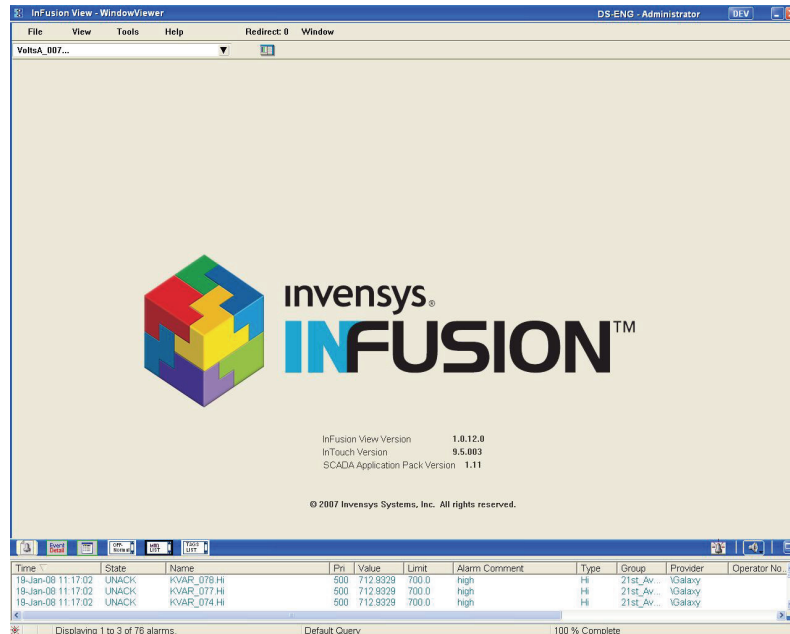


InFusion™ Software

PSS 21S-10B7 B3

SCADA Application Pack



The SCADA Application Package for the InFusion™ Enterprise Control System provides extensions for the basic InFusion Foundation Edition. These extensions provide specific functions common in SCADA platforms.

OVERVIEW

The SCADA Application Pack provides enhancements for the InFusion Foundation Edition in three specific areas:

- ▶ Human Machine Interface
- ▶ SCADA Application Objects
- ▶ Device Integration Pack.

These SCADA Human Machine Interfaces extensions build on the functionality of InFusion View for Foundation Edition and provide the following functionality:

- ▶ List Processing, including Off-Normal List, Modifier List, and Safety Tagging List
- ▶ Three Most Recent Alarm Window
- ▶ Alarm History
- ▶ Event Realtime and History
- ▶ Display Notations
- ▶ Enhanced Operator Safety Tagging System
- ▶ SCADA Faceplates which work with the Enhanced SCADA Application Objects

- ▶ Extended Quality Attribute Animations, including foreground, background, blinking, additional character, and additional character coloring
- ▶ Extended Quality Attribute Displays
- ▶ Operator Control Locking and Tracking
- ▶ Network Monitoring Application.
- ▶ InterControl Center Protocol (ICCP)
- ▶ Mauell Mapboard Controllers
- ▶ Leeds and Northrup Conitel Line Server Protocol (CLS)
- ▶ Fisher Pierce TeleSCADA Controller.

SCADA Functions are provided with specifically targeted SCADA Application Objects, which build on standard Archestra Objects but offer a number of enhancements and features for both Analog and Discrete tag processing, including:

- ▶ Time Stamp Recording on Process Variable
- ▶ Control Reservations and Authorizations
- ▶ Alarm Level Enable and Disable
- ▶ Advanced Warmup of Object Attributes over Object Deployments
- ▶ 64 Bits of extended Quality Information
- ▶ Extensive animation and tagging of values based on Extended Quality
- ▶ Operator Safety and Software Tags
- ▶ Tag Notes
- ▶ Off-Normal State Definition and List Collector Processing
- ▶ Network Monitoring with PING object.

