Smart Alec®

User Manual

version 2.1

ADAPTIVE

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Introduction to the Smart Alec software

Installing Smart Alec software

To install the Smart Alec system, insert the Smart Alec CD in your CD drive. The Smart Alec installation process will start automatically. Simply follow the on-screen instructions.

NOTE: If the Smart Alec installation process does not start automatically, you can start it manually:

1. Select *Start > Run…*
2. Type *setup.exe*
3. Click *OK*

NOTE: If you already have Smart Alec installed on the computer, this version of Smart Alec will not install. Please contact Adaptive Micro Systems' Technical Support department at 1-800-558-7022 for assistance.

NOTE: If you are installing on a computer with Windows 98, after the Data Access installation, you will be prompted to restart the computer. Do not restart at this time. Instead, click *Exit Setup* and allow the Smart Alec installation to complete. When complete, you will again be prompted to restart the computer. Do so at this time.

NOTE: If you click *Cancel* at the Smart Alec Registration Information screen, the Smart Alec files will remain on the computer.

Overview

Smart Alec is a software system that integrates data from many sources, and sends that data to ALPHA electronic signs, alphanumeric pagers, and email systems.

Input vs. output

Data can come from many sources and can be in a variety of formats. This data can be placed into messages which can be sent to a number of viewing destinations. These destinations are called “notification devices.” Messages can be sent to the notification devices in a number of ways.

Setup vs. management

Normally the applications that are needed to set up the Smart Alec system are available only to an administrator, while the applications needed for routine management of messaging needs are available to all users. In an environment where only one person is responsible for using Smart Alec, this user is also the administrator, with full access to all applications.

System security

Security for Smart Alec is available to be able to limit access to some features or functions. This security applies to Smart Alec applications and what users can do with the applications, either read-only (“Details”) or both read and update (“Update”) access. Security also applies to system resources, such as hardware and data. A user will be able to use an application or resource only if he has authorization greater than or equal to the level determined to be needed for that application or resource.

Administrator vs. user security

Security is available so that, for instance, applications needed only by the Smart Alec administrator (to set up the system) are not accessible by normal users (for general management of the system.)

Single-user vs. multi-user environments

A “single-user” environment in Smart Alec might have more than one user, but all users have full access rights to all applications, application functions, and system inputs and resources. A “multi-user” environment is appropriate when users should not necessarily have access to the same applications and application functions; that is, access can be restricted for some users for applications, application functions, or system inputs or resources. For example, you may want to restrict a clerk’s authority and not allow that person to send messages to the signs on the production floor. But you would want the building security manager to be able to send a fire alarm to every sign. Also, you might not want either of these people to be able to set authority for other users.

Smart Alec applications

The applications (programs) available in Smart Alec and their respective functions are as follows:

SA Bar

The initial Smart Alec application from which you can start any other Smart Alec application for which you are authorized.

Notification Device Setup

Designate the names and properties to be used for places where messages will be displayed (i.e., signs, pagers, and email.)

Notification Device Group Manager

Designate groups of notification devices so a user can send a message to multiple devices simultaneously.

Notification Device Interface Setup

Designate the type of hardware the computer uses to send messages to notification devices. See "Appendix 3: Notification Device Interfaces" on page 96 for descriptions and examples.

Variable Setup

Designate variables to be available in Smart Alec.

Variables represent values that can change at any time. When there is a change in a variable's value, actions set up in Variable Rule Manager (see below) can be triggered.

Variable Rule Manager

Designate rules to govern variables, what is done with them, and what happens when their values change.

A rule is a pre-defined set of one or more conditions with possible resulting actions. A rule is associated with a variable and is implemented when the value of that variable changes. When the rule is implemented, its conditions are evaluated. Based on the result of that evaluation, the rule's resulting actions may be initiated.

User Account Security Setup

Designate what level of authorization is granted to any user for applications, variables, commands, and notification devices. In other words, you decide if users can access a given resource (application, notification device, etc.) and what functions they can do with it.

Application Security Setup

Designate what level of authorization is needed by any user to access specific applications and the functions in each. If the level of authorization assigned to a user is greater than or equal to the level of authorization needed, then access is granted.

Message Manager

Define messages which can be displayed on notification devices. Messages can include text, graphics, formatting, time, date, temperature, variables, and animation.

Command Manager

Designate commands which are used to add, delete, erase, or replace messages. Commands can be scheduled for a specific date and time or for a recurring time period.

DDE Data Source Setup

Designate what data will be coming from outside of Smart Alec using DDE (Dynamic Data Exchange), where it will come from, and what to do with it. This data will be used to provide the values for variables.

Socket Handler Setup

Set a user-defined port number to use as a socket to receive data from an external system.

