

I/A Series Information Suite AIM*Explorer



OVERVIEW

AIM*Explorer is a PC desktop tool for visualizing and analyzing real-time and historical process data from a I/A Series system server and an AIM*Historian server. AIM*Explorer has three major components:

- Data object tree tool for visually selecting groups of data objects
- Spreadsheet for viewing data in tabular format and defining data transformations
- Trend/chart area for viewing plots of selected and transformed data.

AIM*Explorer runs on Microsoft Windows 95, Windows 98, and Windows NT operating systems.



Introducing AIM*Explorer

The AIM*Explorer software package enables you to obtain visual displays of historical and real-time process data. With this AIM*AT client application, you can:

- Create, modify, and save real-time and historical trends and charts
- Monitor up to 16 sources of data simultaneously
- · Zoom into selected areas of any chart
- Display traces using a common scale or separate bands
- Select and display charts from Reduction Group
 Data
- Use a marker bar and a statistical toolbox to examine data in detail
- Time-shift historical data to make visual comparisons
- · Create various charts to analyze data
- Define a data transformation as a mathematical function of single or multiple data sources
- Display the data values and transformation results as they are obtained.

AIM*Explorer Features

Multiple Chart Styles

AIM*Explorer makes building real-time and historical trend charts, bar charts, area charts, and stacked bar charts easy. Each chart style can be further configured with scaling, color, and marker options to show your data with maximum clarity.

Library of Charts

Charts and trends are easily saved for:

- · Later analysis
- Setup of other displays
- Export to other AIM*Explorer users.

Cut and Paste

You can copy trend and spreadsheet data to the Windows clipboard as bitmap files or metafiles. And you can copy either the data or formulas from the spreadsheet area directly into spreadsheet programs such as Microsoft Excel.

Wizard

AIM*Explorer has a built-in wizard that assists you step-by-step in creating a trend or chart.

Windows OLE Support

AIM*Explorer supports the drag-and-drop operation between the data object tree and the trending area, thereby allowing you to select data sources from the data object tree visually and drag them into the trend area.

Windows Help

AIM*Explorer includes Microsoft Windows Help that contains the complete user's guide with an index and keyword search. In addition, run-time context-sensitive Help is available to index quickly into the Help file by clicking the mouse button over an item or by pressing the F1 key.

Windows Registry Support

AIM*Explorer uses the Windows Registry to store the default configuration settings and applies them to each new session. A Preferences menu lets you modify these settings as your requirements change.

Windows Style Guidelines

AIM*Explorer has a visual and interactive functionality consistent with the Microsoft Windows operating system — the same functionality that is used in other Windows applications.

Controlled Memory Usage

AIM*Explorer allows you to determine how much data will be active in the program by specifying how many data sets to collect. When that limit of data sets is reached, the next set collected causes the first set to be discarded, allowing you to run AIM*Explorer using a limited set of system resources.

Automatic Screen Management

AIM*Explorer is designed to give the maximum amount of screen area to the actual trending object. In real-time mode, the time-shifting controls disappear to allow the trending object to use more screen area. If you further reduce the size of the window, the list view control likewise becomes invisible, keeping the trend area at the maximum possible size, even on the small screens of laptop PCs.

Operations

You can configure up to 16 data objects (also referred to as pens) for each trend or chart display. The objects can be sourced from either a database point or a mathematical expression that may include any combination of other pens. When you request a data collection, AIM*Explorer retrieves all historical data for the requested time range, performs the specified calculations, and continuously adds the latest realtime and calculated data.

Functional Components

The user interface of AIM*Explorer is made up of three functional components:

- Data Object Tree
- Spreadsheet
- Trend/Chart Window.

Data Object Tree

This component allows you to select which data objects to use in the trending tool. The selection is made in a hierarchical manner from a tree showing all the AIM*AT servers, connected control stations and historian instances, and the objects from these sources (see Figure 1). Selections from the tree are copied to the pens in AIM*Explorer by dragging and dropping them to the trending window.



