

I/A Series[®] Software Overview Application Workstation 51 (UNIX Operating System)



The Application Workstation 51 with Integrated control and I/O software and flexible configurations of application software provides a scalable control system matched to the requirements of entry-level users as well as medium to large scale users needing full network capability on an I/A Series Nodebus or on Ethernet.

The AW51 is available in Style B or Style C hardware versions. Although both have identical form factors, the AW51 Style C offers higher performance levels and larger memory capacity than the Style B.

Support is provided for a wide range of user process control requirements, ranging from relatively simple input-output or data acquisition systems with a limited number of points through elaborate sequential and batch control systems with widely varying features. Control schemes use the same powerful compound and block structures supported by larger I/A Series systems. Scalability is achieved by allowing the user to select only the number of control blocks dictated by the size of the system.



Among the standard application software packages included with the Application Workstation 51 with Integrated Control software are:

- The FoxView Display Manager, which provides a user-friendly interface to the real-time process data in the system
- The FoxDraw Graphic Display Builder, which allows easy creation or modification of dynamic displays.
- Control block configuration via the Integrated Control Configurator
- System Management.

Optional application software is available, such as the FoxCAETM Engineering Software package.

Software I/O drivers are provided for interfacing to FBMs or FBCs, ModiconTM Programmable Controllers, and Allen-BradleyTM PLCs.

Support for additional stations when used as a station on a network. On an Ethernet, the station supports Micro-I/ATM stations, Workstation Processor 51s, and other Application Workstation 51s. On an I/A Series Nodebus, it works in conjunction with all I/A Series stations including Micro-I/A stations.

APPLICATION WORKSTATION 51 SOFTWARE

The AW51 software consists of:

- The SunTM Microsystems SolarisTM 2.x operating system.
- I/A Series Control Suite Integrated Control Software
- Configuration Packages
- Input/Output Drivers
- Relational Database Management

Operating System

The Solaris 2.x version of the UNIX operating system provides:

- Support for a powerful 32-bit RISC processor
- Pre-emptive multi-tasking, ensuring timely response to all events
- · Prioritized processes
- Applications expandability
- Support for the Foxboro operating system extensions provided in larger I/A Series systems
- · Power-up self-checking diagnostics
- · Run-time diagnostics

• Off-line diagnostics to isolate suspected faults.

Integrated Control Software Suite

The Integrated Control Software Suite is provided in accordance with the requirements of the user's system and its capability is available in functional categories. These are:

- Data Acquisition and Input/Output
 - ACCUM (Accumulator)
 - AIN (Analog Input)
 - ALMPRI (Alarm Priority)
 - AOUT (Analog Output)
 - BIAS (Bias)
 - BLNALM (Boolean Alarm)
 - CALC (Calculator)
 - CALCA (Advanced Calculator)
 - CHARC (Characterizer)
 - CIN (Contact Input)
 - COUT (Contract Output)
 - DGAP (Differential Gap)
 - MAIN (Multiple Analog Input)
 - MATH (Mathematics)
 - MCIN (Multiple Contact Input)
 - MCOUT (Multiple Contact Output)
 - MEALM (Measurement Alarm)
 - PATALM (Pattern Alarm)
 - REALM (Real Alarm)
 - SIGSEL (Signal Selector)
 - STALM (State Alarm)
- Continuous Control
 - DTIME (Dead Time Compensator)
 - GDEV (General Device)
 - LIM (Limiter)
 - LLAG (Lead-Lag)
 - MOVLV (Motor Operated Valve)
 - MSG (Message Generator)
 - MTR (Motor Control)
 - PID (Proportional Integral Derivative)
 - PIDX (Extended PID)
 - PIDXE (Enhanced Extended PID)
 - PTC (Proportional Time Controller)
 - RAMP (Ramp)
 - RATIO (Ratio)
 - SWCH (Switch)
 - VLV (Valve)

- Sequential and Batch Control
 - DEP (Dependent Sequence)
 - EXC (Exception Sequence)
 - IND (Independent Sequence)
 - MON (Monitor)
 - PATT (Pattern)
 - STATE (State)
 - TIM (Timer)
 - BOOL (Boolean Variable)
 - REAL (Real Variable)
 - LONG (Long Integer Variable)
 - STRING (String Variable)
 - PACK (Packed Long Integer Variable).

A flexible method of software licensing allows you to choose from three block capacities to match your application most economically. Each block type is assigned a functional point value in Value Points. For example, an AIN block for a single process variable is assigned 1 value point, while a MAIN block for up to 8 process variables is assigned 3 value points.

