

# Versa-Tech<sup>®</sup> I Versa-Tech<sup>®</sup> LT Recloser



Catalog 10E October 2015

## Versa-Tech® Recloser exclusive features:

- All systems up to 29.3 kV, 125 kV LIW (BIL)
- User-Settable Minimum Trip (VTLT - 30 to 200 Amp; VTI - 30 to 800 Amp)
- Beacon indicates lockout condition
- 100 / 400 Amp Cont. (VTLT / VTI) & 8,000 Amp Interrupting
- Records fault history for later review
- Password-protected programming
- Self-powered
- Light weight, easy to handle and install
- Minimal maintenance & insulation concerns
- Radio-programmable in-service option

## Benefits

- Compact size
- Light weight allows for ease of handling/installation
- Environmentally friendly solution - no oil
- Reduced dielectric issues
- No auxiliary control power requirement
- No grounding • Increased immunity to lightning
- Radio Programming • Lockout beacon
- Load Monitoring: Real time feedback of line current through the user interface
- Load Profile: Historical load usage, including peak load every hour

## Description

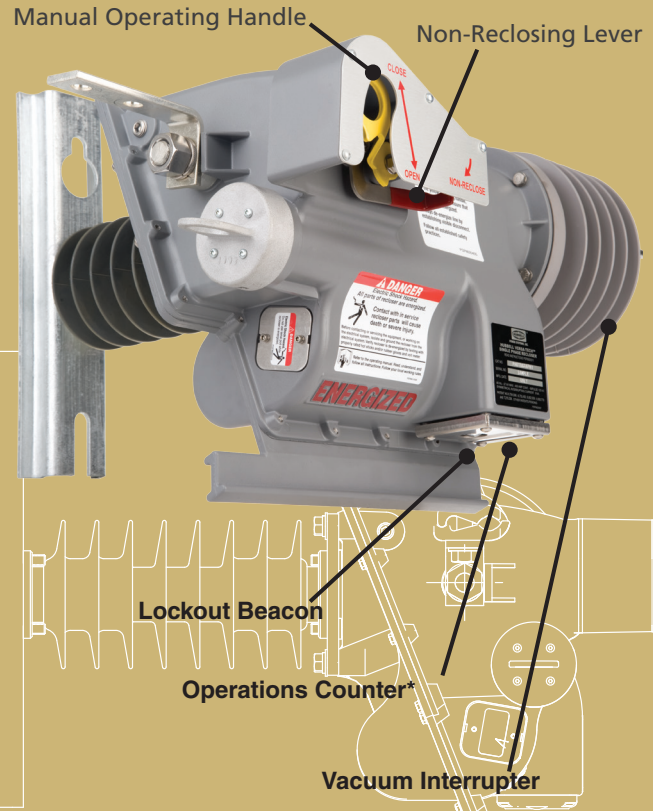
The Versa-Tech® Recloser is a unique design. The interrupter, drive mechanism, control, and housing are raised to the system potential. The entire assembly is then insulated from ground using a standard polymer post insulator. This compact, simplified design eliminates the potential for an insulation breakdown failure.

## Magnetic/vacuum-interruption technology

Fault interruption occurs in the recloser's vacuum interrupter. The vacuum interrupter's state-of-the-art contacts utilize axial magnetic fields to interrupt in diffuse mode for maximum interrupter life. The vacuum interrupter is supported by an insulating support housing with bonded epoxy over-molding for maximum weather resistance.

The drive for the vacuum interrupter is provided by a mechanism with a magnetic actuator. The actuator's rare-earth neodymium magnet provides the latching and holding force for the vacuum interrupter in the closed position. A spring provides the pressure to hold the vacuum interrupter in the open position. Together, the rare-earth magnet and the spring arrangement allow the mechanism to be stable in the open or closed position without the need for external power. To open the vacuum interrupter, a coil on the magnetic actuator is pulsed in one direction. To close, the same coil is pulsed in the other direction. Energy to open and close the recloser is provided by a set of capacitors.

## Components



\*Applicable to VTI only. Operations counter is not present on the VTLT.

## Microprocessor electronic control

The control for the recloser is provided by a microprocessor-based electronic circuit. The control's design allows complete flexibility and user choice of minimum trip, time-current curves and sequencing parameters. User access to all parameters is provided through an RS-232 serial connection. Current sensing for the control occurs through a 1000:1 current transformer.

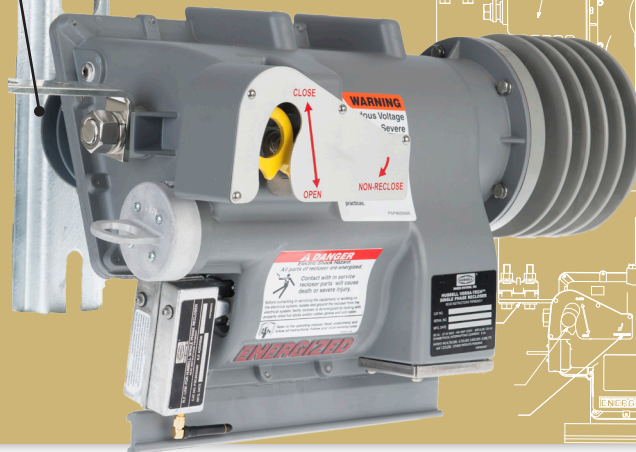
## Self-powered operation

No external transformer power for the recloser is required. Power for the control and the mechanism is converted from fault or load current using two power current transformers. The open and close capacitors that drive the recloser are charged by the load or fault current through the power current transformers. Using this approach the recloser will continue to open and close as necessary without the need for external power or even the hot-stick replaceable lithium battery pack. The low self-discharge lithium batteries are required only for closing the recloser after lockout or manual open, flashing the lockout beacon, and powering the radio if load current is less than 10A.