Event Log Manager

View a log of all events that occur in Smart Alec.

Event Log Acknowledgement

Some of the events that occur in the Smart Alec system may be serious enough that someone should review them and decide if something should be done about them. Smart Alec identifies these events and allows a user to acknowledge having seen them by using the *Event Log Acknowledgement* application.

Smart Alec Shutdown

Closes all of the Smart Alec applications that do the background processing.

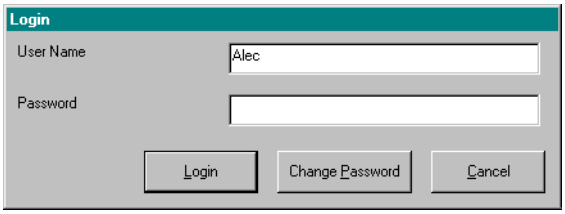
Smart Alec basics

Starting the Smart Alec system

Logging into Smart Alec

To log into the Smart Alec system:

1. From the *Start* button, click *Programs* > *Smart Alec*.
2. The Smart Alec introductory splash screen will appear temporarily.
3. Next, the *Login* screen will appear, as below.



4. Type in your name and password, and click on the *Login* button.
5. Processing applications are started and run in the background as needed.

NOTE: Even if you click *Cancel* in Step 3 above, the processing applications remain running. To shut them down, log into Smart Alec and click Smart Alec Shutdown on the SA Bar.

NOTE: While using the system, if Smart Alec does not seem to be processing, see "Appendix 1: Troubleshooting" on page 93.

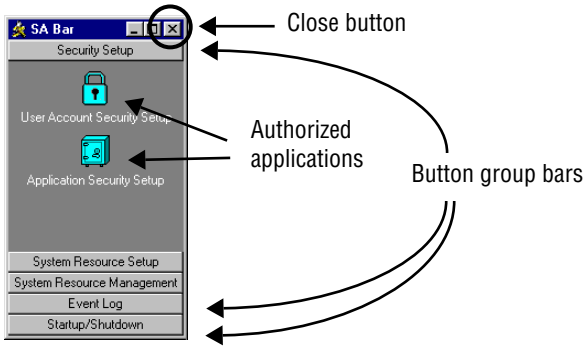
6. Also, the window called the SA Bar will appear for your use. (See "Using the SA Bar" below.)

NOTE

If you are the first or only person logging into the system, or if you are the administrator, accept "Alec" as the user name with no password.

Using the *SA Bar*

The **SA Bar** is where you start all the Smart Alec applications for which you are authorized.



How to use the SA Bar

- Click on any of the button group bars to show the applications available within that group of applications. The button group bars slide up and down as needed to reveal component applications below each bar.
- Click once on any application to start that application.
- Use the close button to close any currently-running Smart Alec user applications in addition to closing the SA Bar. See "Shutting the Smart Alec system down" on page 10.

Smart Alec applications in button group bars

Security Setup

- User Account Security Setup
- Application Security Setup

System Resource Setup

- Notification Device Interface Setup
- Notification Device Setup
- Variable Setup
- DDE Data Source Setup
- Socket Handler Setup

- Command Manager
- Message Manager

System Resource Setup

- Variable Rule Manager
- Notification Device Group Manager
- Display Command Group Manager

Event Log

- Event Log Acknowledgement
- Event Log Manager

Startup/Shutdown

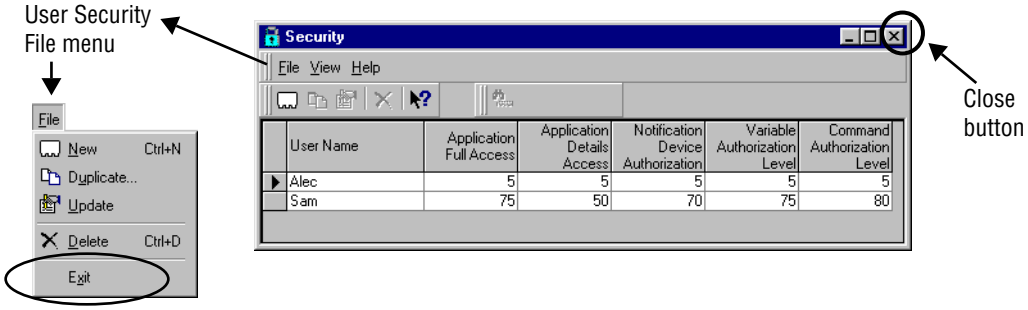
- Smart Alec Shutdown

Shutting the Smart Alec system down

Individual applications

To close any individual user application for setup and management of the system, use any of these methods:

- Click the close button, available for all Smart Alec applications.
- Choose *Exit* from the application's *File* menu.
- Press Alt+F4.