Figure 1. Data Object Tree (shown expanded)

Spreadsheet Area

The spreadsheet component is made up of two worksheets. One worksheet allows you to define mathematical formulas that AIM*Explorer uses for a data pen (See Figure 3). The spreadsheet follows Microsoft Excel conventions for the formula syntax. The second worksheet shows the data values (including calculations) which are displayed in the trend/chart window. The data values appear in red if the control object is in an alarm condition, otherwise they appear in black. Calculated values appear in blue (see Figure 3).



Figure 2. Spreadsheet Formula Entry

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0	6/06/9	8 01:2	2:59	89.216522	72.611542	3.43471	164.87683	80.914032	38.023126	84.155771	82.438416	0	
0	6/06/9	8 01:2	2:58	90.212402	71.840508	3.5177002	164.62016	81.026455	37.679104	84.068932	82.310081	0	
0	6/06/9	8 01:2	2:57	90.822342	71.452209	3.5685287	164.50563	81.137276	37.510369	84.03708	82.252815	0	
0	6/06/9	8 01:2	2:56	91.999718	70.729225	3.6666431	164.30792	81.364471	37.197934	83.987283	82.153961	0	
0	6/06/9	8 01:2	2:55	92.786407	70.151871	3.7322008	164.15675	81.469139	36.942036	83.944477	82.078377	0	
0	6/06/9	8 01:2	2:54	92.85701	69.793312	3.7380843	164.0574	81.325161	36.765698	83.897744	82.028702	0	
0	6/06/9	8 01:2	2:53	92.557098	69.711723	3.7130914	164.02866	81.134411	36.712407	83.870874	82.014328	0	
	6/06/9	8 01:2	2:52	91.241089	69.757141	3.6034241	164.01569	80.499115	36.680283	83.809555	82.007843	0	
	6/06/9	8 01:2	2:50	89.034569	70.07251	3.4195478	164.0652	79.553539	36.746029	83.742374	82.0326	0	
	6/06/9	8 01:2	2:49	87.660172	70.320374	3.3050141	164.11441	78.990273	36.812694	83.709712	82.057205	0	
	6/06/9	8 01:2	2:48	84.571884	70.958298	3.047657	164.26337	77.765091	37.002977	83.655512	82.131683	0	
0	6/06/9	8 01:2	2:47	81.372597	71.719864	2.7810497	164.48138	76.54623	37.250457	83.631217	82.240692	0	
0	6/06/9	8 01:2	2:46	78.509445	72.517426	2.5424538	164.76988	75.513435	37.52994	83.656168	82.384941	0	
	6/06/9	8 01:2	2:45	77.340424	72.902634	2.4450355	164.94078	75.121529	37.673835	83.692908	82.47039	0	
0	6/06/9	8 01:2	2:44	75.76149	73.598938	2.3134575	165.33594	74.680214	37.956198	83.824697	82.667969	0	
	6/06/9	8 01:2	2:43	75.417252	74.150772	2.284771	165.80182	74.784012	38.217772	84.043295	82.900909	0	
	6/06/9	8 01:2	2:42	75.75499	74.36245	2.3129158	166.06093	75.05872	38.337683	84.186922	83.030464	0	
	6/06/9	8 01:2	2:41	77.448433	74.655655	2.4540362	166.63046	76.052044	38.554846	84.542249	83.315231	0	
0	6/06/9	8 01:2	2:40	78.770294	74.742943	2.5641913	166.94034	76.756618	38.653567	84.752265	83.470169	0	
	6/06/9	8 01:2	2:39	82.203804	74.827942	2.850317	167.60861	78.515873	38.839129	85.229465	83.804306	0	
	6/06/9	8 01:2	2:38	86.381195	74.850601	3.1984329	168.33897	80.615898	39.024517	85.768703	84.169487	0	
	6/06/9	8 01:2	2:37	88.61232	74.860382	3.3843598	168.72195	81.736351	39.122371	86.053157	84.360977	0	
	6/06/9	8 01:2	2:36	93.066521	74.923645	3.7555432	169.51186	83.995083	39.339594	86.6337	84.755928	0	
0	6/06/9	8 01:2	2:35	97.137695	75.112411	4.0948076	170.32907	86.125053	39.60361	87.211939	85.164536	0	
	6/06/9	8 01:2	2:34	100.45168	75.49231	4.3709726	171.16779	87.971992	39.931641	87.769379	85.583893	0	-
•		Data /	Forn	nulas /		,							
For	Help p	ess F1											_

Figure 3. Spreadsheet Area (shown expanded)

Trend/Chart Window

The trend/chart window displays the currently visible pens, scrolling the data as necessary to allow the newest data to be seen. You determine which pens are attached to data sources, the visible settings for each data pen, display options for the trend/chart window, the scaling factor for each pen, and the time range for data collection.