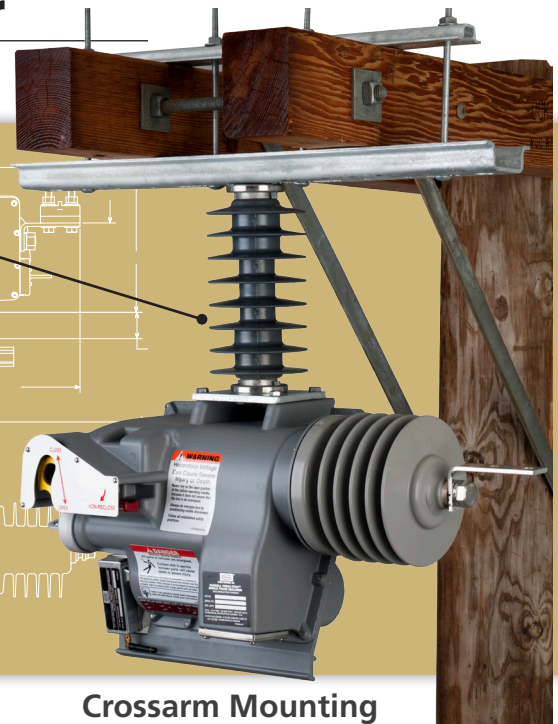
# Versa-Tech® Single-Phase Recloser

## Installation Alternatives

Polymer Standoff Insulator



**Pole/Structure Face Mounting**



**Crossarm Mounting**

### Ratings and Specifications

	VTI	VTLT
Rated Maximum Voltage.....	29.3kV	29.3kV
Rated Continuous Current.....	400A	100A
Fault Make Capacity.....	8kA	4kA
Fault Break Capacity.....	8kA	4kA
Mechanical Operations.....	30,000	10,000
3 Second Withstand Current.....	8kA	4kA
Transformer Magnetizing Current.....	14A	14A
Cable Charging Current.....	25A	25A
Line Charging Current.....	5A	5A
Lightning Impulse Withstand.....	125kV	125kV
60Hz, 1-Minute Withstand Voltage.....	60kV	60kV
Maximum Terminal Pad Load kg (pounds).....	14 (30)	14 (30)
Operating Temperature.....	-40°C to 60°C	-40°C to 60°C
Weight kg (pounds).....	21 (46)	21 (46)

### Automatic operation

In the closed position, the Versa-Tech® Recloser, operates automatically per the user-programmed settings.

### Manual operating handle

The Manual Operating Handle allows manual operation of the recloser with a hotstick.

### Non-reclosing lever

The Non-Reclosing Lever is shown above in its normal (or up) position. When this handle is rotated to the down position, the recloser will trip using TCC1 and lockout on any current above minimum trip. If the Non-Reclose Handle is rotated to the down position twice (up-down-up-down), then the recloser is placed in Hot Line Tag mode. The Hot Line Tag mode is an instantaneous trip mode. When the recloser locks out on Hot Line Tag, the solenoid can be closed only after the Hot Line Tag mode is disabled. This can be done by first rotating the Non-Reclose handle back to its original position (up) and then by pushing the Manual Handle back to its up position.



**Operations Counter\***

**Lockout Beacon**

\*Applicable to VTI only. External operations counter is not present on the VTLT.

### Lockout beacon

The Lockout Beacon is a unique feature to aid the utility lineman in identifying a locked out recloser. This high-brightness, sunlight-visible amber LED will flash once every 3 seconds when the recloser has sequenced to lockout. The beacon will continue to flash every 3 seconds until the lineman closes the recloser or 4 hours have passed. After 4 hours, the flashing beacon will automatically shut off. Powered by the recloser's lithium batteries, the beacon's duty cycle is set to have a negligible effect on battery life.

### Operations counter\*

The Operations Counter is an electromechanical counter which records the number of open operations, both manual and automatic, initiated by the control.

## Zero service requirements

The Versa-Tech® Recloser has been designed for a minimum mechanical life of 10,000 / 30,000 (VTLT / VTI) operations. No routine maintenance is required (other than occasional firmware upgrade and battery replacement).

## Battery replacement

Battery power is used for these functions only:

- To close the recloser after installation or lockout
- The radio if load current is less than 10 amps
- The flashing lockout beacon.

The batteries are made of a very stable lithium chemistry, which is designed with a shelf life of 10 years. Hubbell Power Systems recommends that users replace the batteries on an 8 year cycle (for Versa-Tech I Reclosers with FW 3.xx and Versa-Tech LT Reclosers).

*Note for Versa-Tech I Reclosers with FW 4.xx only: Versa-Tech I FW 4.xx was developed for SCADA compatibility. It does not incorporate low power optimization since it requires more diagnostics and data collection. In cases of lightly loaded lines, battery power is utilized to perform these functions resulting in decreased battery life.*

The battery bayonet is designed to be replaced using a hot stick while the recloser is in service. The battery bayonet utilizes a twist lock design. It is easily removed by pushing in slightly and turning.

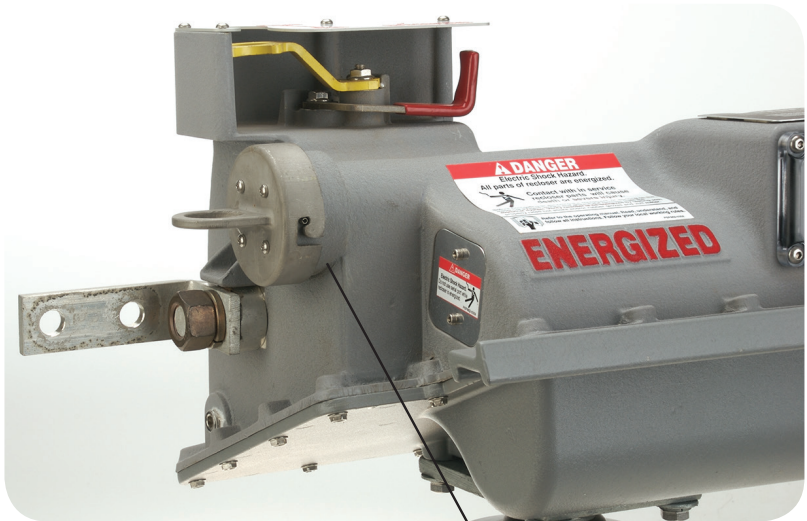


## Battery Pack Replacement Kit

The option to replace the Lithium battery pack inside Versa-Tech battery bayonet is available. Ordering Part No. PSC8620397

## Customer-supplied requirements

- Personal Computer with Microsoft® Windows® XP or later operating system, a USB drive and a RS-232 serial port if a direct connection is desired, PC wireless card for connection through WiFi remote radio, local Digi/XBee or SiFLEX radio with USB Type B serial cable for connection through the Digi/XBee or SiFLEX remote radio.
- Straight-through DB9 Male/Female serial cable to interface from the PC to the recloser via the serial port, after removing its cover shown as shown.

