

ZX32 Series

Medium Voltage Distribution

Catalog 2024
ZX32 Series Three-Phase Recloser
with Controller



PREFACE

The information provided in this document includes general instructions and/or technical features.

The performance characteristics of the products included in this article.

This document is not intended as a substitute, nor is it used to determine the suitability or reliability of these products for specific users application.

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About the Book

At a Glance

Document Scope

This document promotes or highlights the features of the ZX32 Series recloser ranges with FTU-BC561 Controller range. It also describes a brief overview of the technical specifications of the ZX32 Series recloser range, the FTU-BC561 Controller.

Validity Note

This document is valid for ZX32 Series remotely controlled and monitored automatic circuit recloser (ACR) which consists of a ZX32 Series automatic circuit recloser (ACR) combined with an FTU-BC561 Controller (FTU-BC561).

Documents

Title of Documentation	Reference Number
ZX32 Series Installation Manual	Revision 1
FTU-BC561 Controller Operational Manual	Revision 1

You can download these technical publications and other technical information from our website at: www.JuliVCB.com

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Chapter 1 Introduction

What Is in This Chapter?

This chapter contains the following topics

Topic	Page
Executive Summary	
Introduction and Benefits	
Applications	

Executive Summary

In the past, distribution equipment such as reclosers have been purchased only to support load growth. Today your customers and the electricity consumers, are demanding reduced outages and lower tariffs. At Juli Electric, we are continually working to provide the advanced equipment needed for tomorrow's competitive electricity distribution system.

By using our technologically advanced equipment, operating costs are reduced and capital works can be deferred through better management of existing plant. In addition, outages causing lost revenue is reduced.

In addition to automatic circuit reclosers, the Juli Electric family of switchgear includes remotely controlled and monitored pole-mounted load break switches and sectionalisers, as well as remote control and monitoring software.

The Juli Electric Switchgear and controller product family is a complete solution for Distribution System Automation.

Introduction and Benefits

Overview

The ZX32 Series solid dielectric Automatic Circuit Recloser (ACR) represents Juli Electric commitment to improved products and ongoing product development. Providing the features of a traditional recloser, plus the benefits of up-to-date design optimized for automation, remote control and monitoring, now or in the future.

The ZX32 Series development was driven by customer demand for improved return on capital investment in the distribution network. After careful evaluation of customers' needs, the ZX32 Series was developed to achieve performance using technology in solid dielectrics, vacuum interruption and microelectronics.

Benefits

Reduced Purchase Costs

- No requirement for additional RTU, power supplies, batteries, or enclosures. The Remote Terminal Unit (RTU) and a range of communication ports are included in the standard equipment.

Reduced Installation Costs

- Simple Commissioning: Configuration of the unit is from the Software or the Operator Interface (O.I.).
- The key components required for installation are included.
- Pole mounting brackets are provided. An optional Voltage Transformer (VT) for auxiliary supply is available.
- Juli Electric ACRs are suitable for low-cost feeder circuit breakers in outdoor primary substations. In this application, connection into the substation control system is simple and low cost.

Reduced Operating Costs

- Reduce Equipment Damage: The integral protection relay provides fast isolation of any event.
- The recloser monitors line current and voltage without the need for additional measurement devices. This data can then be used for forward planning and optimization of existing feeders.
- Long lifetime, low maintenance equipment reduces lifetime cost.

DSA/SCADA Compatibility

When used with a compatible Distribution System Automation (DSA) or SCADA system, Juli Electric ACRs support remote control and monitoring to provide the following advantages

- Reduced Travel Time for Line Crews: Information on events current and recloser status values transmitted to system control allows fast location of the by affected line section.
- This same information allows informed remote switching, reducing the affected area and quickly restoring supply.
- ACRs can be configured and settings managed from system control, without technicians having to visit each individual recloser in the field, with a consequent reduction in traveling time and improved system integrity.

