

BR10 Series Switches and Controls

The Recloser, the Load Break Switch, and the BR-10 series controls of BH SYSTEM specializes in protecting distribution lines and automation systems.

The distribution network consists of the Recloser and the BR-10R/RN control to protect the second distribution substation and distribution lines, the Load Break Switch and the BR-10S/SN control used in conjunction with Reclosers to perform fault detection and auto-sectionalizing function, and the Sectionalizing Switch and the BR-10A control installed on incoming lines of customer's district or branch lines to prevent faults from spreading towards source side.

Through these devices, improving supply reliability and reducing distribution losses can be achieved.

In addition, economic benefits through increasing sales as well as enhanced availability of power equipment for distribution lines can be gained.

The BR-10 Series Reclosers, St



Automatic Circuit Recloser and Control

Automatic circuit recloser and the BR-10R/RN recloser control are installed on the secondary distribution substation or distribution lines. They are the most core devices for protecting distribution lines and automation.

- -SF6 or solid insulation
- -High reliability vacuum interrupter
- -High speed permanent magnetic actuator
- -Tripping and lockout lever
- -Optional closing handle
- -Position and gas status indicator
- -Voltage sensor built into each bushing
- -Current sensor built into each phase on source side
- -Distribution line or substation application
- -Pole or gantry structure mounting

Ratings	IJ-GR1	IJ-GR2	IJ-GR3	BR10-PR-27	BR10-PR-38		
Applied standard	IEEE Std. C37.60		IEC62271-111				
Rated voltage(kV)	17.5			38			
Rated current(A)	630	630	630	800	800		
Rated frequency(Hz)	50/60	50/60	50/60	50/60	50/60		
Short-time withstand current(kA)	16, 1s	12.5, 1s	16, 1s	16, 3s	16, 3s		
Rated peak making current(kAp))	40	32.5	40	40	40		
Power-frequency withstand voltage(kV)	50	60	70	60	70		
Impulse withstand voltage(kV)	110	150	170	150	170		
Mechanical endurance(times)	10,000						
Insulating medium	SF6 gas			Solid			
Interrupting medium	Vacuum						
Operating mechanism	Permanent Magnetic Actuator						
Bushing material	Porcelain / Silicone Rubber Solid						
Bushing terminal	Nema 2 hole pad / Universal clamp						

BR-10RN Recloser Control

The BR-10RN Recloser control measures voltage and current, and based on these measurement, the control performs status monitoring of distribution lines, fault detection, and protection operation. It also monitors itself as well as the Recloser, records history information and fault waveforms. The local control panel and the operating program are provided for operation and control on sites. In addition, utilities can perform remote control and status monitoring by connecting the SCADA



Gas Insulated 38kV Recloser

witches, and Controls make your system more

system and the recloser controls through the communication networks.

The BR-10RN control offers Bluetooth connection, Android OS based application for user convenience, user spaces for modem installation, and auxiliary power.

In order to provide easier maintenance, most electronic components such as a permanent magnetic actuator controller and a capacitor bank are placed in the control enclosure.

Main Features

- Directional phase and ground O/C, SEF, and negative sequence O/C protection
- · High current trip and lockout elements
- Under/over voltage and frequency protection
- Broken conductor protection, hot line tag and single shot protection
- Cold load pickup and inrush restraint
- Sequence coordination & loop control
- Auto reclosing up to three shots
- 4 operating setting groups and alternate settings
- 39 TCCs and 5 user defined curves
- Progressive battery management and monitoring
- Supporting DNP3.0 level 2 and IEC 870-5-101/104
 - » Supporting various communication networks
 - » Ethernet port, EIA 485 Port, and EIA 232 Port for SCADA connection
- · Optional Bluetooth connection, and GPS interface
- 4 spare input and output points, and terminals for connection
- External indicator to check out main status from the ground
- Dedicated surge protection device for AC power input
- Optional 15kV Isolation Transformer

Benefits

- High reliable FDIR is realized through more accurate and active protective operation.
- Remote control and management for devices are available through distribution automation system without additional options.
- It is able to build the field-oriented distribution protection system in conjunction with BR10 series load break switch with BR-10S/SN control or sectionalizing switch with BR-10A control.
- Through this protection system, utilities can achieve higher reliability by minimizing outage time and sections.
- Therefore, it can significantly improve supply reliability.