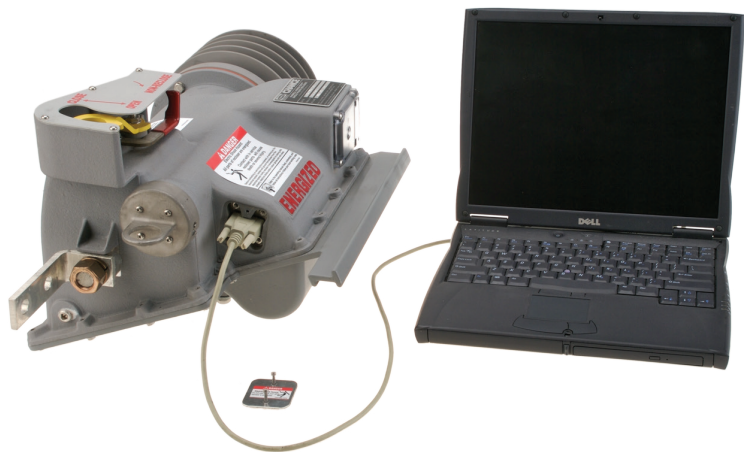


Battery bayonet in the recloser



Battery bayonet partially removed from recloser

Serial Port Cover



Programming recloser with serial port connections

## Easy-to-program controls

The Versa-Tech™ Recloser solid-state circuitry provides for flexible user-programmable control of current sensing, timing, and all other control functions. The recloser is shipped with generic settings and must be programmed prior to installation with settings required for proper coordination with the rest of the distribution circuit.

## Software installation

Recloser Programming software must be installed on the computer prior to use. Installation software is provided with each recloser on a USB drive or can be downloaded from [www.hubbellpowersystems.com](http://www.hubbellpowersystems.com).



- Automatic scan of communication ports
- One double-click radio connect
- One-click report generation

- Status indicators on every screen
- Recloser serial number
- Communication indicators
- Bottle status indicator
- Local and remote radio display

- Non-reclose and Hot Line Tag status indication
- Indication of remote radios in range

## User-friendly programmable software settings

### Security

The recloser comes with password security on its settings. When changing the settings with the Program Settings button, a correct password must be given.

### Minimum trip value

The Minimum Trip Value is the minimum current sensed that will cause the Recloser to trip. This current is user configurable from 30A to 200A (VTLT) and 30A to 800A (VTI) in 10A increments.

### Sequence coordination

The sequence coordination feature, if enabled, will prevent unnecessary operations of the recloser when used in a series arrangement upstream from other fault interrupting devices. Shot selectable Sequence Coordination and Lockout on Sequence Coordination option is also available (with SCADA FW 4.xx).

### Operations to lockout

The control can be set to 1, 2, 3, or 4 operations before the recloser goes to lockout.

### Manual closing delay time

The time from when the manual handle is activated until the recloser begins closing the circuit can be programmed from 0 to 30 seconds.

### Time-current curve and time-current curve modifiers selection

The control can be set to utilize two different time current curves TCC1 and TCC2. TCC1 and TCC2 can be set separately to use one of 15 different time current curves. See Reference Bulletin TD10005E through TD100034E. Each of the 4 possible operations can

be set to use either TCC1 or TCC2. Out of the 15 TCC curves, 11 of the curves come in with modifiers for greater coordination flexibility. By selecting Mod1, Mod2 or Mod3, the shape of the time-current curve can be modified as shown in Reference Bulletin TD10005E through TD100026E. Four IEEE Inverse curves have been added to the existing curves as shown in Reference Bulletin from TD10027E to TD10034E.

### Minimum response time

Minimum response time is used to achieve coordination between fault interrupting devices where fault levels would cause two devices in series to both trip. When minimum response is enabled, tripping is inhibited until the minimum response time programmed is less than or equal to the fault current time. The minimum response time is programmable from 0 to 250 milliseconds in 1 millisecond steps.

### Reclose time

Reclose Time is the amount of time from when the recloser interrupts the over-current until the recloser attempts to close the circuit again. Each of the three possible reclose intervals is separately programmable from 0.25 to 60 seconds in 0.05 second increments.

### Reset time

Reset time is the amount of time from the last reclose until the present count of operations completed is reset to zero and it is also defined as the amount of time from the last momentary over current event (current above minimum trip) the recloser sees until the timer

expires. When the recloser goes to lockout, the count is also reset to zero. Reset time is programmable from 1 to 240 seconds in 1-second increments.

### Cold load time

During this programmed interval, the control will be in one operation to lockout mode and overcurrent timing will use TCC2. Cold Load Time is programmable from 0 to 300 seconds in 1 second increments.

### Cold load pick up

The range of the minimum trip can be elevated by multiplying the minimum trip by the cold load pick up factor during the Cold Load Time. The Cold Load Pickup factor ranges from 1-20 and is programmable in steps of 1. For example: A recloser programmed at a minimum trip of 50A, cold load time of 100 sec with the cold load pick up of 2 has a minimum trip range from 1A-100A during the 100sec cold load time when the unit has locked out (or manually opened) and closed back in.

### Record manual close

When enabled, this feature causes the recloser to store in the Event History the time and date of manual closes as well as over-current operations.

### Time stamp

The recloser has a built in time stamp circuit which records the time and date following each recloser operation.