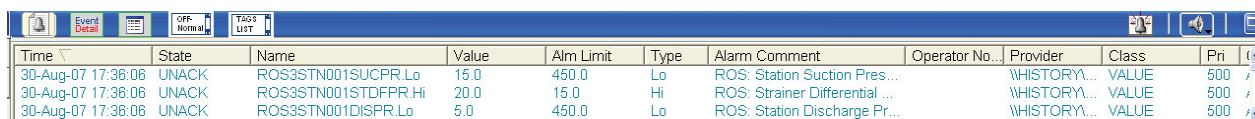
SCADA Device Integration is enhanced with an optional set of SCADA Device Objects, including:

- ▶ GE SRTP (Fanuc PLC) Drivers

OPERATOR EXPERIENCE

The InFusion View visualization experience is enhanced with many new operator functions, while maintaining complete compatibility with the InFusion Foundation Edition. Using the SCADA Application Pack, the security of InFusion View is strengthened, allowing operators to see only data that is enabled for their particular role. List displays are provided permitting operators to view groups of data specifically set up for them. Notations can be added to Windows and extensive animation and extended data quality processing provides for record keeping and animation of information according to extended quality attributes.

Alarm processing is improved with a Three Most Recent Alarm window, providing the three most recent unacknowledged alarms, in addition to full screen alarm and historical alarm displays. Events, including all operator actions from the console, including the operator name, can be viewed in both real-time and historical context. The Three Most Recent Alarm Display alarm toolbar makes available lists of OffNormals, objects with modifiers applied, Operator Safety Tags, Alarms, Events, List Processing, and Audible Alarm control. See Figure 1.



Time	State	Name	Value	Alm Limit	Type	Alarm Comment	Operator No.	Provider	Class	Pri
30-Aug-07 17:36:06	UNACK	ROS3STN001SUCPR.Lo	15.0	450.0	Lo	ROS: Station Suction Pres...		WHISTORY...	VALUE	500
30-Aug-07 17:36:06	UNACK	ROS3STN001STDFPR.Hi	20.0	15.0	Hi	ROS: Strainer Differential ...		WHISTORY...	VALUE	500
30-Aug-07 17:36:06	UNACK	ROS3STN001DISPR.Lo	5.0	450.0	Lo	ROS: Station Discharge Pr...		WHISTORY...	VALUE	500

Figure 1. Three Most Recent Alarm Window with Alarm Toolbar

A key component of the SCADA Application Pack is 64 different Modifiers and Modifier Time Stamps available for each object. These provide a rich set of concise quality indicators for every object in the system. These quality indicators are combined with animation coloring and tagging, including settable priorities, text colors, fill colors, animation string and colors, which enable the operator to quickly discern important quality information on every display.

Included with the SCADA Application Pack are control authorization and lockout functions allowing items under control by an operator to be visible to every other operator in the system.

Other benefits to the operator include a time stamp of the Process Variable allowing an operator to see the time of the last Process Variable update; various modifier settings (such as Alarm Inhibit) are now preserved over object deployment, so that the original time stamps for each operator action are retained.

SCADA OBJECTS

The new SCADA Objects \$SCADAAnalogDevice and \$SCADADiscreteDevice provide the same functionality as the base Archestra \$AnalogDevice and \$DiscreteDevice objects, but have many enhancements targeted for SCADA Applications. (See Figure 2.) These two new objects are built using the Application Object Toolkit in native C++ form and provide all of the new functionality at the highest performance level possible within the Application Server. New SCADA objects are created and deployed in the same manner as standard Archestra Objects and new objects simply inherit all functions provided by the SCADA Objects.

