I/A Series® Software

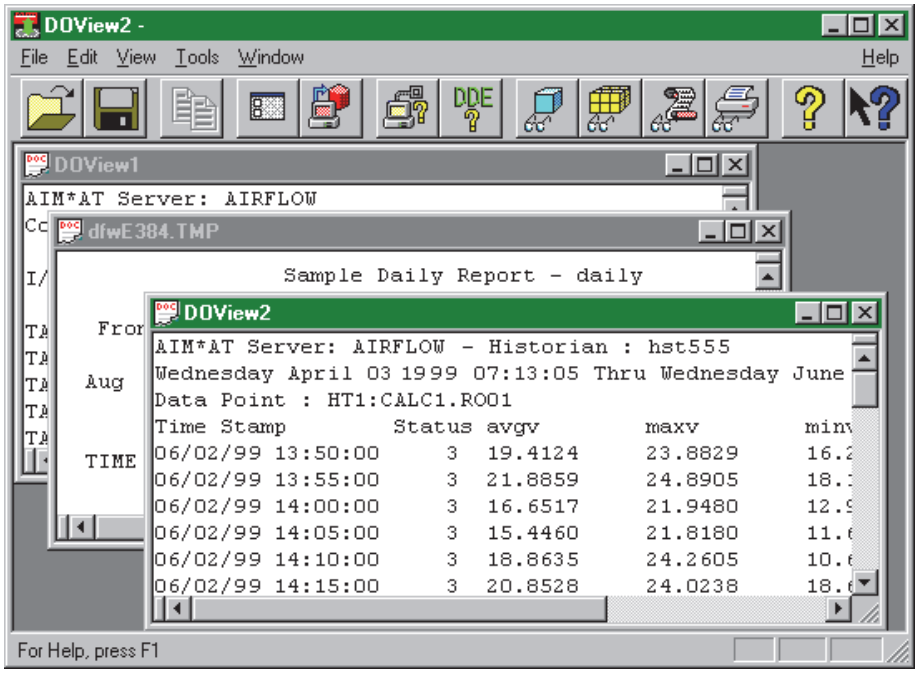
Product Specifications

Foxboro®

by Schneider Electric

PSS 21S-6AIMDL

AIM*DataLink



*AIM*DataLink provides easy access to I/A Series® real-time data objects and historical information from Windows-based applications.*

OVERVIEW

AIM*DataLink Version 2.5 provides Windows-based desktop systems access to both real-time and historical information from an I/A Series system or an AIM*Historian server. Specifically, using low overhead client-server architecture, AIM*DataLink employs a true Windows desktop system architecture, including:

- Dynamic Data Exchange (DDE) interface to I/A Series data objects
- Open Data Base Connectivity (ODBC) interface to historian data including sample RTPs, Messages and Reduction Group data
- Excel Add-In for easy Historian data access without using Structured Query Language (SQL)
- OLE 2.0 and OLE automation for connection between OLE enabled Windows applications and AIM*DataLink views, reports, and I/A Series files.

In addition, browsers allow you to generate desktop views of I/A Series data objects and historian tables.

AIM*DataLink was developed for Windows 95 and runs on Windows 98 and Windows NT Workstation 4.0.

FEATURES

- Real-time access to process and production data in I/A Series servers using the DDE capability within the Microsoft Windows environment
- SQL query capability for the I/A Series Historian and AIM*Historian (Sample, Reduction, Message, and MDE data) via Microsoft ODBC by applications within the Windows environment
- Browser Access to I/A Series data object parameter (compound:block.parameter) names and descriptions, AIM*API data sets, data object values, distributed Historians, and I/A Series reports
- Real-time data object views
- OLE 2.0 server object linking and embedding
- Connection to multiple I/A Series and AIM*Historian servers and Windows-based PC clients with a variety of applications
- Configurable access privileges by user and data elements
- Access to files residing in I/A Series servers
- Refined, intuitive user interface
- Support for Microsoft Windows operating systems on multiple hardware platforms
- Context-sensitive on-line Help.

