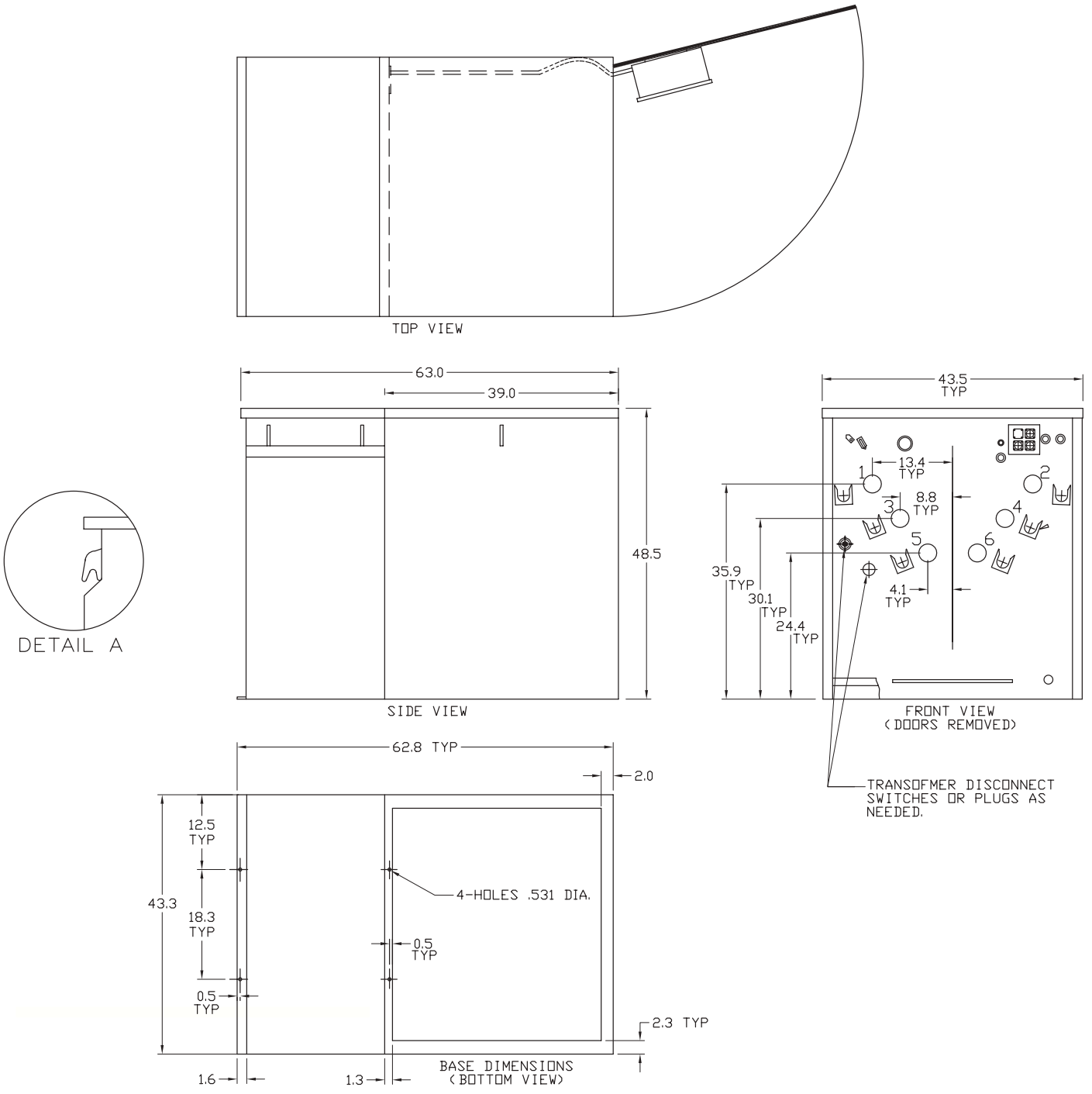
Table 17. Mechanical Specifications

Mechanical Characteristic	Specification
Mechanical life (minimum operations)	2500
Operating temperatures limits (°C)	-30 to +50
Close mechanism	Solenoid operated
Open mechanism	Spring operated
Contact close time (cycles)	0.75
Contact open time (cycles)	0.50
Interrupting time (cycles)	1.50
Allowable contact erosion (in.)	0.125

Table 18. Weights and Oil Capacity

Type	Weight With Oil (lb) 62-1/4. in. Enclosure	Oil Capacity (gal)
PWE and PWVE	1520	95

Dimensional information



Figurte 14. Dimensions of PWE and PWVE reclosers

This page is intentionally left blank.

This page is intentionally left blank.

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Power Systems Division
2300 Badger Drive
Waukesha, WI 53188
United States
Eaton.com/cooperpowerseries

Printed in USA
Publication No. CA285006EN
August 2017

For Eaton's Cooper Power series product information, call 1-877-277-4636 or visit: www.eaton.com/cooperpowerseries.

Powering Business Worldwide