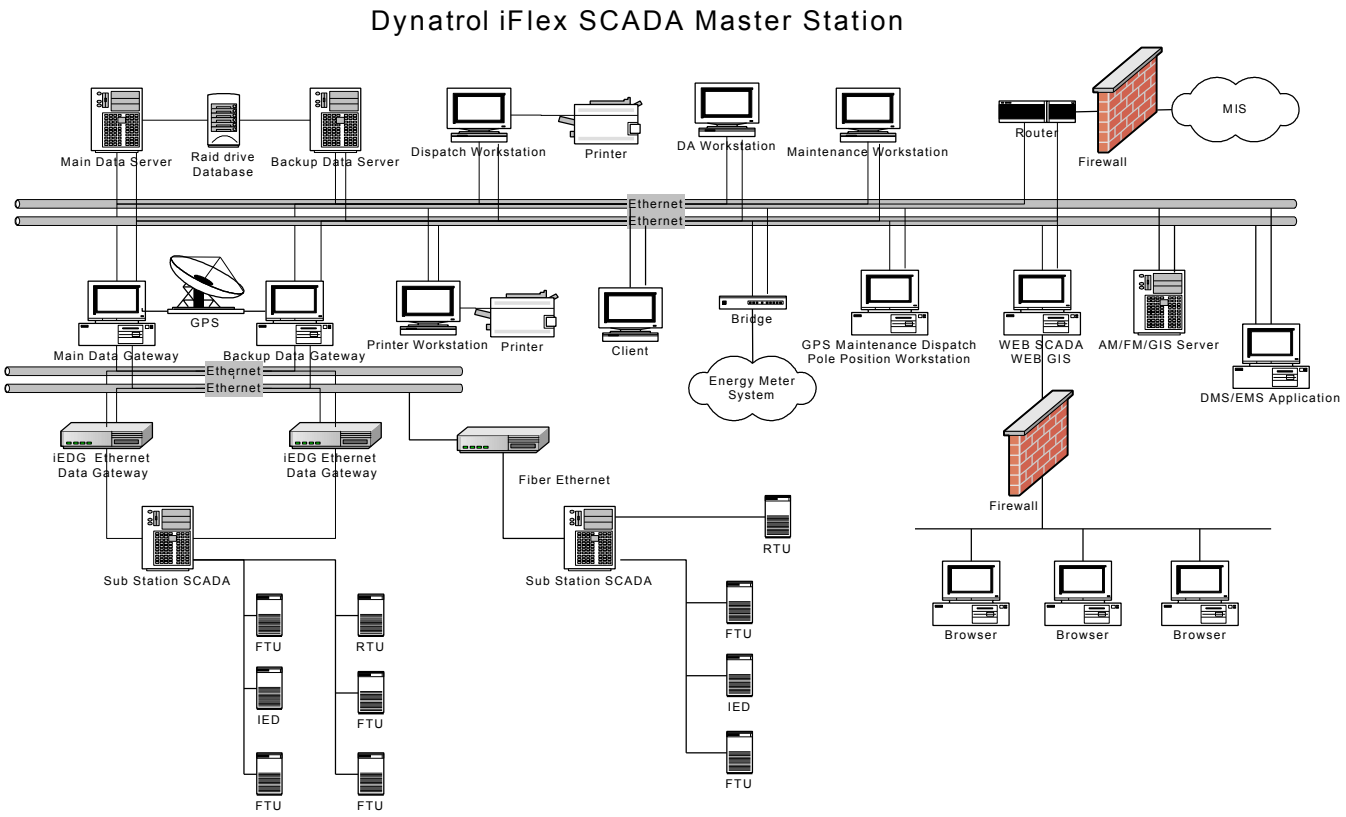
Dynatrol Systems Inc.