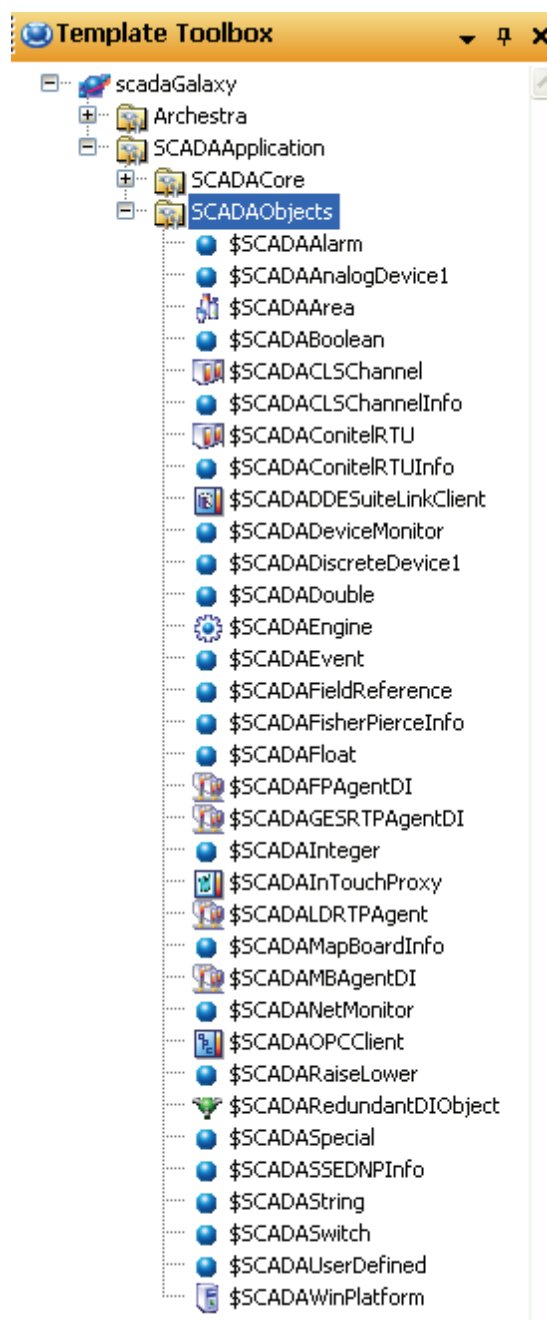


Figure 2. SCADA Objects Available in Template Toolbox

Analog processing supports many new features, including configured attributes, such as, Object Type, Object Type Code, SCADAPak Directory and Control Timeout. Processing of the Analog Device is enhanced with 64 bits of quality information consolidated into two-32 bit fields; providing fast access to all object quality information with minimal overhead. With the new \$SCADAAnalogDevice object, operators can disable alarm levels individually, view the extended quality information including time stamps for each quality indicator, set operator safety and software tags, including tag notes, view the Process Variable last time change, inhibit events, and view underrange and overrange of input indications. The SCADAAnalogDevice is specifically designed to work with the Device Integration Objects to maximize the quality information presented to the operator.

Discrete processing supports many similar new features, including new configured attributes, such as, Object Type, Object Type Code, SCADAPak Directory, Control Timeout, Alarm Direction, Event Direction, Faceplate Control Text, and Normal State Definition. Discrete device processing is enhanced with 64 bits of quality information consolidated into two-32 bit fields; this provides fast access to all object quality information with minimal overhead. With the new \$SCADADiscreteDevice object, operator scan view extended quality information including time stamps for each quality indicator, set operator safety and software tags, including tag notes, and view the Process Variable last time change. The SCADADiscrete Device object is specifically designed to work with Device Integration Objects to maximize the quality information presented to operators.

An additional application object natively provides a “ping” function to monitor devices on the network for failure, raising an alarm on the failure of a device. The ping object is bundled into the Network Monitoring Application, which provides overview and detailed

displays of system network servers and clients.

DEVICE INTEGRATION OBJECTS

The SCADA Application Pack supports an optional Device Integration Pack that includes common SCADA drivers. These drivers are written as Device Integration Objects (DI Objects) rather than simple I/O or DA Servers. As DI Objects, they are integrated into the Integrated Development Environment (IDE) configuration interface. Each DI Object provides extensive communication statistics and automatic and manual failover capabilities between primary and backup communication circuits; as well as integration with the Industrial Application Server (IAS) inherent failover using RMC Channels; this eliminates the need for the IAS Redundant DI Objects for these drivers.