Applications

Smart Grid Ready

With the increasing push for advanced monitoring, reduction of outages and the need to facilitate two - way communications between supply and the distribution network, the ZX32 Series solid dielectric recloser is ready to be integrated into your Smart Grid solution.

Loop Automation

Restoring supply to your customers in time is the focus of Recloser Solutions' Loop Automation Scheme.

The Loop Automation Scheme reconfigures protection settings, sectionalises by events, minimizes affected areas, and restores network supply without the need for communications or operator intervention, using standard recloser features.

A network affected by an outage is automatically reconfigured to provide power to the unaffected area when an additional supply is available. Using a combination of Feeder, Mid-Point and Tie Reclosers to protect, sectionalise by events and minimize affected areas. Loop Automation is a Distribution System Automation Scheme designed to restore supply to customers in time.

Automatic Changeover (ACO)

The Automatic Changeover (ACO) system uses primary & alternative supplies, master & slave reclosers and fast communications so the supply is available for a load in the event of a power outage.

Using a number of different set-ups, including Break-Before-Make and Make-Before-Break, allows the system to be configured to the specifications required for the load. The system can even be set up for one-way or two-way switching so the power is available to your systems.

Operation as a Sectionaliser

Reclosers and sectionalisers work together to further improve feeder reliability. Using a separate RL-Series LBS/ Sectionaliser , as part of a feeder automation network, detects passage event and automatically isolates sections events of a network in conjunction with upstream recloser operation.

To accomplish this it senses the three-phase current and voltage to count the number of recloser trip operations. When the pre-programmed number of recloser operations is reached, the controller opens the sectionaliser during the recloser downtime to isolate the downstream event.

Chapter 2 ACR Overview

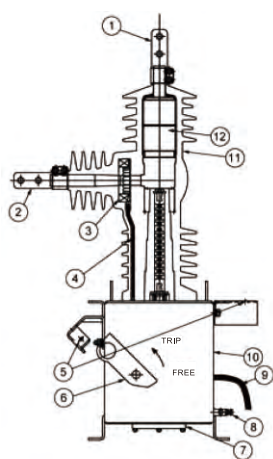
What Is in This Chapter?

This chapter contains the following topics

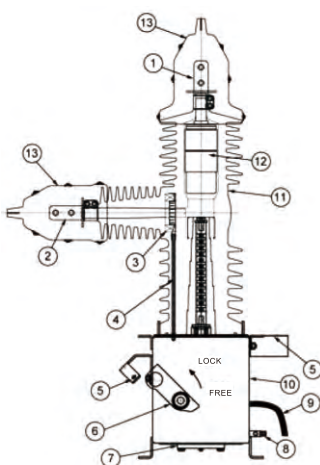
Topic	Page
ACR Overview	
ZX32 Series Recloser Specifications	

ACR Overview & ZX32 Series Overview

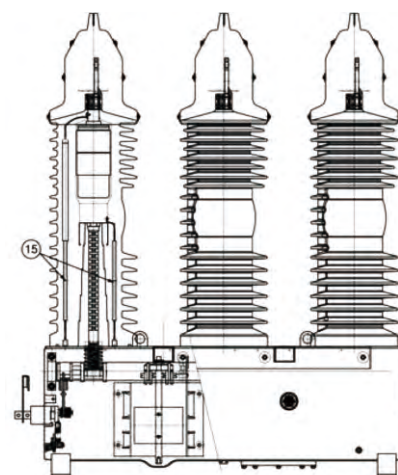
The ZX32 Series circuit breaker is controlled and monitored by either the COMPACT or ULTRA FTU-BC561 Controller (FTU-BC561). Enclosed in a 304 (COMPACT) or 210 (regular) grade stainless steel enclosure the FTU-BC561 provides an electronic controller with Operator Interface (O.I.) that monitors the circuit breaker and provides protection, measurement, control, and communication functions. Connected via a control cable, the switchgear and FTU-BC561 can form a remotely controlled and monitored ACR.