Applications

- The Recloser protects the primary distribution line and is applied to distribution substations or overhead lines
- It is applied to the main feeder on the loop network or the radial line that requires active feeder protections from faults.
- It is applied to lines in conjunction with distributed or multiple power that require directional overcurrent protection.
- If the primary line lost power, it is applied to distribution lines that require power supply through alternate sources.



ore convenient and more reliable

Load Break Switch and Control

- The load break switch and the BR-10S/SN control are installed on overhead distribution lines, and they perform monitoring and fault detection on distribution lines as well as load shedding and auto-sectionalizing functions. Therefore, they are critical equipment for automation and reliability improvement of distribution lines.
- SF6 or Solid insulation
- Tulip contact or vacuum interrupter with outstanding electric characteristics
- Adoption of puffer-type arc extinguishing principle
- Motorized spring toggle mechanism guaranteed of stable operation
- Operating handle and locking lever
- Position indicator and gas status indicator
- Voltage sensor on each bushing, and current sensor built into each phase on source side
- Pole and gantry structure mounting
- Maintenance free structure

Ratings	15kV	25kV	36kV	25kV	
Applied standard	IEC62271-103				
Rated voltage(kV)	15.5	25.8	36	25.8	
Rated current(A)	630	630	630	630	
Rated frequency(Hz)	50/60	50/60	50/60	50/60	
Rated short-time withstand current(kA)	16, 3sec	16, 3sec	16, 3sec	12.5, 1sec	
Rated short circuit making current(kA)	40	40	40	32.5	
Rated earth fault breaking current		NA			
Rated cable and line-charging breaking current under earth fault conditions	25A			NA	
Power-frequency withstand voltage(kV)	50	60	70	60	
Impulse withstand voltage(kV)	110	150	170	150	
Operating mechanism	Manual and Motorized spring toggle				
Mechanical endurance(times)	5,000(M2 Class)				
Electrical endurance	E3 Class				
Insulating medium	SF6 gas			Solid	
Arc extinguishing	Puffer Type			Vacuum Interrupter	
Bushing material	Porcelain / Silicone Rubber			Solid	
Bushing terminal	Nema 2 hole pad / Universal Clamp				

BR-10SN Automatic Switch Control

Main Features

- Directional phase and ground fault, and directional SEF detection
- Auto-sectionalizing and equipped with load shedding scheme
- Real-time monitoring for related devices and status of distribution lines
- Generate various information based on voltage and current phasor
- Progressive battery management and monitoring
- · Remote control and status monitoring by connecting to SCADA system
- External indicator to check out main status from the ground

- Supporting DNP3.0 level 2 and IEC 870-5-101/104
 - » Supporting various communication networks
 - » Built-in Ethernet port, EIA 485 port, and EIA 232 port for SCADA connection by default
- 4 digit password security that restricts access to the control from strangers
- Sequential event and fault waveform, demand history management
- Setting, status, and history data checking through the operating program, F/W download
- 4 auxiliary DI and DO ports, and terminal blocks for connection
- Dedicated surge protection device adoption for AC power input
- Optional Bluetooth connection & GPS interface
- Optional 15kV Isolation Transformer for AC power input



- It achieves convenience of operation and reliability through remote operation, monitoring, and control based on distribution automation system.
- Fast and high reliable FLISR is realized by fault detection and remote control.
- Through auto-sectionalizing function, it reduces significantly the number of customers that have experienced outage for long hours.
- It can perform more segmentalized fault detection and isolation of faulty section from the system in conjunction with reclosers.
- It improves load unbalance and distribution loss through real-time line monitoring.
- It prevents faults on branch lines from spreading towards trunk lines of source side.
- It can saves investment costs on facilities.

Applications

- It operates as a control for load break switch in centralized distribution automation systems.
- It is able to operate as a control for load shedding to cope with power quality degradation due to insufficient power supply without communication.
- In systems with sufficient reclosing intervals, it operates as a sectionalizer control to isolate faults automatically by sensing recloser operations.
- It is used to rapidly detect fault sections in conjunction with the reclosers or the relays in substations.
- It is used for fault location, fault isolation, and service restoration based on distribution automation.

Operating Program for BR-10 Series Control

The Win-OP, an operating program running on a windows-based computer, is connected to the BR-10 series control via RS232/USB/Ethernet/Bluetooth used for checking status, various history events, and measured figures, and verifying and setting parameters for protection elements and operation, as well as editing point index map for communication protocols.





Test Set for Controls

It is a portable test device that is used to inspect whether functionalities of the controls connected to the load break switch or the recloser during scheduled maintenance, repairs, or replacements.

- Two type of test; analog type of simple tester, fully digitalized tester
- Simulate functions of the recloser or load break switch
- Simple type of tester provide an adjustable single phase current and voltage source
- Buttons for opening and closing operation, and setting each state.
- Simple type of tester provide manual test feature for fault simulation and sectionalizing function, and fault pickup and reclosing sequence test
- Digital type of tester provide adjustable 3 currents and 6 voltages source
- Digital type of tester provide user programmable sequence test and auxiliary DI/DO contacts with graphic LCD display
- · The intuitive and robust design for ease of use in the field



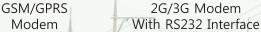
It is a device used to monitor the state of the equipment at a distance from the recloser or LBS installation.

- Battery and charger for power outage
- Reset button to halt the alarm
- Test button and power indicator
- Use auxiliary power to protect controls

Modem for Remote Operation

The BR-10 series controls can be connected to the operating program or the SCADA system using a variety of modems. Utilities can also optionally perform remote monitoring and control via SMS of mobile modem in the control and app in user mobile smart phone.







2G/3G Modem With Ethernet Interface



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