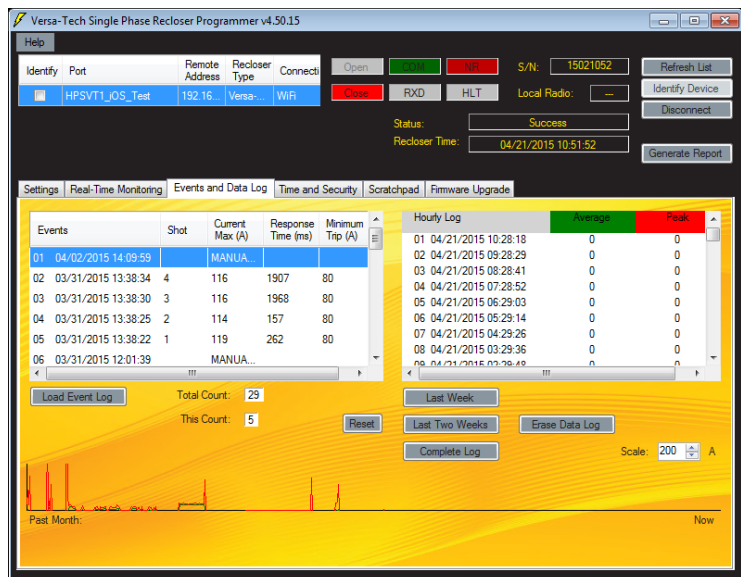
- Real time current monitoring
- Real time feedback of load
- Last hour average load
- Peak



- Log
- Hourly log
- Average load
- Peak load
- 45 days of data storage
- Download last week, last 2 weeks, or complete load profile log

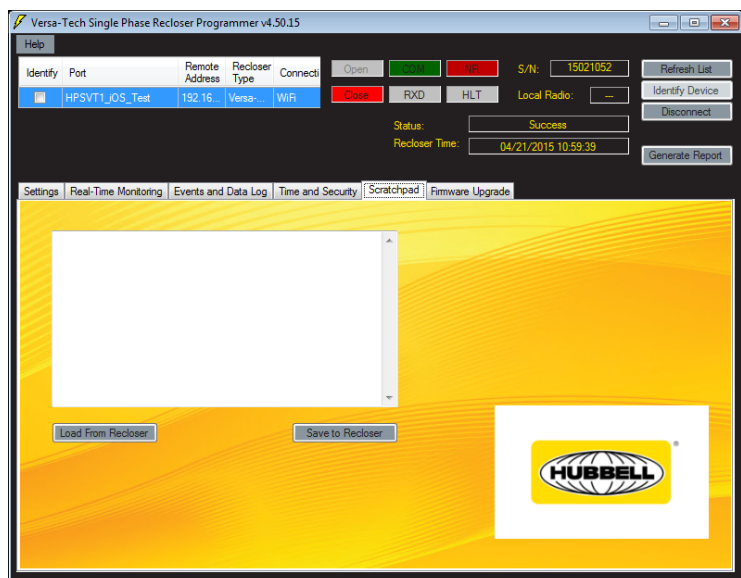
### Event history

The recloser records the operations count, control response time and the maximum current half cycle after each over-current operation. These values, as well as the time and date for the operation, are stored in a buffer which can be read from the control using the recloser programmer software. The buffer is large enough to store the last 80 over-current operations. After each over-current interruption, the oldest record will be discarded and the most recent record will be stored at the top of the buffer.



### Scratchpad memory

The recloser has available a 256-character scratchpad non-volatile memory which can be used to store information in text form. The scratchpad can be accessed through the recloser programmer software.



## Radio communications

The Versa-Tech® Recloser can be fitted with an optional radio which will allow settings, diagnostics and scratchpad to be viewed remotely while the unit is in service. The radios will also allow settings, timestamp and scratchpad to be changed while the recloser remains in service.

### Remote radio

The remote radio is designed to be adapted to the recloser serial port. Access to the serial port is provided by removing the serial port cover. Three remote radio options are available for the Versa-Tech® I and Versa-Tech® LT Recloser: Digi/XBee Standard Performance, SiFLEX High Performance, and WiFi.

### Digi/XBee and SiFLEX radio operation

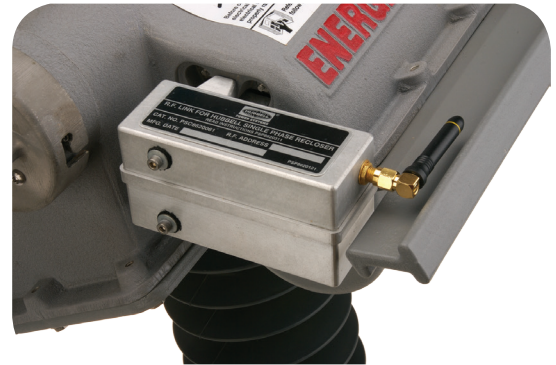
The radios communicate with each other on a 900MHz channel which utilizes frequency hopping to minimize interference from other radio frequency sources. The radios use a two-part addressing scheme to help ensure that messages from only authorized sources are passed to a recloser.

First, all Versa-Tech® Recloser local and remote radios have a unique user transparent address which goes out with each communication. The recloser local radio will accept messages only from a remote radio with the same address. This helps prevent other 900MHz radios from making unauthorized communications with Versa-Tech® Reclosers.

Second, each remote radio is programmed with a unique fixed radio communications



Remote Radio



### Remote radio connects to serial port of recloser

address. This address allows users to differentiate between multiple reclosers all within a 500-foot transmit/receive range. The remote radio will discard any message that does not include its unique radio communications address. The local radio has provisions through the recloser programmer software which permits selecting any recloser's remote radio communications address.

### WiFi radio operation

The 2.4 GHz WiFi Remote Radio can be used to communicate with a Versa-Tech I or Versa-Tech LT Recloser without the need for a local radio. The WiFi radio has the capability to communicate up to 100 feet from the recloser. Wireless communication can be established to the Versa-Tech I (running FW 3.xx or later) or Versa-Tech LT Recloser through the internal wireless card on a PC and the Versa-Tech Programmer software (User Interface v4.50.15 or higher). Wireless communication can also be established to the Versa-Tech I and Versa-Tech LT Recloser using the Versa-Tech Programmer iPad app (version 3.1 or later).