The available levels are:

- Level 1: 100 Value Points for AW51D, 3000 Value Points for AW51E
- Level 2: 500 Value Points for AW51D, 6000 Value Points for AW51E
- Level 3: 2000 Value Points for AW51D, 15000 Value Points for AW51E

For more information on Value Points, refer to PSS 21H-1B7 B4, *Control Processor 60 and Control Processor 60 Simplex Integrated Control Software.*

The AW51 provides the Integrated Control Configurator for use in creating the compounds and blocks of the control scheme and establishing the initial values of its parameters. Block detail displays provide a dynamic and interactive visual summary of block operation. Alarm displays provide alarm notification and the status of all current alarms. In addition to these standard control software capabilities, numerous application software packages are offered as standard or optional features.

APPLICATIONS

Standard Application Packages

The following application software is included with all categories and levels of the AW51 Integrated Control Software.

System Management

Features include:

- Display of equipment information for the station and its associated input/output devices, buses, and printers
- Capability for change actions directed to the associated equipment
- Processing of station alarm conditions and messages
- Maintenance of the system date and time.

Database Management

Features include:

- Storage, retrieval, and manipulation of system data files
- A run-time license for the embedded use of the INFORMIXTM Relational Database Management System
- A Lotus spreadsheet package.

Historian

Features include:

- Maintenance of a history of values for processrelated measurements which have been configured for retention by the Historian
- Maintenance of a history of application
 messages which have been sent to the Historian
- Maintenance of a history of alarms and error conditions which generate messages for the Historian
- Access to all Historian data by display and report application programs.

FoxViewTM Display Manager

Features include:

- Presentation of the I/A Series operating environment
- Setting of the overall operating environment according to the type of user. Process engineers, process operators, and software engineers have access to specialized functions and databases suited to their specific requirements and authorizations
- Dynamic and interactive process graphics
- Display and processing of current process alarms
- Group and default displays for control blocks
- Execution of embedded trending within displays.

FoxDrawTM Display Builder

Features include:

- Graphical display configuration for viewing and control of process operation
- Access to graphical object palettes allowing easy inclusion of pumps, tanks, valves, ISA symbols, and similar complex objects
- Ready modification of existing displays using a mouse pointer, menu items, and quick-access toolbars
- Association of process variables with objects in the displays
- Dynamic variation of object attributes such as fill level, color, position, size and visibility with changes in the associated process variable
- Inclusion of operator control elements such as pushbuttons and sliders into displays
- A library of faceplates which may be configured by simply specifying the compound and block name of the block to which the faceplate is to be connected.

Optional Application Packages

AIM*DataLink

Features include:

- Multiple I/A Series servers and multiple Windows
 PC clients
- · Security maintained at the I/A Series servers
- Real-time access to IA Series process data via the DDE (Dynamic Data Exchange) capability
- Access to Historian data via the ODBC (Open Data Base Connectivity) interface
- Data Object Browser for access to data objects (process or shared variables) in any server
- Historian Browser for access to any Historian
- Report Browser for access to any Report print file in the system
- Implementation as an OLE server to enable connection of AIM*DataLink or Data for Windows files, views, or reports to any Windows application supporting OLE.

FoxCAE Engineering Software

Features include:

- Use of typical loops as starting point for I/A Series database generation
- User-specified default block parameter values, with later modification possible
- Graphical loop editor ensuring consistent documentation layout
- Graphical block-sequencing and control processor phasing tools
- Historian data collection point assignments transferable to the I/A Series system
- Back documentation of pre-existing databases.

AIM*AT Historian

Features include:

• Scalable Historian with up to 250,000 points optionally available.

Third-Party Software

Features include:

- Availability of a wide range of fully certified non Foxboro third-party software.
- Necessity for impact on system loading to be determined on a case-by-case basis.

Input/Output Support

Software drivers are provided for interfacing the AW51 with the following buses and devices:

- Foxboro Fieldbus, for support of Fieldbus Modules, Fieldbus Cards, Intelligent Transmitters, HTG Interface Units, and Gas Chromatographs
- ModiconTM Modbus
- Ethernet (for connection of Allen-Bradley PLCs, and WP51 additional operator stations).

User Programming Support

Powerful support is provided for interfacing user programs with I/A Series control systems. Some features of this capability are:

- Support for on-platform user programs interfacing to the I/A Series via the FoxAPITM integration software
- Client/server interfacing using standard networking protocols such as TCP/IP or DECnetTM when the user program is not resident on the AW51. (Net FoxAPI)
- Insulation from re-engineering of applications caused by platform changes
- Connection-based read or write access to I/A Series data objects
- Grouping of data objects into data sets for efficiency of multiple accesses
- Change-driven reads or writes of I/A Series data objects to reduce traffic levels in networked applications
- Function call interface to FoxAPI or Net FoxAPI services
- Historian access functions with transparency to Historian storage structures.

50 SERIES X-TERMINAL SOFTWARE

The X-Terminals are intended to serve as additional process operator stations connected to the AW51. They contain the following software capabilities necessary for monitoring and controlling the process:

- Access to block detail displays, user-configured displays, Select displays, and trend displays
- Alarm notification and response capabilities, such as current alarm displays and userconfigured alarm displays
- System Management displays for monitoring the health of the equipment and responding to fault conditions.

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