Cross section of ZX32 27 kV switchgear

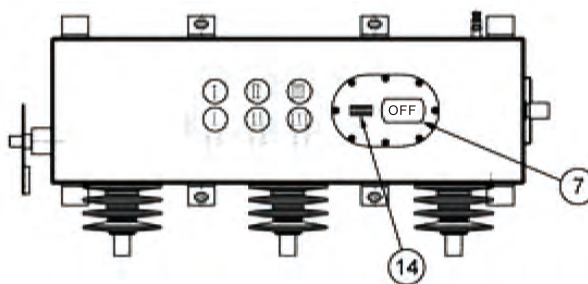


Cross section of ZX32 38 kV switchgear



Typical front view of ZX32 27 kV/38 kV switchgear

- 1.X-side terminal
- 2.I-side terminal
- 3.Current transformer
- 4.CT wiring
- 5.Lightning arrester brackets
- 6.Manual trip ring
- 7.On/Off indicator
- 8.Earthing point
- 9.Control cable
- 10.Stainless steel tank
- 11.Epoxy bushing
- 12.Vacuum interrupter
- 13.Bird Guard
- 14.Counter
- 15.Resistive voltage divider (RVD)



Typical bottom view of 27 kV/38 kV switchgear

ZX32 Series Function

The switchgear is operated by a magnetic actuator which produces an opening and closing action. Switching occurs when a controlled pulse is sent through the open/ close actuator from storage capacitors in the FTU-BC561. When closed, the switch is latched magnetically. Spring loaded push-rods provide contact loading on the interrupters.

A current Transformer (CT) and a Resistive Voltage Divider (RVD) are moulded into the epoxy-housing.

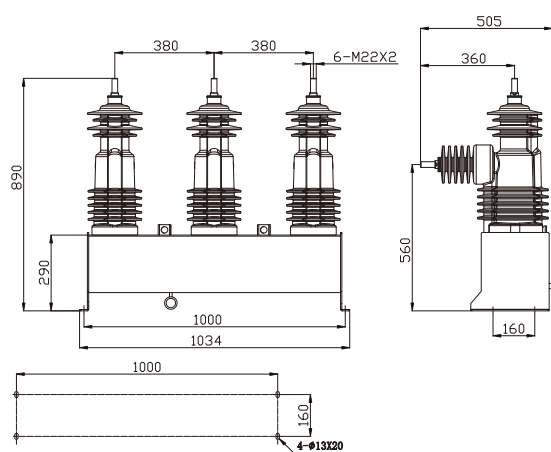
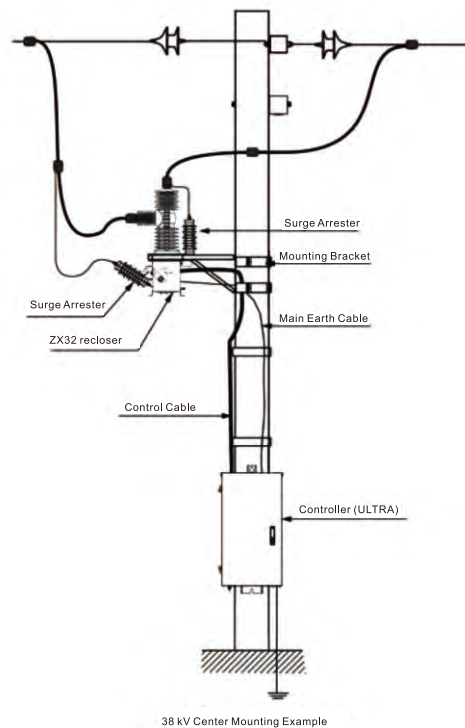
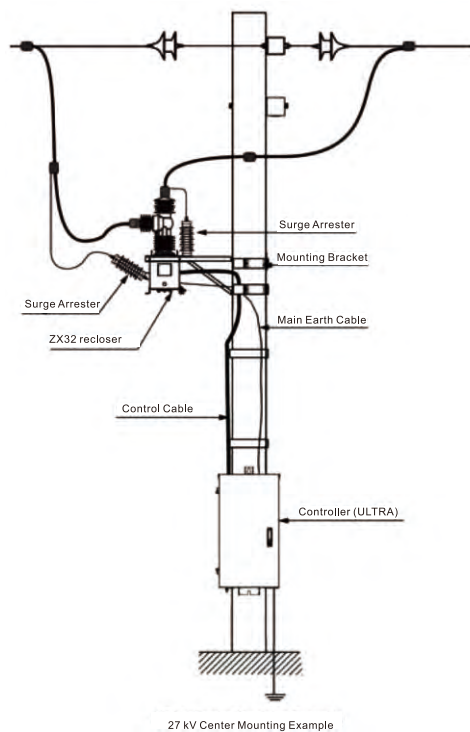
These are monitored by the FTU-BC561 for protection, remote monitoring, and display. An auxiliary voltage supply of 115/230VAC is required to power the control unit. Where this is inconvenient, an additional voltage transformer can be provided. The recloser is supplied with optional cable clamp connectors. Mounting brackets for lightning arresters are optionally available.