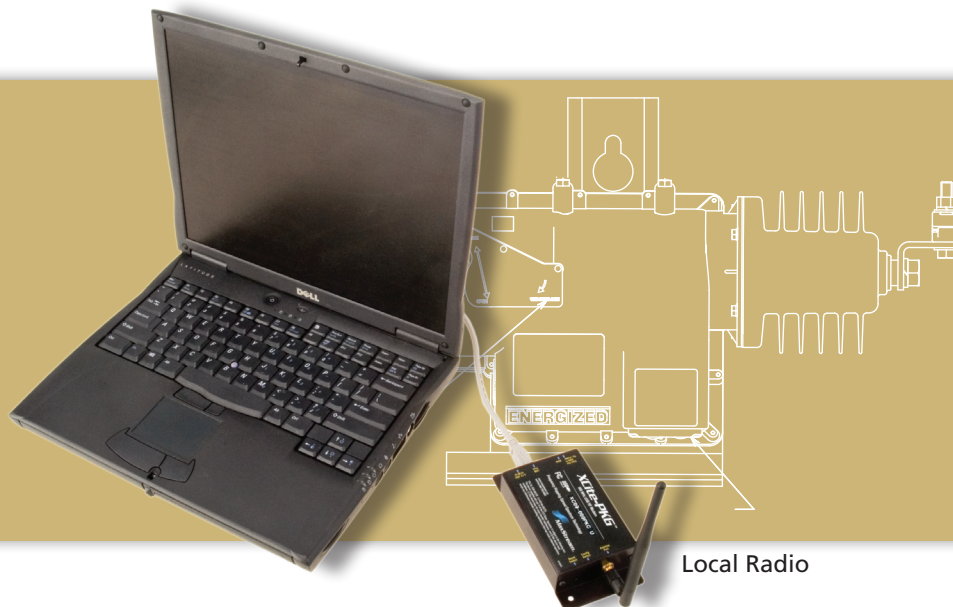


WiFi Remote Radio

### Local Radio

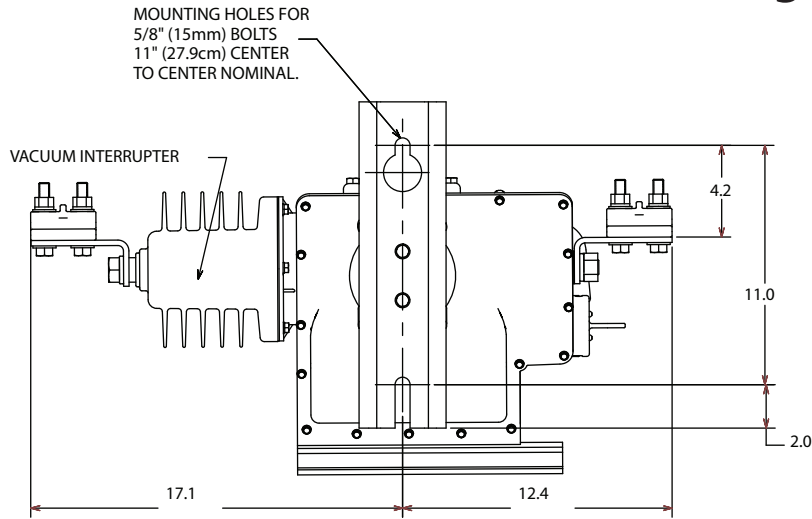
A local radio is needed when using the Digi/XBee Standard Performance or SiFLEX High Performance remote radios.

The local radio is controlled and powered by connecting a USB cable between the module and a personal computer as shown below. Communication with the local radio is accomplished through the recloser programmer software provided with the recloser.

