

# DBF, DBT, DRS - DIGITAL BREAKER FAILURE, SUPERVISION AND RECLOSER

The DBF is a digital breaker failure relay that provides phase and ground backup protection if the primary circuit breaker fails to clear a system fault.. The DBT is a digital relay that supervises the integrity of the breaker's tripping and closing coils. The DRS provides both single pole and three pole reclosing for one or two breakers. These devices are usually combined to created a Breaker Control Scheme.

The UR and UR<sup>Plus</sup> product portfolio offered by GE Multilin has more options to meet your specific application needs. To take advantage of the latest in technology and the new developments, and to reduce hardware on Breaker Control Schemes, consider replacing the DBF, DBT and DRS with a single C60 or C90Plus system.

### UR AND URPLUS FAMILY

- C60 Breaker Monitoring and Control System
- C90Plus Substation Automation Logic Controller

#### **KEY BENEFITS**

- · Enhanced operation during external faults
- Flash memory for product field upgrade
- Multiple breakers and disconnect switches support
- Reduced installation space requirements through compact design - True convergence of protection, metering and control functions, multiple I/O options programmable pushbuttons and status LEDS, and communication interfaces
- Modular construction simplifying and reducing the stock of spare parts
- Advanced programmable logic for building customized schemes
- Embedded IEC61850 Protocol No external protocol converters required
- Comprehensive metering current, voltage, power, energy, frequency, phasors
- Customize protection and control functions with Programmable logic (FlexLogic™), custom time-current curves (FlexCurves™), and custom built protection and control functions (FlexElements™)

- Front panel display and keypad for local direct access, with a RS232 port for local PC access (USB port on UR<sup>Plus</sup>)
- Multi-language support French, Chinese, Russian option
- Networking options Ethernet cooper or fiber (optional redundancy), RS485
- Pilot channel options Direct fiber for up to 150 km, RS422, G.703, direct to multiplexer fiber C37.94
- Multiple protocols IEC61850, DNP 3.0 Level 2, DNP TCP/ IP, Modbus RTU, Modbus TCP/IP, IEC 60870-5-104, HTTP, TFTP.SNTP. EGD
- Reduced relay to relay wiring and associated installation costs through high-speed inter-relay communications
- Dependable Globally accepted, with performance backed up by more than a decade of field experience
- Reduce cooper wiring and labor cost of electrical substationsthrough the IEC61850 Process Bus solution "HARFIBER"



# **C60 Breaker Monitoring and Control System**



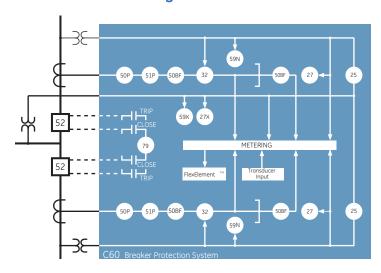
- Complete breaker control, monitoring and integration in a single platform
- Complete IEC 61850 Process Bus solution providing resource optimization and minimizing total P&C lifecycle costs
- Reduced wiring through the use of high-speed peer-to-peer communication for accepting Trip and Close commands from other relays
- Advanced automation capabilities for providing customized protection and control solutions
- Ambient temperature monitoring with alarming when outside temperature exceeds upper thresholds
- Stand-alone breaker monitoring and control
- Multiple breaker configuration control including Breaker-anda-Half and Ring Bus
- Breaker monitoring accumulated wear and operation time, number of operations, breaker flashover and trip coil monitoring

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### **C60 Enhanced Front Panel**



### **Functional Block Diagram**



#### ANSI Device Numbers & Functions

Device Number	Function
25	Synchrocheck
27P	Phase Undervoltage
27X	Auxiliary Undervoltage
32	Directional Power
50G	Ground Instantaneous Overcurrent
50N	Neutral Instantaneous Overcurrent
50P	Phase Instantaneous Overcurrent
51G	Ground Time Overcurrent
51N	Neutral Time Overcurrent
51P	Phase Time Overcurrent
59N	Neutral Overvoltage
59X	Auxiliary Overvoltage
79	Autoreclose
50BF	Breaker Failure

# C90<sup>Plus</sup> Substation Automation Logic Controller



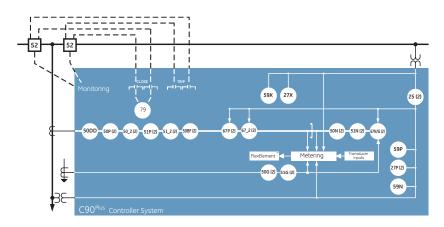
- Simplified powerful programmable automation controller with math engine eliminates the need for separate substation programmable logic controller
- Deterministic execution of automation logic regardless of the number of equations configured
- Local HMI dedicated real time bay control with configurable single line diagrams with control of up to six breakers
- High-end load shedding blocks with multiple stages of under frequency, rate-of-change-of-frequency and undervoltage elements
- Intuitive large front panel color HMI dedicated to metering, fault records, event records and equipment status
- Custom protection and bay interlocking schemes
- Bay controller for common bus-bar arrangements
- Substation alarm concentrator & controller
- Control for up to 6 breakers and 30 disconnect switches
- · Custom bus transfer schemes
- Standalone breaker fail & reclosing for dual-breaker arrangements
- Dedicated automation controller with 4000 lines of logic at a deterministic 50 msec execution rate

- Configurable alarm annunciator eliminates the need for separate annunciator panel
- High-end fault and disturbance recording, including internal relay operating signals eliminates the need for redundant recording devices
- Reduced installation space requirements through compact design - True convergence of protection, metering, automation, bay control functions, multiple I/O options and extensive communications capability
- Phasor Measurement Unit Synchronized phasor information according to IEEEC37.118 standard for detection of system instabilitu
- Dedicated protection logic at 1 msec execution rate
- CT and VT monitoring
- Metering current, voltage, frequency, power, energy and phasors as per IEEE C37.118
- Transient recorder 256 samples/cycle, 30 sec of storage capacity
- Disturbance recorder 1 sample/cycle, 5 min of storage capacity
- Event recorder 8000 time tagged events, with 0.5 ms scan of digital inputs

### **C90**Plus Front Panel



# **Functional Block Diagram**



#### ANSI Device Numbers & Functions

ANSI Device Numbers & Functions		
Device Number	Function	
25	Synchronism Check	
27P	Phase Undervoltage	
27X	Auxiliary Undervoltage	
50BF	Breaker Failure	
50DD	Current Disturbance Detector	
50G	Ground Instantaneous Overcurrent	
50N	Neutral Instantaneous Overcurrent	
50P	Phase Instantaneous Overcurrent	
50_2	Negative Sequence Instantaneous Overcurrent	
51G	Ground Time Overcurrent	
51N	Neutral Time Overcurrent	
51P	Phase Time Overcurrent	
51_2	Negative Sequence Time Overcurrent	
52	AC Circuit Breaker	
59N	Neutral Overvoltage	
59P	Phase Overvoltage	
59X	Auxiliary Overvoltage	
59_2	Negative Sequence Overvoltage	
67N	Neutral Directional Overcurrent	
67P	Phase Directional Overcurrent	
67_2	Negative Sequence Directional Overcurrent	
79	Automatic Recloser	
81 U/O	Under and over frequency	