The switchgear contact position is shown by a large, clearly visible On/Off indicator. A hook-stick can be used to engage the manual trip ring to trip and lockout the recloser from the ground. The mechanical trip ring has two positions: UP position of the manual trip lever allows for normal operation, the DOWN position of the manual trip lever trips the recloser and further pulling it down locks the recloser both mechanically and electronically in open position.

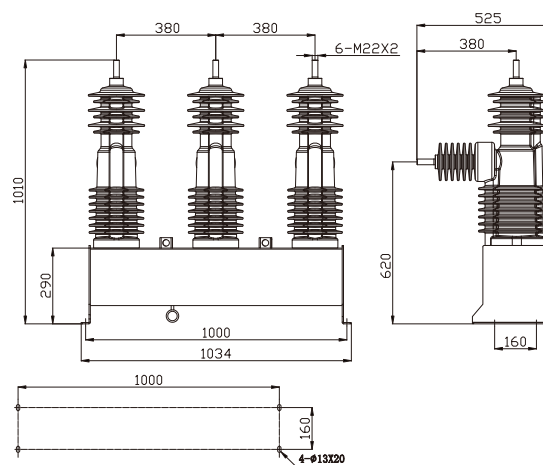
ZX32 Series Recloser Specifications

Description	Specification	Specification
ZX32 Series Range	27 kV	38 kV
	12.5 kA	16 kA
RATINGS		
Rated Maximum Voltage	27 kV	38 kV
Rated Continuous Current	630 A	800 A
Fault Make Capacity (rms)	12.5 kA	16 kA
Fault Make Capacity (Peak)	32.5 kA	41.6 kA
Power Operating Time (Close/Open)	0.1/0.05 s	0.1/0.05 s
Mechanical Operations	30,000	30,000
Rated Full Load Operations	30,000	30,000
Short time Current	12.5 kA	16 kA
BREAKING CAPACITY		
Mainly Active (0.7pf)	630 A	800 A
Fault Break Capacity	12.5 kA	16 kA
Cable Charging	25 A	40 A
Line Charging	5 A	5 A
LIGHTNING IMPULSE WITHSTAND LEVEL		
Phase to Earth	140 kV	170 kV
Across Interrupter	140 kV	170 kV
POWER FREQUENCY WITHSTAND VOLTAGE		
Phase to Earth	60 kV	70 kV
Across Interrupter	60 kV	70 kV
SERVICE CONDITIONS		
Ambient Temperature ^a (°C)	-40–50	-40–50
Ambient Temperature ^a (°F)	-40–122	-40–122
Radiation (Max)	1.1 kW/m ²	1.1 kW/m ²
Humidity	0–100%	0–100%
Altitude meters (Max) ^b	3000	3000
Altitude feet (Max) ^b	9840	9840
NET WEIGHTS		
Circuit breaker with pole mount bracket (kg/lbs)	170/375	205/452
Control cubicle with control cable (kg/lbs)	41/90	41/90
Gross Weight of crate (kg/lbs)	275/600	335/739
CRATE DIMENSIONS		
Width (mm/in.)	1140/44.8	1140/44.8
Depth (mm/in.)	1080/42.5	1080/42.5
Height (mm/in.)	1140/44.8	1220/48
IEC and IEEE STANDARDS		
Applicable standards	IEC62271-111 and IEEE C37.60	IEC62271-111 and IEEE C37.60