Drivers included in the optional Device Integration Pack are:

- ▶ GE SRTP Fanuc PLC Driver – This driver is designed to interface to GE Fanuc PLCs over a TCP/IP Network. Failover is handled through both automatic and manual failover capabilities.
- ▶ LiveDATA RTP Agent ICCP Driver – This driver interfaces to a LiveData ICCP Live Server using LiveData RealTime Protocol (RTP). Note: This driver requires a separate purchase of the LiveData server.
- ▶ Mauell Mapboard Driver – The Mauell Mapboard Driver interfaces to a Mauell Corporation DO128 controller through a commercial terminal server. Failover is handled through a primary/backup terminal server. This device is useful for driving legacy lamps on wallboards. Up to 16 DO128 Controllers can be used.

- ▶ Conitel Communication Line Server – The Conitel CLS driver interfaces to an Invensys Process Systems Communication Line Server with Conitel Protocol. The basic functions of Conitel, including Scanning (one or two bit status, MCD, uni or bi-polar analog processing), and Trip/Close controls are provided. The driver also provides a “listen mode” to an existing Conitel CLS Line Server, so that a new system can “eavesdrop” on an existing system and run in parallel operation during cutover. (Note: Accumulator processing, time synchronization, and Sequence of Events are not currently provided.) See PSS 21H-8D2 B4 I/A Series® *Intelligent SCADA Communications Line Server (CLS 50)* for additional information.
- ▶ Fisher Pierce TeleSCADA Object – interfaces with a Fisher Pierce TeleSCADA control box, which is typically used to interface to Capacitor Bank Controllers.

SCADA APPLICATION PACK SUMMARY

The SCADA Application Pack provides enhanced functionality for InFusion Foundation Edition Systems targeted for SCADA applications. It provides a useful starting point for those projects which require SCADA functionality.

The licenses in the following table are applied per site installation.

Table 1. Site Licenses

Part Number	Short Description	Description
J0201EF	SCADA Application Objects for InFusion (Feature SCADAOBJ)	SCADA Application Objects license provides an extensible collection of Application Objects (AO), Device Integration (DI) Objects. It includes: 1) Application Object templates for Analog and Discrete data with time stamping, alarm control extensions, operator tagging, control selection and bad data management. 2) Application Objects to support system status monitoring of SCADA systems and networks, including TCP/IP Device Monitoring.
J0201EG	SCADA Extensions for InFusion View (Feature SCADAHMI)	The SCADA extensions for InFusion View license adds functions for managing and displaying alarms / events including the Current Alarm List and Historical Alarm List with inherent filtering & sorting functions, Current Event List and Historical Event List with inherent filtering & sorting functions, the Most Recent Alarm List window and Alarm Filter preferences linked to User Logon. InFusion View extensions including Off-Normal List, Modified Object List, Tagged Object List, Operator Access List, System Communication Status, Control Selection Visualization and Operator Notepad.

Table 1. Site Licenses (Continued)

Part Number	Short Description	Description
J0201EH	SCADA Device Integration Objects for InFusion (Feature SCADADI)	This software license enables Device Integration Objects including of CLS/Conitel, GE SRTP over TCP/IP, LiveData RTP Agent, Mauell Mapboard DO128 and FP TeleSCADA Radio Controller.
J0201EJ	SCADA Application Pack for InFusion (Feature SCADABUN)	The SCADA Application Pack license provides an extensible collection of Application Objects (AO), Device Integration (DI) Objects plus extended functionality and displays for InFusion View. It includes: 1) Application Object templates for Analog and Discrete data with time stamping, alarm control extensions, operator tagging, control selection and bad data management. 2) Application Objects to support system status monitoring of SCADA systems and networks, including TCP/IP Device Monitoring, Time Drift Monitoring and Disk Utilization Monitoring. 3) Extensions to InFusion View for managing and displaying alarms / events including the Current Alarm List and Historical Alarm List with inherent filtering & sorting functions, Current Event List and Historical Event List with inherent filtering & sorting functions, the Most Recent Alarm List window and Alarm Filter preferences linked to User Logon. 4) InFusion View extensions including Off-Normal List, Modified Object List, Tagged Object List, Operator Access List, System Communication Status, Control Selection Visualization and Operator Notepad. 5) Device Integration Objects including of CLS/Conitel, GE SRTP over TCP/IP, LiveData RTP Agent, Mauell Mapboard DO128 and FP TeleSCADA Radio Controller.



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