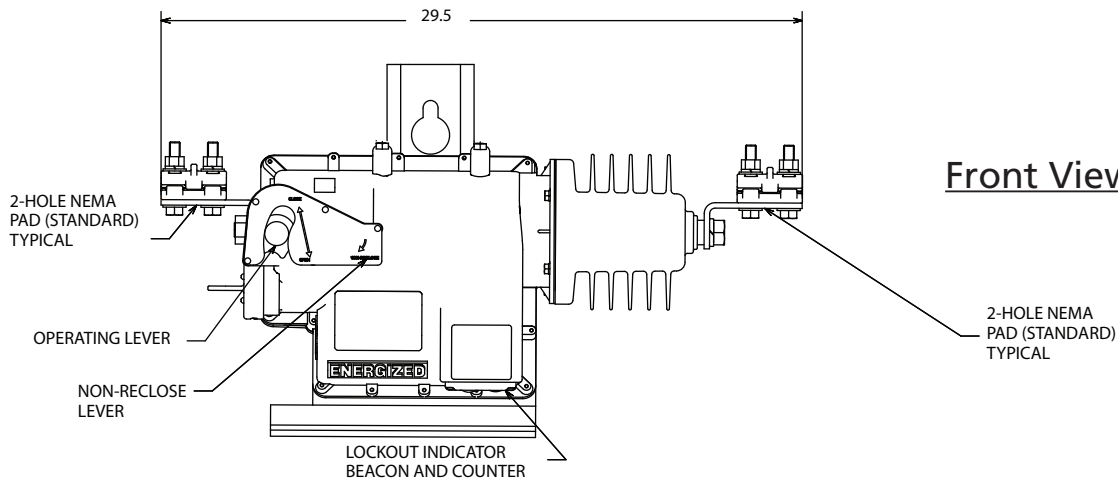


Local Radio

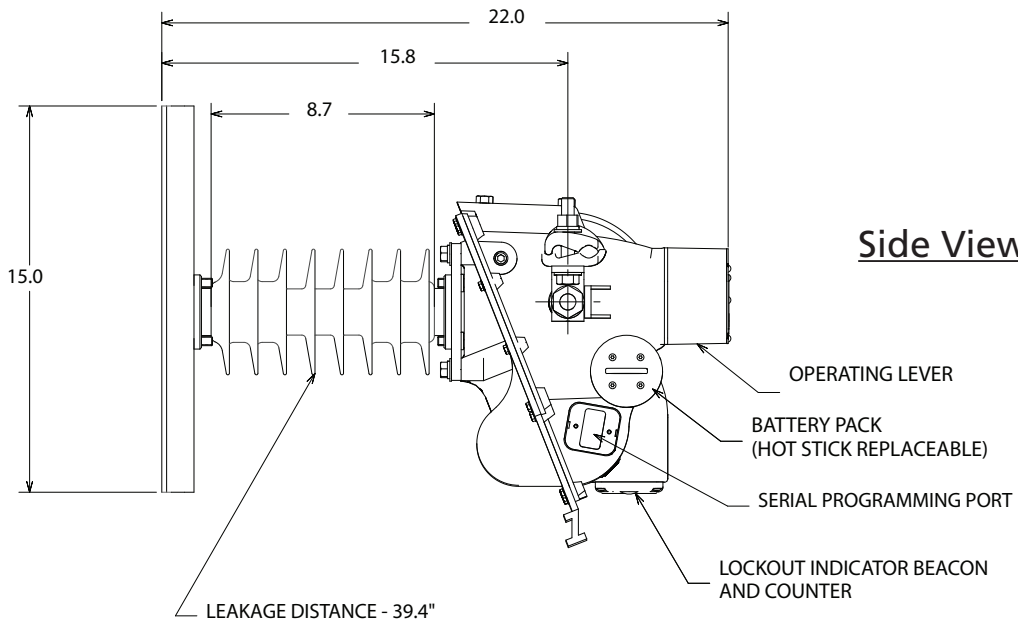
# Dimensions - Pole/Structure mounting



Back View



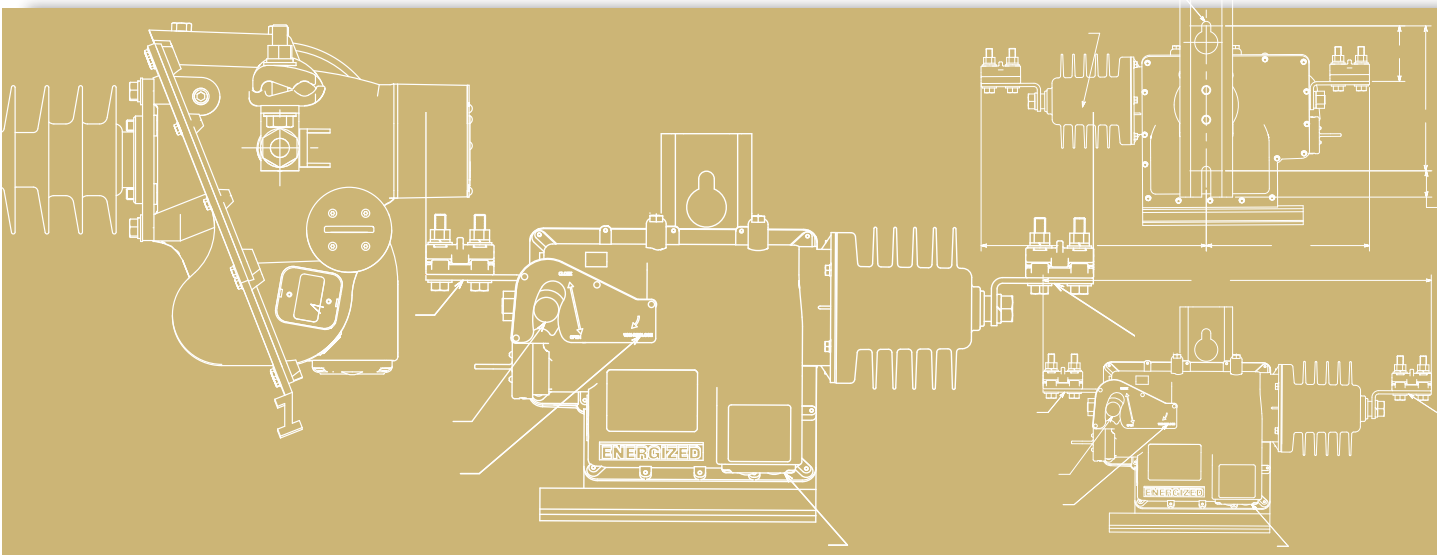
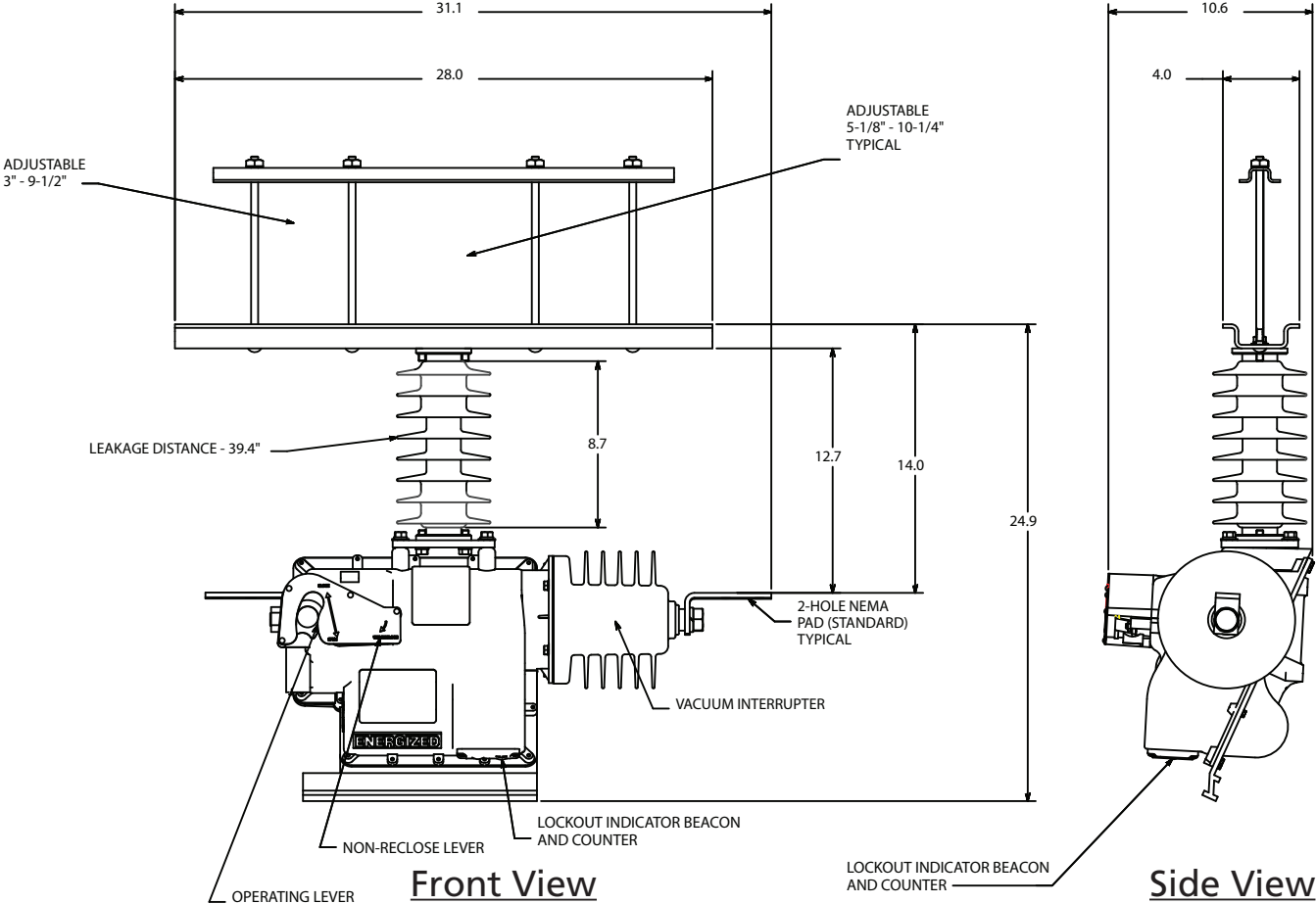
Front View