Pole Mounting Details & ZX32 Series Recloser



Front view of ZX32- 27 kV

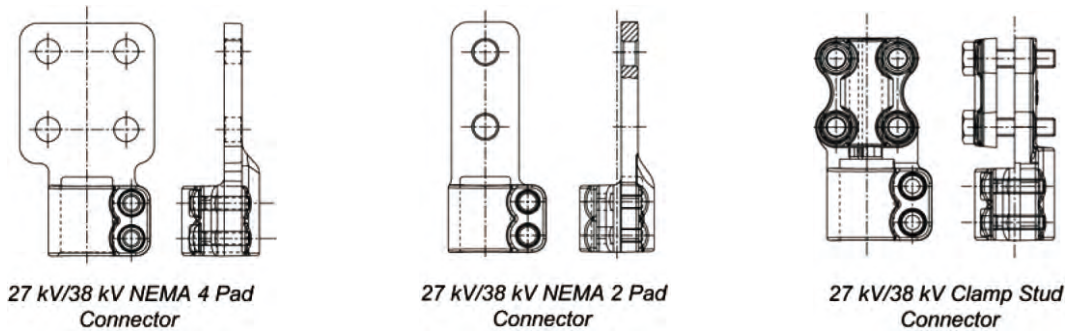


Front view of ZX32- 38 kV

Accessory Options

Below are the various accessory options available:

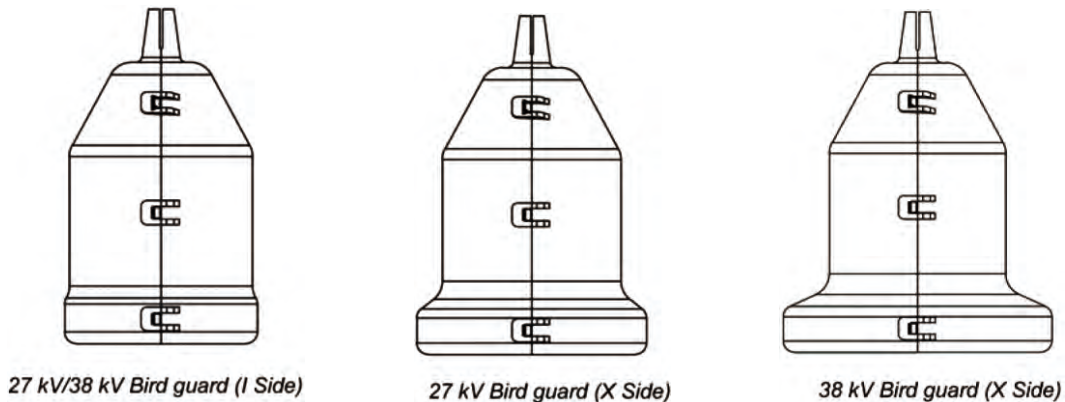
- Connectors:



Either one of the above three connectors are required in 6 quantity for recloser.

