



## DFP100/200 – DIGITAL FEEDER PROTECTION

The DFP100/200 are digital relay systems that provide distribution feeder protection, control, metering, and monitoring. The DFP200 provides comprehensive protection functions including a high impedance fault detection function that distinguishes between downed conductors and other arcing faults.

The UR and URPlus 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 on Feeder Protection and control, consider replacing the DFP with a F35 or F60 system.

## UR FAMILY

- F35 Cost Effective protection for single or multiples feeders
- F60 Advanced Feeder Protection and Control

## 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
- Front panel display and keypad for local direct access, with a RS232 port for local PC access (USB port on URPlus)
- Multi-language support - French, Chinese, Russian option
- Customize protection and control functions with Programmable logic (FlexLogic™), custom time-current curves (FlexCurves™), and custom built protection and control functions (FlexElements™)
- 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 substations through the IEC61850 Process Bus solution "HARFIBER"



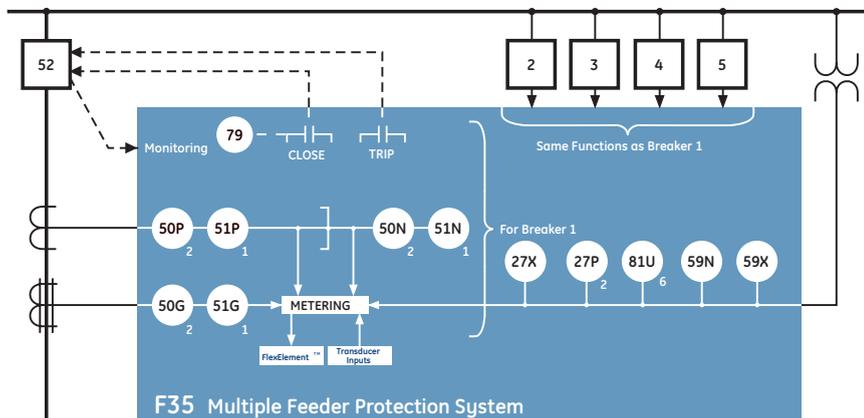
## F35 Cost Effective protection for single or multiples feeders

- Cost effective and flexible protection and control device for distribution feeder applications
- Complete IEC 61850 Process Bus solution providing resource optimization and minimizing total P&C life cycle costs
- Improved system stability at reduced cost - Control schemes using hi-speed communications
- High-end fault and disturbance recording, including internal relay operating signals thus eliminating the need for redundant recording devices
- Robust network security enabling Critical Infrastructure Protection through user command logging, and dual permission access control
- Primary protection and control for multiple distribution feeders
- Distribution load shedding schemes based on voltage and frequency elements
- Incipient cable fault detection
- Advanced automation capabilities for providing customized protection and control solutions
- Ambient temperature monitoring with alarming when outside temperature exceeds upper thresholds
- Busblocking/ interlocking schemes
- Throw over schemes (bus transfer scheme applications)
- Distributed Generation (DG) interconnect protection, including active and passive anti-islanding
- Oscillography – analog and digital parameters at 64 samples/cycle
- Event Recorder - 1024 time tagged events with 0.5ms scan of digital inputs
- Data Logger - 16 channels with sampling rate up to 1 sample / cycle
- Setting Security Audit Trail for tracking changes to F35 configuration

## F35 Enhanced Front Panel



## Functional Block Diagram



ANSI Device Numbers & Functions

Device Number	Function
27P	Phase Undervoltage
27X	Auxiliary Undervoltage
50G	Ground Instantaneous Overcurrent
50N	Neutral Instantaneous Overcurrent
50P	Phase Instantaneous Overcurrent
51G	Ground Time Overcurrent
51N	Neutral Time Overcurrent
51P	Phase Time Overcurrent
52	AC Circuit Breaker
59N	Neutral Overvoltage
59X	Auxiliary Overvoltage
79	Automatic Recloser
81	Underfrequency



## F60 Advanced Feeder Protection and Control

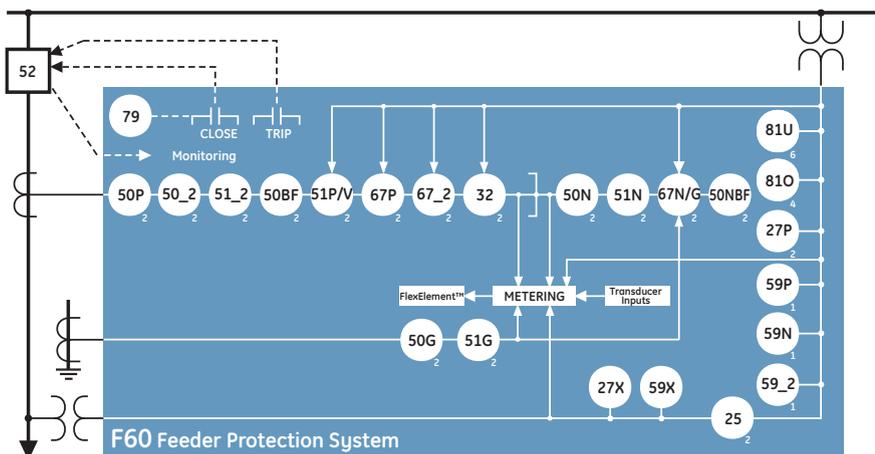
- The most flexible protection and control device for distribution feeder applications
- Complete IEC 61850 Process Bus solution providing resource optimization and minimizing total P&C life cycle costs
- Unique and secure downed conductor detection, backed up by many years of field experience
- Flexible load encroachment allows secure operation during heavy load conditions
- Voltage and frequency elements to provide load shedding and transfer schemes for increased system uptime and improve system stability
- Advanced automation capabilities for providing customized protection and control solutions
- Primary protection and control for feeders on solidly, impedance or resonant (Peterson Coil) grounded systems
- Bus blocking/Interlocking schemes
- Distribution load shedding schemes based on voltage and frequency elements
- High-speed fault detection for arc flash mitigation
- Throw over schemes (bus transfer scheme applications)
- Back-up protection for transmission lines, feeders and transformers
- Application flexibility with multiple I/O options and programmable logic (FlexLogic™)
- Robust network security enabling Critical Infrastructure Protection through user command logging, and dual permission access control
- Advanced fault and disturbance recording, including internal relay operating signals provided thus eliminating the need for redundant recording devices
- Ambient temperature monitoring with alarming when outside temperature exceeds upper thresholds
- Distributed Generation (DG) interconnect protection, including active and passive anti-islanding
- Oscillography – analog and digital parameters at 64 samples/cycle
- Event Recorder - 1024 time tagged events with 0.5ms scan of digital inputs
- Data Logger - 16 channels with sampling rate up to 1 sample / cycle
- Setting Security Audit Trail for tracking changes to F60 configuration
- Incipient cable fault detection

## F60 Enhanced Front Panel



Upgrades & Replacements

## Functional Block Diagram



ANSI Device Numbers & Functions

Device Number	Function
25 (2)	Synchronism Check
27P	Phase Undervoltage
27X	Auxiliary Undervoltage
32	Sensitive Directional Power
50BF/50BNF	Breaker Failure
50DD	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	Ground Time Overcurrent
51N (2)	Neutral Time Overcurrent
51P (2)	Phase Time Overcurrent
51_2(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
81O	Overfrequency
81U	Underfrequency