

## **POWER QUALITY AND ENERGY METERING PRODUCT RANGE OVERVIEW PDF**

### **Busbar Protection Relay**

The MiCOM P741,42,42 Agile numerical busbar protection is now available with redundant fiber-optic communications. The scheme offers the highest availability, with the automatic ability to ride through fiber disconnections without the need for maintenance attention. Power system busbars are a key node in the delivery of energy to consumers. It is therefore essential to provide fast and discriminative protection which will initiate precise isolation of any faulted bus section in the event of an internal fault, to avoid any disruption in supplies to non-faulted bus sections and circuits.

In a distributed busbar protection scheme, the fiber optic links between the feeder bays and the central unit (CU) are essential for correct operation. Most schemes offer a single point-to-point link from each bay to the CU. Should any of those links be compromised, the CU will be missing the current measurements for that bay . meaning that a zone of protection is disabled. The dispatcher has the tough choice whether (1) to open the circuit breaker for the bay with compromised communications to restore the differential protection to service, or (2) to continue to run on slower back-up protection alone. The latest release of GE's P741,42,42 busbar protection offers the possibility to duplicate the fiber optic communications between the bays and the central unit. This redundancy feature permits ride-through for fiber breaks, joint/splice failures, transmitter failures or accidental disconnections.

The redundancy in communications between the central unit and the bay peripheral units allows the existence of two communication paths in parallel, one being active and the other connected as standby. A choice of different switching options is available, depending on the utility's preferred topology for the busbar scheme. This switching is performed automatically, upon detection of a failure in the primary path.



## Bay Control Unit



The DS Agile C264 substation controller is a sophisticated solution supporting multiple applications and functions for substation control, communication, monitoring, protection, and automation. Flexibility, reliability and ease of use are among the top features required in a substation computer; the DS Agile C264 has these features.

A combination of dual redundant fiber optic Ethernet, modular I/O, expandable design, and an extensive library of functions make the C264 the ideal solution for a wide array of applications in substation digital control systems.

### **Applications**

- \_ Full digital substation and conventional substation
- \_ Transmission, distribution, utilities and industrial
- \_ Green field and brown field substation

## **Key Benefits**

- \_ Flexible, modular and expandable design to support many applications
- \_ Dual-bay management with two embedded CT/VT acquisition boards including measurements and sampled values streams to reduce the number of controllers
- \_ HSR/PRP RedBox capability to connect PRP/HSR non-compliant devices to the redundant network, reducing the number of RedBoxes
- \_ Reduce engineering costs and amount of devices, wiring, cabling and training required by using the multi-functional capabilities
- \_ IEC 61850-8-1 and IEC 61850-9-2 standard compliance for interoperability
- \_ LCD graphical display for user-friendly local control, monitoring and maintenance
- \_ Seamless integration with existing substation assets with flexible interfaces, expandability and support of legacy and cutting-edge communication protocols
- \_ Proven solution with more than 50,000 units installed worldwide

## **Multi-function Controller**

- Bay Computer (BCU)
- Remote Terminal Unit (RTU)
- Switchgear Control Unit (SCU)
- Protocol converter
- Substation gateway

## **Automation and Control**

- Traditional data management function (inputs and outputs)
- Feeder manager (protection and control)
- Substation automation processor
- Sequence-of-Events Recorder (SER)
- Automatic Voltage Regulation (AVR)
- Multi-bay management
- Measurement center
- Load shedding control
- IEC 61131-3 soft logic
- Control and protection scheme
- Optimization

## **Advanced Communication**

- Up to 6 physical ports
- 0 ms network redundancy
- IEC 62439-3 PRP and HSR

## **DISTURBANCE RECORDER**

The Reason DR60 is a centralized one-box multifunctional digital fault recorder (DFR). The small form factor, together with the ruggedness of design drawn from field experience in yard-mounted applications, ensures that the Reason DR60 can be installed in harsh utility and industrial environments. The high scalability in binary I/O counts along with modern communications such as IEC61850 Edition 2 and synchronization protocols such as MMS, GOOSE and PTP precision-timing, place the DR60 at the forefront of digital fault recording technology.

### **Full system awareness**

The DR60 outstanding performance, high accuracy and complete set of functionalities provide data for several applications and analysis, such as:

- Network faults
- Performance of the protective IEDs
- Dynamic response of the network
- Long-term trends
- Revenue readings
- Asset Management

### **Situational Awareness**

- Waveform recorder supporting 256 and 512 samples per cycle
- Disturbance and continuous disturbance recorder
- Trend Recorder & sequence of events recorder
- PMU IEEE C37.118.1/2-2011/1a-2014 compliance

### **High Density I/O**

- Up to 32 analog inputs
- Up to 96 binary inputs and up to 48 binary outputs
- Up to 32 high-speed transducer inputs for HVDC applications

## **Communications**

- Supporting industry standard protocols including DNP3, MMS and GOOSE
- Time synchronization including support for IEEE 1588 PTPv2 and IRIGB
- Serial (RS232 and Ethernet (RJ45 or LC) interfaces

## **Application Flexibility**

- Cross triggering
- Trigger matrix for easy output configuration and special logic schemes
- Native configuration in SCL format
- MMS report control blocks
- Back and front panel mounting

## **SUBSTATION AUTOMATION**

As power networks become more efficient and intelligent, substation automation systems need to provide new and smarter solutions. GE's DS Agile 7.0 is a digitized control system that is compatible with traditional copper wired systems and interoperable with IEC 61850 compliant third-party devices.

The DS Agile 7.0 digitized control system incorporates a new, state-of-the-art user interface that provides holistic and accurate monitoring of the substation for optimal control, operation and maintenance, maximizing asset usage while preserving health. Electrical and non-electrical data is acquired by sensors and condition monitoring units across the substation, integrated into the DS Agile database and displayed through a customizable graphical interface, enabling greater substation situational awareness.

### **Key Benefits**

- \_ Reduce substation footprint and save up to 80% of copper wiring with digitization
- \_ Extend primary device life with substation situational awareness
- \_ Interoperability with IEC 61850 Ed2 compliance certificate
- \_ User friendly with powerful and customizable HMI
- \_ Flexible hardware and software configuration and network topology for integration with legacy technologies
- \_ High availability with IED and network seamless redundancy
- \_ Save onsite trips with secure remote access
- \_ Customer proximity with local teams supported by the Center of Excellence for project delivery and support

\_ Wide range of applications with scalable solution

### **Applications**

\_ Transmission, distribution

\_ Utilities, industry

\_ Green field, brown field substations