- Bird Guards:

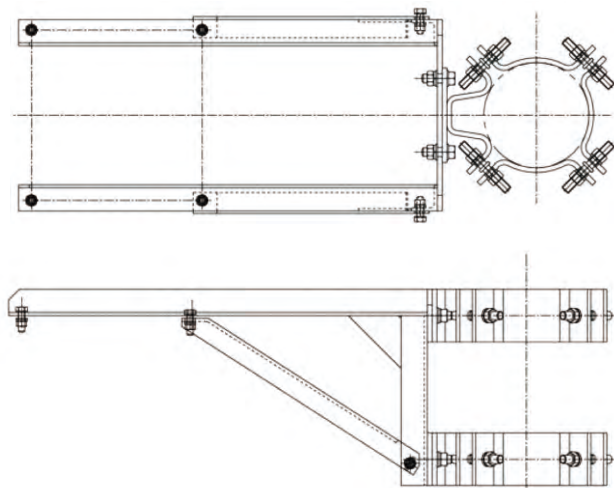
The two types of bird guards are suitable for the three types and three quantity of load side are required for recloser.



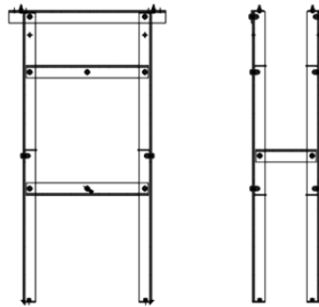
- Mounting Brackets:

There are two types of mounting brackets that can be used. Either one of these which are required in one quantity for recloser.

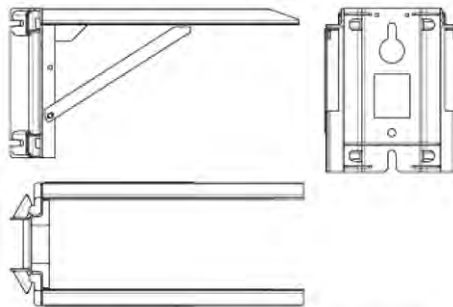
- 27 kV/38 kV mounting bracket assembly
- 27 kV/38 kV mounting bracket for wooden pole (through holes mounting)



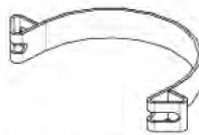
27 kV/38 kV Mounting bracket assembly
(Same mounting bracket for end and center mounting)



27 kV /38 kV Substation mounting bracket



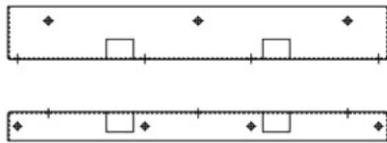
27kV/38kV mounting bracket for wooden pole (through holes mounting)(Same mounting bracket for end and center mounting)



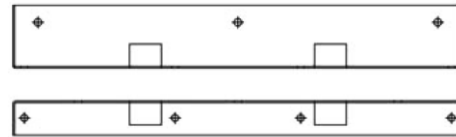
27kV/38kV Pole Clamp Band (if required)

- Surge Arresters:

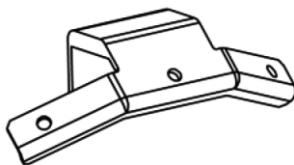
Two surge arrester mounting brackets (load and source) are required in one quantity for recloser for mounting six surge arresters.