BENEFITS

Using AIM*DataLink, virtually any 32-bit Windows-based desktop in the enterprise has access to historical and real-time information from I/A Series systems (security is controlled by the I/A Series server). AIM*DataLink browsers enable you to scan for and view real-time and historical information. AIM*DataLink provides DDE, OLE 2.0, and ODBC interfaces to connect to the Microsoft Office suite and equivalent applications. This access to information makes reporting and analyzing process-generated information easy and intuitive.

The AIM*DataLink interface was developed using Microsoft guidelines for Windows 95 targeted products which provide a consistent “look and feel” among applications.

REAL-TIME READ/WRITE ACCESS VIA DDE

AIM*DataLink uses the standard DDE syntax of “Application, Topic, and Item” for establishing connections. “Application” and “Topic” are DDE interface mechanisms for identifying a Windows “conversation.” In this case, the “Application” is always “AIMServer” and the “Topic” is always “ObjectAccess”. The “Item” part of the connection refers to the desired I/A Series object expressed as:

<AP-Alias>/<Compound>:<Block>.<Parameter>

Three types of interchanges constitute data object access:

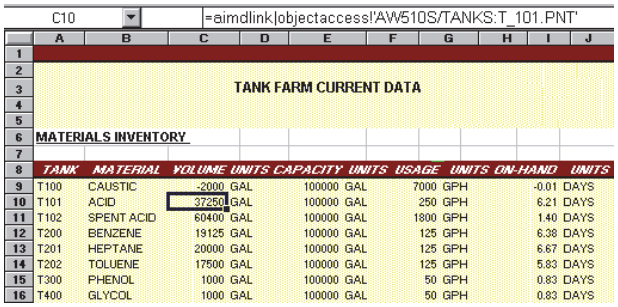
- Automatic change-driven updates from the I/A Series server to the requesting PC client
- Single one-shot updates of a requested data object
- Single writes of a specific data object.

Change-driven updates occur periodically to Windows-based applications for the specified data objects. Updates may be either DDE *hot links*, which contain the changed data value, or *warm links* that act only as a notification that a change has occurred.

Applications receive DDE data in “CF_TEXT” format of the following form:

<Data Value><TAB><Status Value><CR><LF>

One typical use of the DDE capability is to link I/A Series data objects to an Excel worksheet. Figure 1 is a typical worksheet.



C10 =aimdlink|objectaccess!'AW510S/TANKS:T_101.PNT'

	A	B	C	D	E	F	G	H	I	J
1										
2										
3			TANK FARM CURRENT DATA							
4										
5										
6	MATERIALS INVENTORY									
7										
8	TANK	MATERIAL	VOLUME	UNITS	CAPACITY	UNITS	USAGE	UNITS	ON-HAND	UNITS
9	T100	CAUSTIC	-2000	GAL	100000	GAL	7000	GPH	-0.01	DAYS
10	T101	ACID	37250	GAL	100000	GAL	250	GPH	6.21	DAYS
11	T102	SPENT ACID	60400	GAL	100000	GAL	1800	GPH	1.40	DAYS
12	T200	BENZENE	19125	GAL	100000	GAL	125	GPH	6.38	DAYS
13	T201	HEPTANE	20000	GAL	100000	GAL	125	GPH	6.67	DAYS
14	T202	TOLUENE	17500	GAL	100000	GAL	125	GPH	5.83	DAYS
15	T300	PHENOL	1000	GAL	100000	GAL	50	GPH	0.83	DAYS
16	T400	GLYCOL	1000	GAL	100000	GAL	50	GPH	0.83	DAYS

Figure 1. Typical Excel Worksheet

Using this data sheet, it is then possible to generate a “live-updating” graph (Figure 2).