All background processor applications

To close all of the Smart Alec applications that do the background processing, click Smart Alec Shutdown on the SA Bar. (You can see which programs are running in Windows by pressing Ctrl/Alt/Del together. Be sure to choose *Cancel* here rather than *End Task* or *Shut Down*.)

NOTE: Running Smart Alec Shutdown will stop all processing of messages and commands!

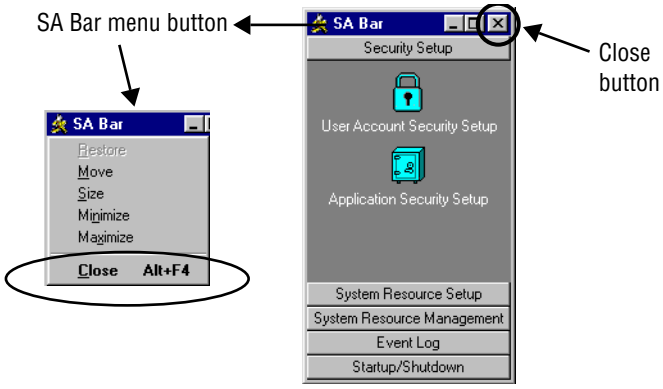
To restart the background processors, from the *Start* button, click *Programs* > *Smart Alec*.

All setup and manager applications

To close all of the currently-running Smart Alec user applications for setup and management of the system (found in the SA Bar), close the SA Bar by either of the following methods.

NOTE: This will *not* close the Smart Alec background processor applications. (See the prior section.)

- Choose *Close* on the SA Bar menu.
- Click the close button on the SA Bar.
- Press Alt+F4.



Complete Smart Alec system

1. Click Smart Alec Shutdown on the SA Bar.
2. Close the SA Bar.

Security authorization

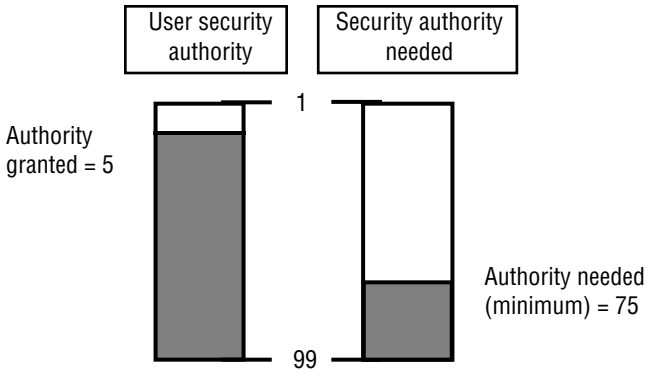
Security concepts

Smart Alec security is used to permit or deny access to applications, functions, and system resources in order to separate administrative and setup functions from general management functions.

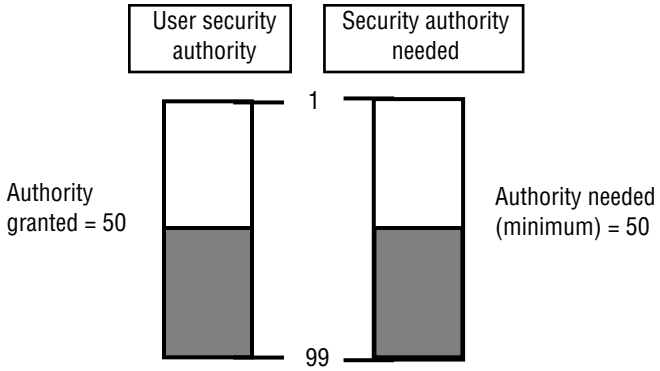
Security is set up such that there are levels for authority from 1 (greatest authority) to 99 (least authority). That is, the lower the number, the more authority you have, up to the point of your being "number 1."

The security level is set for each user to determine how much authority the user is granted to access applications, functions, and system resources. The security level is also set for each application/function and system resource to determine the minimum authority needed for a user to access them. If a user's authorization level is greater than or equal to the minimum needed for that application/function or system resource, then access is granted to that user.