27 kV Surge arrester mounting bracket load

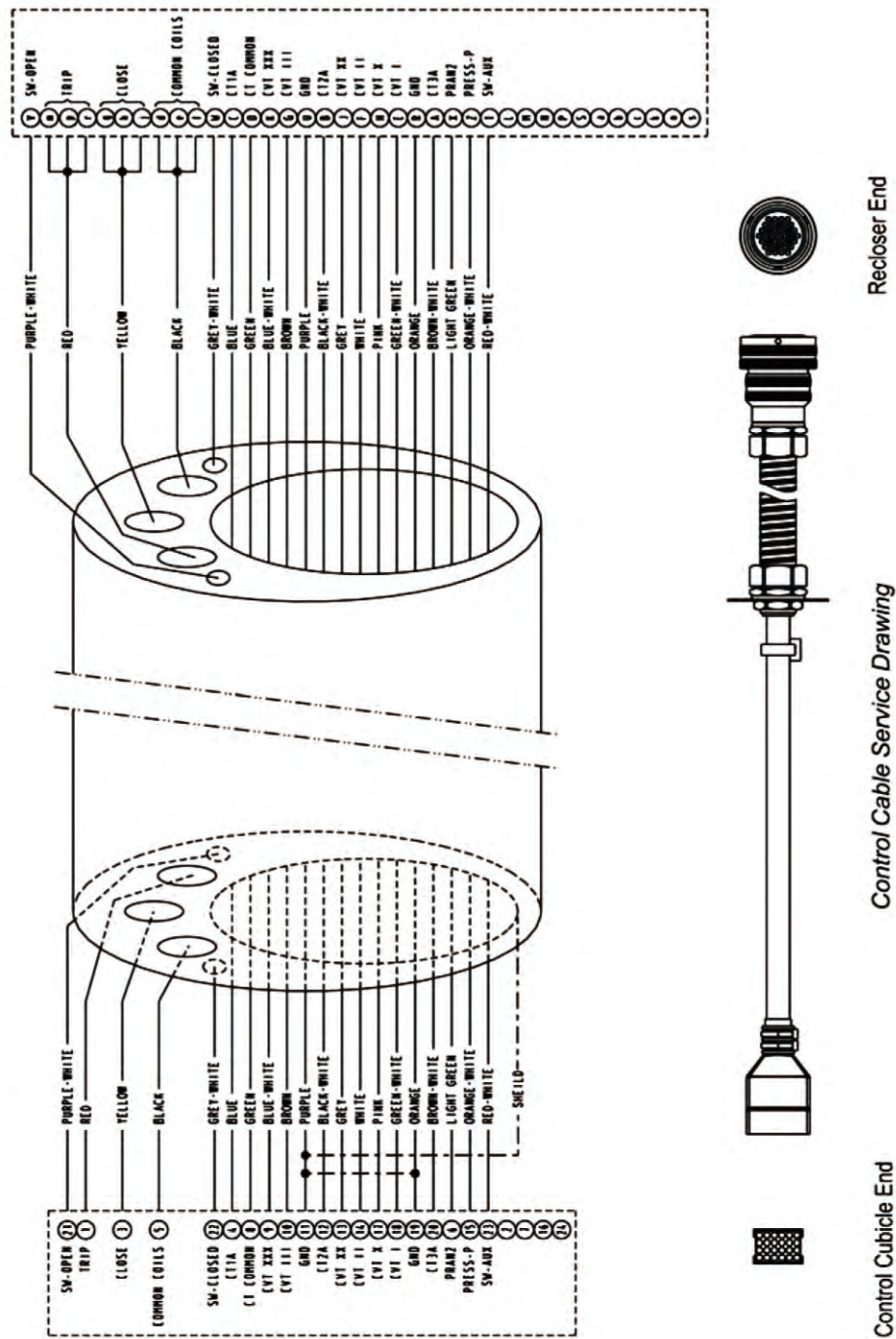


38 kV Surge arrester mounting bracket load



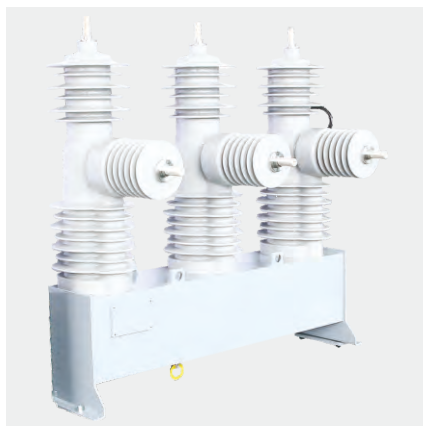
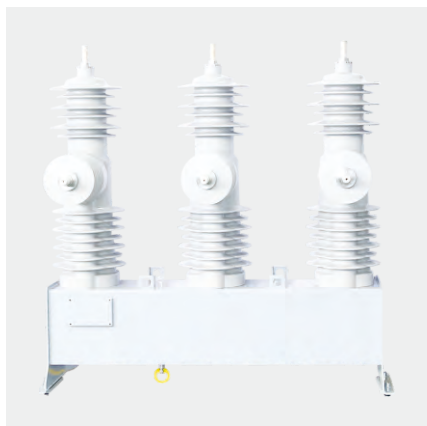
27 kV/38 kV Surge arrester mounting bracket Source