Side View



# Dimensions - Crossarm mounting



# HUBBELL®

## Power Systems

### Catalog Numbering System

	Position							
To build your Versa-Tech Recloser, add features from the matrix to this base number	1	2	3	4	5	6	7	8
<b>Catalog No. PSC86</b>	2	X	1	X	X	X	X	1
Voltage Rating 27kV								
Versa-Tech I with FW 3.xx	1							
Versa-Tech II with WiFi <sup>1</sup>	2							
Versa-Tech II with SiFLEX Radio <sup>1</sup>	3							
Versa-Tech LT	4							
Versa-Tech I with FW 4.xx	5							
Minimum Fault Trip 30A		1						
Pole/Structure Mount			1					
Crossarm Mount				2				
Pole with Ground Connector					3			
No Connectors					1			
PG (Parallel Groove) Clamps (2 total)					2			
Captive Hardware					3			
Single Tap Lug					4			
Double Tap Lug					5			
No Radio <sup>2</sup>						1		
Standard Performance Remote Digi Radio <sup>3</sup>						2		
High Performance SiFLEX Remote Radio <sup>3</sup>						3		
WiFi Module <sup>3</sup>						4		
XBee Radio <sup>3</sup>						5		
Cellular Modem - GSM <sup>4</sup>						6		
Cellular Modem - CDMA <sup>4</sup>						7		
Pole Plaques (Additional) <sup>5</sup>								
Reserved								1

1. Unlike the Versa-Tech I and Versa-Tech LT, Versa-Tech II WiFi and SiFLEX Radios are internal to the recloser.
2. "No Radio" applies to Versa-Tech I, Versa-Tech II and Versa-Tech LT. Versa-Tech I and Versa-Tech LT radios are external to the recloser, so choosing the "No Radio" option means that either communication will be done by a direct serial connection or that the customer already has a Hubbell Remote Radio. Versa-Tech II comes with either an internal WiFi or internal SiFLEX Radio as designated by Position 2 above. Choosing the "No Radio" option for VTII means that no cellular modem is needed.
3. Versa-Tech I and Versa-Tech LT can be ordered with either a Digi, SiFLEX, WiFi, or XBee external radios. These options do not apply to Versa-Tech II.
4. Cellular Modems can only be ordered for Versa-Tech II Reclosers.
5. The number in Position 7 is the number of pole plaques in addition to the one included with each recloser (Ex. 3 is 3 more for a total of 4). If no additional pole plaques are needed then put "0" in Position 7.

*Note: For information on the Versa-Tech II Single-Phase Recloser, please refer to Catalog 10EE on the Hubbell Power Systems website.*

### Instruction Manual

Included with each unit

Step-by-step instructions are included with each Versa-Tech® Recloser. The detailed manual describes and illustrates all pertinent information from unpacking and installation procedures to software troubleshooting.



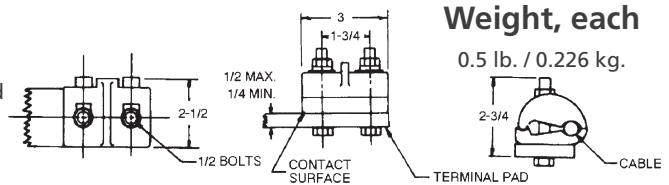
### Non-Reclose Hookstick Adapter Kit

Included with each Versa Tech I & LT Recloser. This adapter can be attached to the NR lever to allow for easier operation with a hookstick.



### Parallel Groove Clamp Accessory Ordering Information

Available as a separate line item, Catalog No. ATC1343, fortified cadmium-plated aluminum parallel groove clamp, is furnished with galvanized steel bolts and nuts and will accept #2 through 500 kcmil aluminum or copper conductor.



### Weight, each

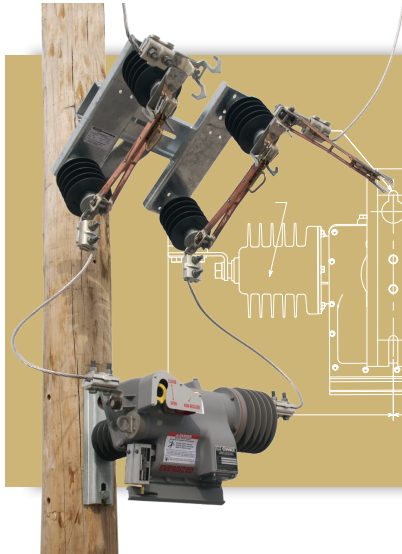
0.5 lb. / 0.226 kg.

