SCADA Applications

SPIDER™

Application

The SPIDER SCADA applications comprise a complete set of functions to best fulfill operational demands put on a system for supervisory control of power systems. The applications are designed to give efficient support for all states of operation as well as efficiently handle disturbances.

The SCADA applications are built on a full-graphics HMI user interface, the real-time Avanti DBMS system, a modern process communication system, and other services in the SPIDER platform system.

With SPIDER SCADA it is possible to begin installing a small system and grow from a single workstation up to a multi-server control center. And continually upgrade the existing installation by utilizing the standard set of functions and tools.

The SPIDER SCADA system is built on widely accepted state-of-the-art computer standards. The design is portable and distributable on a number of hardware architectures.

Functions

**Process Data Handling:** Event driven and cyclic collection of data from RTUs and Substation Automation Systems, of ABB manufacture as well as a large number of other RTUs. Deadband zero range processing is supported to filter small variations from being transmitted. A large number of standard as well as manufacturer proprietary protocols are supported.

**Inter-Center Communication:** IEC 60870-6/ TASE.1 (ELCOM) support on DECnet, X25 and TCP/IP as well as support of the ... / TASE.2 (ICCP) protocol.

**Event Processing:** Limit transitions and status changes are monitored and carefully classified. Both warning and alarm limits are available, and gradient supervision. Delay handling enables filtering of events caused by limit transitions during a short time.

The detailed event classification enables extensive predefined and manual query extracts of both event and alarm information.

E.g. extracts by unit type, voltage level, reason type, priority, time period and wild card. User hooks for event triggered user applications are also possible.

**Alarm Notification:** Audio signal as tones or synthetic speech. Visible annunciation by flashing symbols and icons as well as alarm messages in the alarm window and list.

**Advanced Operation Integrity:** Flexible combination of basic console authority and operator log-in authority for authorization of intervention and picture presentation.

**Control:** Object commands, regulation commands and set-point regulation.

**Sequential Control:** Switching sequences triggered by event or operator. Interactive Learn Mode for easy programming, by using single line diagrams.

**Interlocking:** Conditional checking for control options with override option. Easily defined conditions.
Functions, continued

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**Blocking:** Units can be taken out of service. Data acquisition, alarm handling, event registration, command and historical recording can be blocked on station, feeder/bay and object level.

**Process Value Presentation:** Alternative presentation of measurements, estimates, forecasts and historical data in single line diagrams.

**Tagging:** Multiple object tags (e.g. work permit, temporary earthed, locked) with different priority. Automatic constraints on control actions. Tag status presentation in single line diagrams as well as in lists.

**Operator Messages:** Electronic notebook with possibility to connect to a timer for cyclic or one shot message at predefined time/times.

**Printouts:** Spontaneous event printouts, Event reports, Statistical data reports, Status reports, Operator messages reports and Hardcopy printouts. Printouts can be manually reassigned to different units. Printouts are automatically reassigned to a backup unit at failure. No printout is lost at printer failure.

**Mimic Presentation:** Object status can be presented as single or double lamps. Measured values can be presented as a meter instrument, a digital display and on chart recorders.

**Calculations:** 4GL programming language for easy programming.

**Spread-sheet integration:** Import of data to commercial spreadsheet (e.g. MS Excel) on cyclic or demand basis of process data and historical data. Manual corrected historical data and calculation results can be fed back into the database.

**Tariff Processing:** Handles multiple tariffs. Tariff periods defined per day. Tariff switching by time of day, external event or on operator demand.

**Equipment Statistics:** Enables predicted preventive maintenance instead of strictly time scheduled. Accumulation of breaker operations by means of number of controlled operations and number of spontaneous operations. Operation time measurement e.g. number of operation hours for a generator.

**Data Archiving & Historical Data Processing:** Time tagging and archiving of real time data both cyclic and on time of day basis. Quality marking of data from the real time quality marking and dedicated quality marking for the time tagged value. Successive mean value calculation as well as back-up values if the primary is invalid. Historical data can be archived and restored.

**Disturbance Analysis:** A function for creating system wide snap shots triggered by a predefined event. The snapshot contains pre and post disturbance measured values and indications. Sequence of event recording made in individual RTUs with high time resolution. Detailed disturbance data is fetched from Digital Protection Relays and gives possibility to see cause, direction and distance to earth fault or short circuit. Measured values and indications are recorded for later analysis.

**Benefits of SPIDER SCADA Applications**

- Scalable for easy expansion of data and functionality.
- Immediate access to power system status.
- Fast and easy monitoring of power system security.
- Excellent support for direct preventive actions and restoration even during disturbance situations.
- Extensive reporting and archiving with possibilities for export and also for restoration of archived data.