iFlex SCADA Master SPECIFICATIONS



Main Features

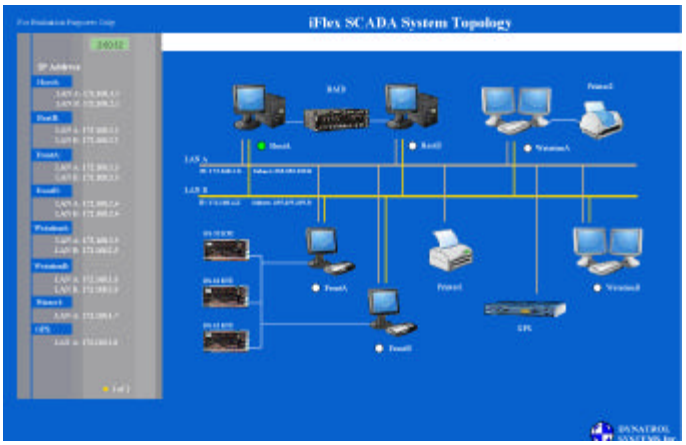
- Supports Win2000/WinXP Professional Operating Systems
- Open system architecture:
  All Operating System, Database System and Protocol communication interfaces compliant with OSI standards
- Scalable:
  - Depending on the requirement, the iFlex SCADA Master can be one single PC or up to a networked group of PC.
  - Distributed system with offsite backup capability
- Standard Database:
  - Integrates seamlessly with standard commercial Relational Database Management Software (RDBMS)
  - Third party software: Oracle, Sybase, MSSQL etc. can be easily integrated for use with iFlex SCADA Master
- Redundancy:
  - Provides Redundancy on both Communication and Process Servers
  - Hardware Redundancy: Disk-mirroring solutions incorporating RAID technologies
  - Software Redundancy: All changes on the hot machine are mirrored on the standby machine's database
- User friendly:
  - State-of-the-art software techniques, very intuitive operation of the iFlex SCADA Master
- Secure Operations:
  - Latest state-of-the-art technology in iFlex SCADA Master, secure and safe.
  - Various level of access with password protection.
  - Audit trail, playback and error logs
  - Third party software firewall and security solutions.
- Ease of Configuration and Maintenance:
  - Configure and maintain the iFlex SCADA Master with relative ease by using the default recommended configuration system parameters
- Flexible, adaptable to the ever-changing needs of our Customers:
  - Developed software can be enhanced to suit ever-changing needs of our customers.

- Cost effective:
  - Most cost-effective solutions under unique approach of software development method

Cost-effective System Structures

- iFlex SCADA Master has a flexible and highly expandable architecture.
- Stand-Alone Mode:
  Provide all the functions of a system within a single computer
  Server functions include:
  - Real-time communications with RTUs, FTUs,
  - Database management
  - Alarm and event management
  - History recording

  Client functions include
  - Operator and/or engineering monitoring, Control, and Configuration



- Compact Mode:
  Provide distributed server, workstation and data gateway functions within group of computers.
  Data gateway functions include
  - real-time communications with RTUs and FTUs.

  Server functions include:
  - Database management
  - Alarm and event management
  - History recording
  - Operator and/or engineering monitoring, Control, and Configuration
- Standard Mode:
  - Dual Servers (One primary server, one backup server)
  - Dual Data Gateways (One primary gateway, one backup gateway)
- Multi-Computer Mode:
  - Dual Servers (One primary server, one backup server)
  - Dual Data Gateway (One active and one backup)
  - Separate workstations for Engineer, Operator, Database and Web server and numerous client workstations

Major Module Applications

- Real-Time Process Management Package, known as RTPM
- Graphical User Man-Machine Interface Package, known as MMI
- Data Gateway Package, known as Front-End Processor (FEP)
- Database Manager Package, known as DBM
- Drawing Interface Tools package, known as Drawing Tools (DT)
- Web Server/Client Package, known as WEB Server

RTPM functions

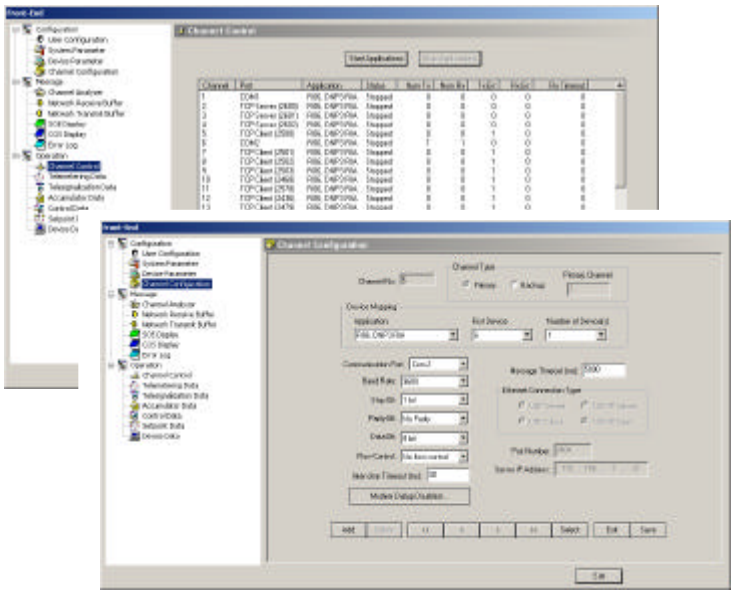
- Network Message Management.
- Redundancy Management
  - Single Ethernet network redundancy
  - Dual Ethernet network redundancy
- Scheduled Processes
  - Event triggers printing
  - Event triggers automatic interface display
  - Timer triggers daily report printing
  - Timer triggers monthly report printing