While data collection is active, you can:

- Zoom in on one part of the graph
- Perform time-shifting operations to compare data at different times
- Obtain real-time statistics

- Freeze the current screen while the data collection continues in the background
- Change each pen's scaling option or value
- Change the time range that is displayed on the trend/chart
- Make pens visible or invisible.

Data Object Wizard

The built-in Data Object Wizard guides your selection of data objects from one or more AIM*AT servers for use in a trend or chart. Figure 4 shows the use of the wizard to select control stations. Note the use of a filter to select particular station names.

I/A Serve	rer Filter
Main	I/A Server Filter I/A Compound-Block Filter
	C* Filter
Show Se	elected Expand Collapse Select All Clear All
	AW0PER CP3050 CP3051 CP4050 P7AW01 CPC301 CPC302 CSC101
<	Back Next > Cancel Help

Figure 4. Wizard Example with Station Filter

Filtering can also be used to select compound or block names from I/A Series systems.

Figure 5 shows the wizard which is filtering for I/A Series block names that begin with "FC".



Figure 5. Wizard Example with Block Name Filter

Scaling Options

Individual Pen Options

You can set AIM*Explorer to display all pens on individual scales or to display all pens using a global scale.

The individual scale options are the following:

- Auto The maximum and minimum values for the value axis are dynamically determined from the data.
- System Default AIM*Explorer adopts the scaling for the variable used by the AIM*API server.
- Hi-Lo The maximum and minimum values for the value axis are set by the user.

Global Pen Options

You can set AIM*Explorer to display the pens in one of the following ways:

- Each Pen Full Screen Each visible pen is scaled to use the entire size of the trend's value axis. The maximum and minimum values are set by the individual pen's scaling option.
- Each Pen Non-Full Screen The maximum value for the value axis is set by finding the largest number out of each visible pen's current scale. The same is done to determine the minimum value. You can also set the global autoscale option in which the maximum and minimum values for the value axis are determined dynamically.
- Banding Each visible pen is given a range of the value axis allowing you to see all of the visible pens without any overlap.

When you press a corresponding button on the side of the trend, the value axis displays the selected pen's maximum and minimum values. When the banding option is activated, these values appear at the top and bottom of that pen's display range on the value axis.

Time Span of Data Collected

Two factors determine the amount of data collected by AIM*Explorer: the trend/chart window data and the underlying data store.

Trend/Chart Window Data

You can set the time span and the sampling frequency in the trending window. The number of data points to be displayed in the window is the product of the time span in seconds divided by the sampling frequency.

Data Store

The number of data sets in the data store is the product of the number of points in the trending window data set multiplied by the data store factor. The data store factor enables time-shifting of data.

Registry Settings

The following parameters are stored in the Windows registry to be used as default settings:

- Axis Mode
- Pen Characteristics
- Time Axis Settings
- Chart Settings
- Spreadsheet Settings
- Data Store Factor.

You can save the current settings as new default settings any time.

Supported Platforms

Clients

PC client stations access AIM*Explorer trend and chart displays over an Ethernet TCP/IP local area network. PC clients run under Microsoft Windows 95, Windows 98, and Windows NT 4.0 operating systems.

Servers

- I/A Series AP/AW51 server (Version 3.3 or greater)
- I/A Series AW70 server (Version 6.0 or greater)
- Either the I/A Series Historian or AIM*Historian
- Sun Microsystems servers running Solaris 2.4
 or later
- Windows NT 4.0 servers



Figure 6. Typical Chart Formats

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