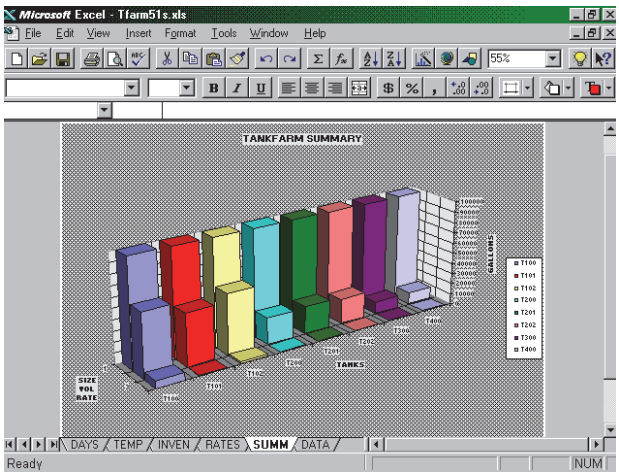


Figure 2. Graphical Presentation of Real-Time Process Data

ODBC ACCESS TO HISTORIANS

The architecture of ODBC is a client-server model, making it an ideal tool for access to I/A Series Historians and AIM*Historian instances. The four components of the ODBC architecture are:

- Applications such as Excel Spreadsheet and MS Query
- Driver Manager, the ODBC manager provided by Microsoft separately or as part of the MS Office Suite
- Driver such as the AIM*DataLink Historian ODBC driver
- Data sources such as historian instances.

The application interacts with you via its user interface, calls ODBC functions to submit SQL statements, and retrieves and presents results.

The ODBC Driver Manager manages interactions between multiple applications and multiple ODBC drivers simultaneously. An application calls an ODBC function in the Driver Manager which routes the call to the correct ODBC driver.

AIM*DataLink ODBC driver is a Dynamic Link Library (DLL) that implements ODBC function calls and interacts with a data source (AIM*AT Historian Database).

The driver:

- Establishes a connection to the data source
- Submits requests to the data source
- Translates data to and from other formats if requested by the application
- Returns results to the application
- Formats errors into standard error codes and returns them to the application
- Declares and manipulates cursors if necessary
- Initiates transactions if the data source requires explicit transaction initiation.

There are two types of ODBC drivers:

- Single-tier
- Multiple-tier.

Multiple-tier drivers process ODBC calls and pass SQL statements to the data source. Single-tier drivers process both ODBC calls and SQL statements. The AIM*DataLink ODBC driver is a single-tier driver using a client-server model where SQL statements are processed by the driver for access to remote historian files and database tables.

The data source is a term used in ODBC for two purposes:

- As a conceptual term that defines the kind of data you desire
- As an actual name you or the system administrator assigns via an ODBC utility to describe a particular collection of software components, such as an ODBC driver, a network library, a server name and address, and DBMS.

AIM*DataLink accesses the AIM*AT Historian database, which consists of:

- Sample Data
- Reduction Groups
- MDE
- Messages
- AIM*Historian Event Messages.

Each of these files or tables is accessible for read access. The MDE tables (with appropriate permissions) can be written allowing you to set up remote lab or other manual entry applications using networked Windows PC applications.

To access I/A Series historical data from a Windows-based PC, you must specify:

- Historian name (for example, hst01)
- Database name
- Table name
- Column names.

In addition to accessing historians on the information network, AIM*DataLink enables Windows PCs to secure access to I/A Series Historians residing on other servers located on the I/A Series Nodebus.

BROWSER ACCESS

Browsers are a suite of dialog boxes on the Windows desktop for viewing I/A Series objects and data. There are four browsers available.

The Data Object Browser lets you examine all available data objects from a server which take the form of compound:block.parameter or SharedVariableName.

With this browser, you review individual objects and create data object views.