MMI functions

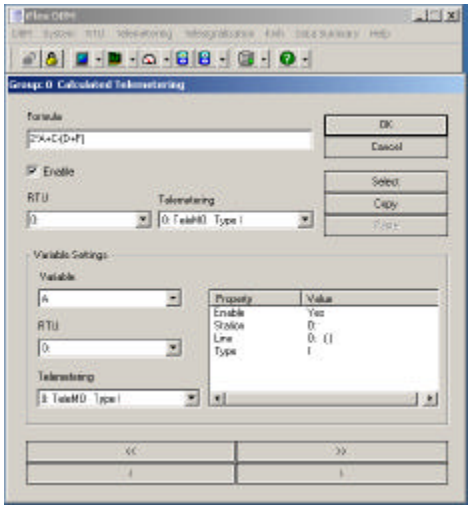
- Real-time Data Display
  - Switch status, currents, voltage, network node status, Kwh, frequency, safely running days, total consumer power, total supply power, real-time curve, real-time table, power flow, calculated variables, hot spot super link, tag, Trending, event etc.
- Operation Management
  - Line Maintenance/Repair
  - Remote control
  - Setpoint control
  - Control Tag or Control Lock assigned to the equipment
- Printing
  - Scheduled Report printing
  - Manual Report printing
  - Event printing
- Alarm Sound Management
  - Customize sound files
  - Enunciate/Silence sound
- Security Privileges Management
- Generate reports
- Zoom and pan interface view
- Navigation between diagrams
- Alarm Summary display
  - Alarm Summary can be setup to show just high priority alarms
  - Alarm Summary also can be reduced in size to show only the three most recent alarms
  - Alarm Summary display line placed along the bottom of the screen
  - Multi-parameter sort function
  - Multi-parameter filter function
  - Configurable columns
  - Single Acknowledgement, Acknowledge All, Acknowledge filtered list
- Historical trend value may be graphically displayed
- Historical trend value saved in database tables
- Bus lines can be automatically colored according to their status, and according to their live operating voltage

FEP functions

- Receive data from FTU/RTU or other IEDs
- Parse/Map data and transfer data to RTPM
- Redundancy Support
- Support multiple protocols, e.g.
  - DNP3 L2
  - T101
  - MODBUS
  - SC1801
  - CDT
  - additional protocol support can be added upon customer request
- Plug-in component of each I/O device driver (Protocol module)
- Supervisory/Troubleshooting functions



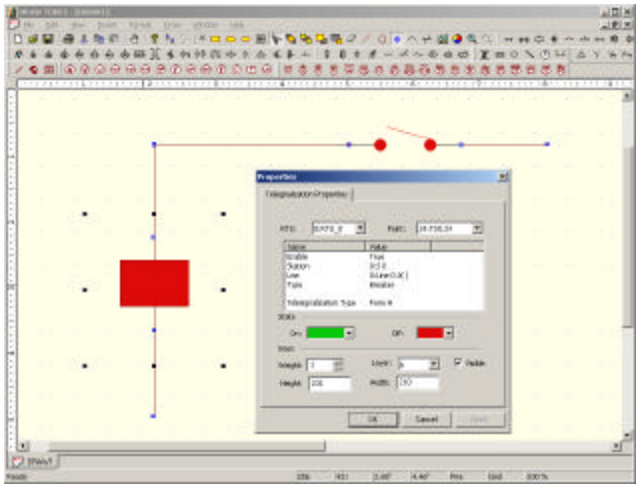
DBM functions



- Support standard relations databases such as SQL/Oracle/Sybase
- Support Open Database Connectivity (ODBC)
- Historical data includes historical curves, events, operation records, etc.
- Calculations and Scripts include +, -, *, /, <, >, <=, >=, =, NOT, AND, XOR, OR, NAND
- Set a tag to real-time or “force in”

DT functions

- Draw interfaces for display in MMI
- Customizable primitive properties
- Basic Drawing Primitives:
  - Graphic Primitives (Rectangle, Rounded Rectangle, Oval/Circle, Chord, Polygon, Pie, Arc, Line, Poly Line), Text, Push Button, Data link, Bitmap, GIF, JPEG, Chart/Trend, Timer, Report. Gauges.
  - Electrical Power Devices (Bus, Feeder Line, Ground, Transformer, Generator, Capacitor, Switcher, Breaker etc.), Event etc.
- Standard Drawing Functions:
  - Display Grid Lines
  - Space Objects Evenly Horizontal, Space Objects Evenly Vertical, Align Top, Align Bottom, Align Left, Align Right, Align Horizontal Center, Align Vertical Center
  - Group, Ungroup
  - Bring to Front, Send to Back
  - Draw Bus Line to standardized width and color, Make Bus line vertical, Make Bus line horizontal, Animate Bus line with color reflects voltage or ground status
  - Animate Flow Line with color animation reflects power flow moving direction
- Advanced Drawing functions:
  - Foreground Fill, Rotate, Position, Scale, Visibility, and Layering
- Dynamic Power Drawing Objects:
  - Analog indications
  - Circuit breakers
  - DC converter
  - Digital indications
  - Grounds
  - Link symbols
  - Local service contactors
  - Local service transformers
  - Power transformers
  - Voltage transformers
  - Bus
  - Feeder Line
  - Generator
  - Capacitor
  - Switcher
  - Breaker
  - Event indications



WEB Server:

- Real-time information WEB browsing