• Control Cable:



NOTE: For detailed drawings of accessories, contact Sinoamigo power.

Appendices



Recloser Controller

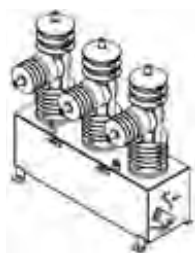
Only one of the boxes (ticked ☐ or filled ☒ with the required value) have to be considered between each horizontal line Red Circle ○ lead-time should be requested from Sinoamigo power.

ADVC Controller				Quantity	
Model (Features Highlighted are only available on ULTRA)			COMPACT ☐	ULTRA ☐	
Operator Interface (O.1.)			FTU-BC300  ☐	FTU-BC561  ☐	
Ambient Temperature (°C)			Standard	-10°C to 50°C ☐	
			Extended with Battery Heater	-40°C to 50°C ☐	
Auxilliary Supply Type		Single AC supply:	115Vac ☐	230 Vac ☐	
			Dual AC ☐	Dual Supply ☐	
Maximum Battery Hold Up Time			28 Hours ☐	48 Hours ☐	
Language		English ☐	Chinese ☐	Spanish ○	
Standard Protocol		MODBUS ☐	IEC ☐	DNP3 ☐	
Accessories (Additional Costs May Apply)					
FTIM (Ultra FTIM cable only)			Not Applicable ☐	Yes ○	
IOEX			Not Applicable ☐	Yes ○	
General Purpose IEC Socket			Not Applicable ☐	Yes ☐	
GPO 10Amax.	None ☐	AUS  ☐	EU-A  ○	EU-B  ○	
Only With IEC Socket	Other ☐	UK  ○	USA  ○	Sth Afric  ○	

Special notes (For other available Accessories, contact Sinoamigo power)

Required Details for Order

ZX32 Series Recloser (15,27, and 38kV)



Only one of the boxes (ticked ☐ or filled ☒ with the required value) have to be considered between each horizontal line. Red Circle ○ lead-time should be requested from Sinoamigo power.

Certain configurations may leads additional cost. To clarify these details, please consult Sinoamigo power.

Circuit Breaker Unit			
Rating (System voltage / Interrupt/BIL)	15 kV/12.5 kA/110 kV ☐	27 kV/16 kA/140 kV ☐	38 kV/16 kA/170 kV ☐
Rated Current(A)		630 A/800 A*(for 27 kV) ☐	630 A/800 A*(for 38 kV) ☐
Frequency		50 Hz Standard ☐	60 Hz Standard ☐
Sensitive Earth Fault Rating			1-20A ☐
Language	English ☐		
Accessories			
Mounting Arrangement	Front / End mount ☐ Substation mount ☐ Front / End:Through holes for wooden poles ☐		
Control cable Length	6 Metres (Default) ☐	8 Metres ☐	
Birdguards	Source and Load side:	Yes ☐	NO ☐
Options			
Medium Voltage Terminal Options (Set of 6)	27/38 kV NEMA 4 Pad Connector ☐ 	27/38 kV NEMA 2 Pad Connector ☐ 	27/38 kV Clamp Stud Connector ☐
Surge Arrester Brackets Set of 2 brackets with End Mount and Center Mount option			Standard Inclusion ☐
Surge Arresters		Not Applicable ☐	Surge Arresters ○
VT Mounting		Not Applicable ☐	Pole Mounted ☐

* For more details, consult Sinoamigo power



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