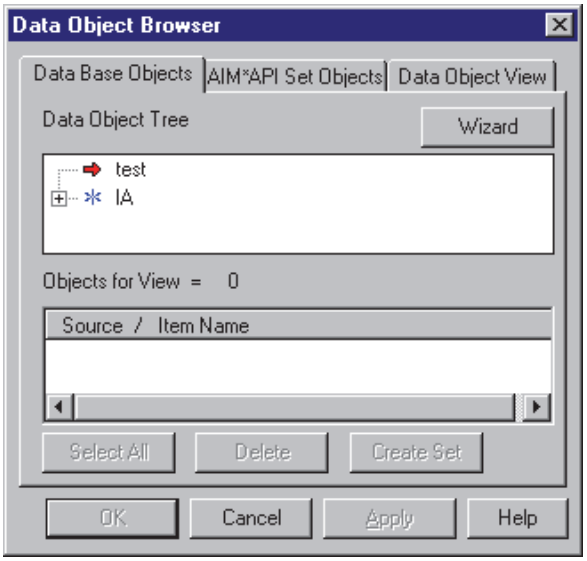


Figure 3. Data Object Browser

The Set Browser enables a Windows PC user to examine all available AIM*API data sets and their corresponding data objects from a selected I/A Series server. With this browser you can specify data formats and create data object views.

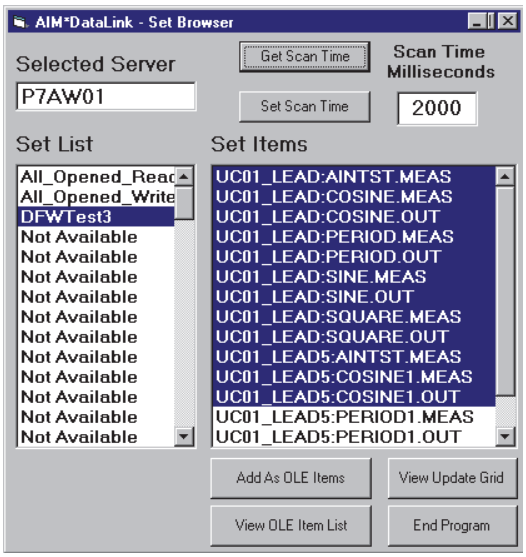


Figure 4. Set Browser

The Historian Browser is a tool for accessing distributed historians and associated databases. Upon selection of a particular AIM*AT server and historian instance, you can view the contents of the historical files or tables, and create an historian view.

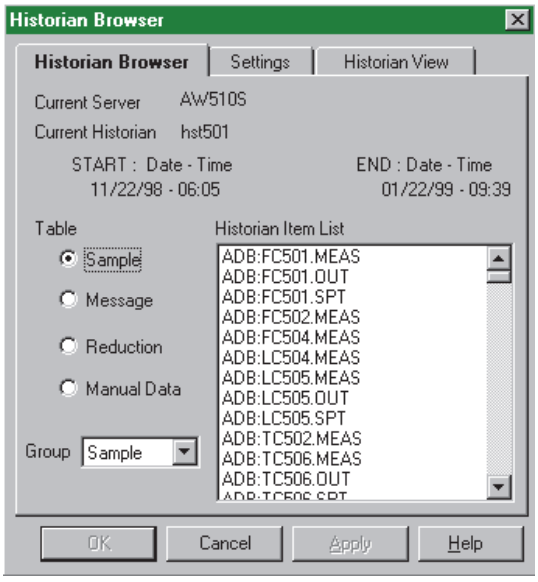


Figure 5. Historian Browser

The Report Browser accesses I/A Series report print files located on the selected server. Reports may be viewed, printed, and placed in a report view.

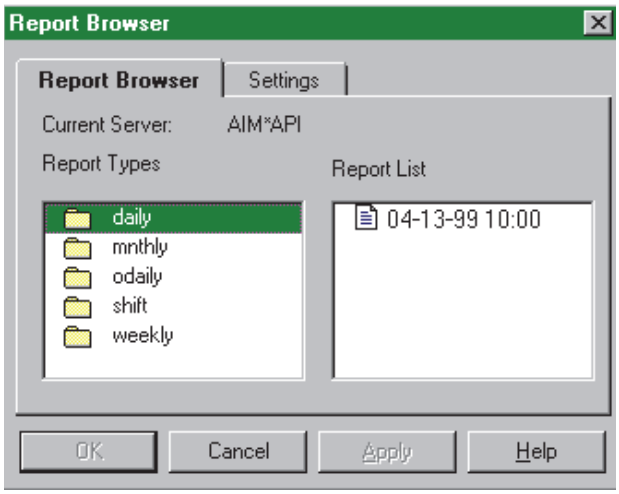


Figure 6. Report Browser

VIEWS

With the browsers you create a Data Object, Historian or Report view which you can save for future use, print, and link to other PC applications (OLE 2.0). Figure 7 is an example of a Data Object view.