### Replacement Items

Catalog No.	Description	Weight (lb./kg.)
PSC8620064	Replacement Battery	1.79 / 0.810
PSC8620061	Replacement Standard Performance Digi Remote Radio	0.84 / 0.380
PSC8620062	Local Std. Performance Digi Radio	1.25 / 0.565
PSC8620073	Replacement High Performance SiFlex Remote Radio	0.84/380
PSC8620069	Local High Performance SiFlex Radio	1.25 / 0.57
PSC8620066	Pole Mount Hardware	5.4 / 2.45
PSC8620067	Underhung Hardware	12.5 / 5.67
PSC8620397	Battery Pack Replacement Kit	0.395 / 0.179
PSC8620253	Non-Reclose Hookstick Adapter Kit	0.085 / 0.038
PSC8620084	WiFi Remote Radio	0.325 / 0.147

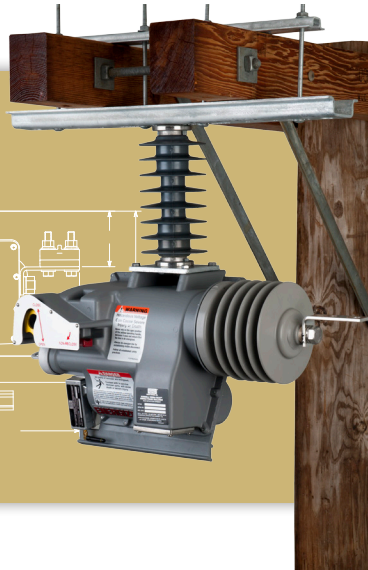


## Typical Applications

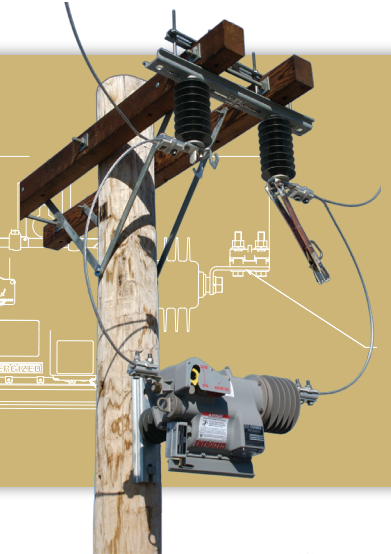


**3-Pull Bypass Switch Arrangement**

Type BP3 Switch shown. For ratings, specifications and ordering information, see Catalog Section 14B.

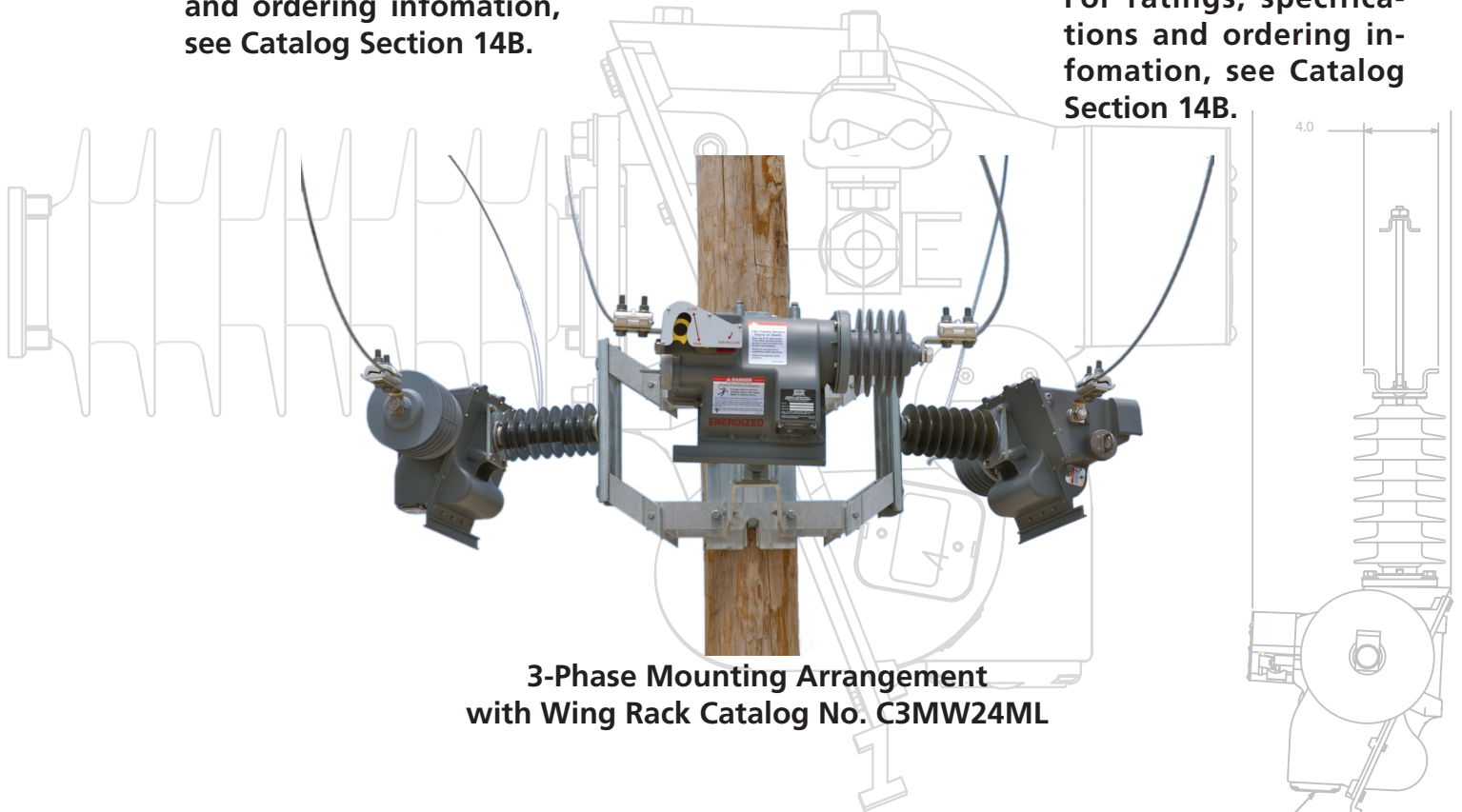


**Crossarm Mounting**



**Single Bypass Switch Arrangement**

Type M3 Distribution Class Switch shown. For ratings, specifications and ordering information, see Catalog Section 14B.



**3-Phase Mounting Arrangement with Wing Rack Catalog No. C3MW24ML**

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Power Systems

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