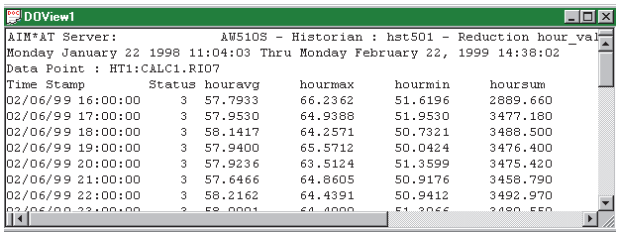


Figure 7. Data Object View

MULTIPLE SERVERS - MULTIPLE WINDOWS PC CLIENTS - MULTIPLE APPLICATIONS

By employing a low overhead client-server architecture, AIM*DataLink makes it possible to set up a configuration consisting of multiple I/A Series servers, AIM*Historian instances, and Windows PC clients.

SECURE BUT OPEN

Security is a built-in feature of AIM*DataLink and is maintained at the AIM*AT servers.

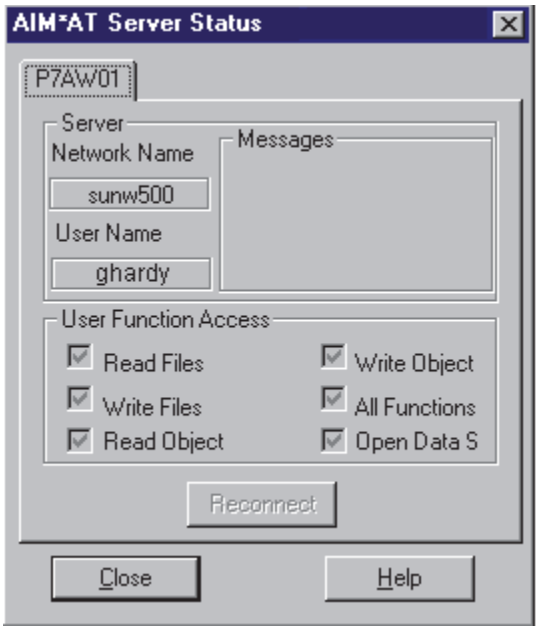


*Figure 8. AIM*API Server Status Dialog Box*

READ/WRITE ACCESS TO I/A SERIES SERVER FILES

AIM*DataLink provides a graphical tool for the Windows PC user to read and write files on I/A Series servers. AIM*DataLink OLE 2.0 capability also provides read access of I/A Series server files.

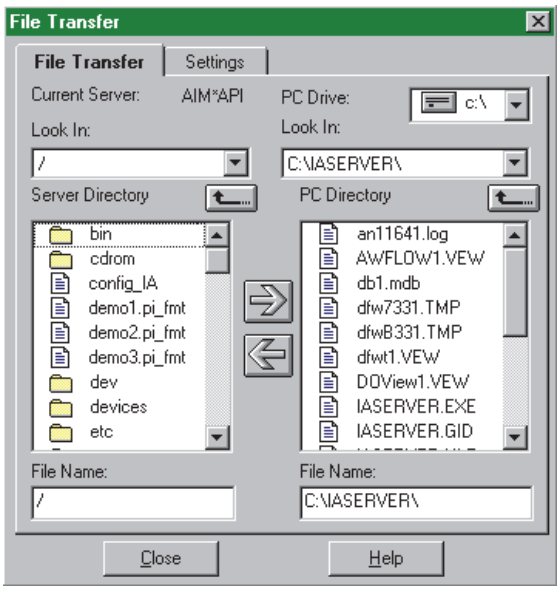


*Figure 9. AIM*DataLink File Transfer Dialog Box*

REFINED, INTUITIVE INTERFACE

AIM*DataLink provides the intuitive interface complete with a toolbar, pull-down menus, and context-sensitive Help that users of Windows applications have come to expect.

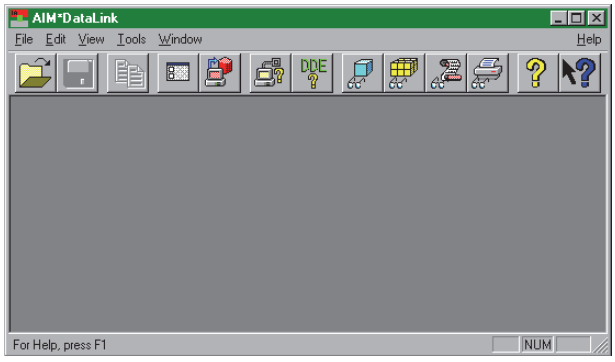


Figure 10. Main Window with Toolbar

COMMON LOOK AND FEEL ACROSS ALL MICROSOFT WINDOWS OPERATING SYSTEMS

AIM*DataLink was designed to operate on two Microsoft Windows desktop operating systems:

- Windows 95 and Windows 98
- Windows NT Workstation 4.0 (and up).

Because it takes advantage of the Common Dialog mechanism and the Microsoft Foundation Class (MFC) development environment, it runs on all Microsoft desktop operating systems with the same look and feel.

ON-LINE HELP

AIM*DataLink provides conventional on-line Help and context-sensitive Help related to a target item. With context-sensitive Help, you first pick the Help tool on the toolbar and then the target item. The Help item associated with that target is then displayed.

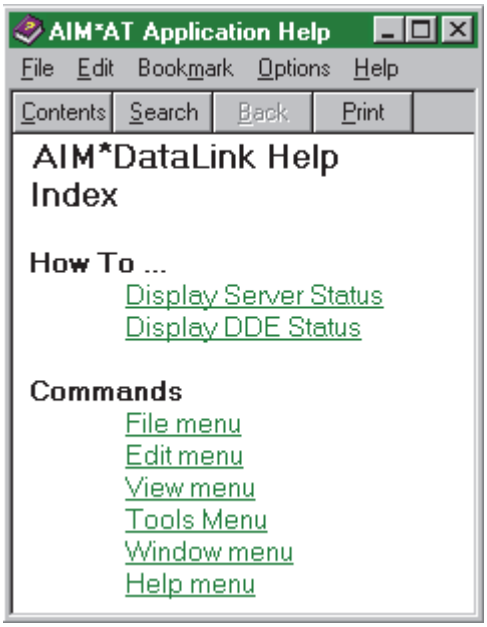


*Figure 11. AIM*Server Application Help Dialog Box*

Software Requirements

Licensing for AIM*DataLink software, which includes the client PC and AIM*AT server components that access the I/A Series or AIM*Historian server, is available for single and multiple PC and server configurations. Off-the-shelf packages consist of one PC client up to 100 PC clients.

Windows PC System Requirements

- Personal computer using one of the following Microsoft Windows operating systems:
  - Windows 95 and Windows 98 (8 MB of RAM; 12 MB recommended)
  - Windows NT Workstation 4.0 (12 MB of RAM; 16 MB recommended)
- One 3.5-inch high density diskette drive
- CD-ROM drive
- Microsoft mouse or equivalent
- 10 MB of hard disk space recommended
- Monitor compatible with the appropriate Windows operating system (color VGA or better resolution recommended)
- Network interface card compatible with the selected Windows operating system and TCP/IP network support such as, 3c509.

Server Requirements

- I/A Series
  50 Series or 70 Series server with optional information network interface such as Ethernet, token-ring, ATM, or fast Ethernet
- AIM*Historian server
  Windows NT 4.0 or Solaris 2.4 SPARC server with information network interface.

Technical Specifications

- 0.5 to 30 second PC scan time range (1 ms steps)
- Up to 10 simultaneous client DDE applications per PC
- Maximum of 1000 DDE object connections per PC
- Up to 10 simultaneous I/A Series server connections per PC
- Up to 20 simultaneous client PC connections per server.

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