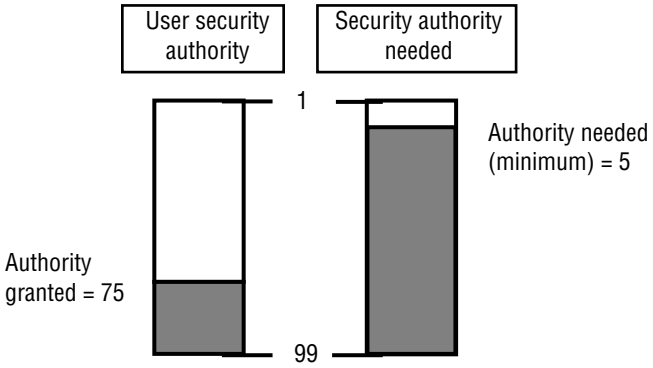
Example 1
User can access the system resource



Example 2
User can access the system resource



Example 3
User can **not** access the system resource



Where security is used

The security system is used for:

- create and use system resources (i.e., notification devices, variables, commands)
- use applications (programs to run, some of which can create, authorize, or change system resources)
- use application functions (view details, make updates)

Security system controls

Applications

- If you have enough “details” authorization to use an application, that application will appear in the SA Bar for you. You will be able to use that application and view details of any data in it.
- If you have enough “update” authorization for an application, that application will also appear in the SA Bar for you. You will be able to view details and, in addition, you will be able to make changes using that application.

Resources

- Some applications can create and manage system resources. If you have sufficient “details” authorization for a system resource, you will be able to view details of any system resource data.
- For system resource applications, if you have sufficient “update” authorization, you will be able to view details and, in addition, you will be able to make changes to system resources.

Data

- Some applications can create data that can be designated as public or private. Each user who creates data in one of these applications determines whether that data is to be available to other users (public) or to only himself (private) when anyone is using that application. Then when that application is to present data to any user, the application checks to see if the data requested is for public use or only for private use. If the user is the creator of the data or if the data is for public use, the data is displayed. Otherwise, it is not.

Processing

- Similar to data, processing (display) commands can be designated as public or private.

Given all the above points, it is possible to have authorization to access an application for a specific system resource and to create one of those system resources, but not have enough authorization to use that system resource. For example, you could be authorized to use Notification Device Setup to initialize a new notification device, but not be authorized in Notification Device Group Manager to group that new notification device with others.

Classes of users

While security is set up such that there are levels of authority from 1 (greatest authority) to 99 (least authority), it is easiest to work with just a few levels. A level of 50 has been established for a general level user, while a level of 5 has been established for an administrative level user. Any other levels are acceptable for customized users, but 25 and 75 might be good choices because they are easy to use.

See "Creating user environments" on page 28 for detailed instructions for setting up individual users.

General user: lower authorization, discretionarily set by system administrator

The default authorizations for a general user are as follows. These authorizations give normal access for applications and system resources for routine management of the system. This is how all users are initially set up in Smart Alec for all applications and system resources. Notice that all authorization level values are the same and therefore, all users have the same system access.

Type of authorization	Scope of authorization	Authorization level
Application	Applications–full access	50
Application	Applications–details access	50
Processing	Commands	50
System resource	Notification Devices	50
System resource	Variables	50

Administrative user: greater authorization, discretionarily set by system administrator

The default authorizations for an administrative user (such as "Alec") are as follows. These authorizations give high-level administrative access to set up applications and system resources.

Type of authorization	Scope of authorization	Authorization level
Application	Applications–full access	5
Application	Applications–details access	5
Processing	Commands	5
System resource	Notification Devices	5
System resource	Variables	5

Custom user: uniquely set up as needed

Authorizations for a custom user vary according to an individual's need to access applications and system resources. Great care must be taken when setting up custom user authorizations and matching them with the settings for applications and system resources. Otherwise, some users may be inadvertently denied access.

The following is an example of one possible way to create another class of user.

Type of authorization	Scope of authorization	Authorization level
Application	Applications–full access	75
Application	Applications–details access	25
Processing	Commands	50
System resource	Notification Devices	50
System resource	Variables	75

This example gives limited access to variables and to update ("full access") applications, gives broad access to view details in applications, and gives normal access to commands and notification devices.

Setting minimum security levels for applications and system resources

Security levels authorized for users work together with security levels for applications and system resources. Authorization levels are set for each user for applications in general, as shown above. In addition, minimum authorization levels are set for each specific application. If a user's authorization range is greater than or equal to the minimum needed for an application, then access is granted to that user.

Normally, default authorization levels for both users and applications are set to 50. However, in the Smart Alec system with the custom user illustrated above, application security could be set up with these settings for the applications shown here:

Specific application	Minimum authorization level needed
Application Security Setup	5
User Account Security Setup	5
Notification Device Setup	50
Notification Device Group Manager	75
Variable Rule Manager	50

In this example, a high level of authority is needed to gain access to Application Security Setup and User Account Security Setup. The user in this example does not have that level of authority. So these applications would not appear in the SA Bar for him. But he does have sufficient authority for full (update) access to Notification Device Group Manager and for details (read) access to both Notification Device Setup and Variable Rule Manager. Therefore, he would be able to make updates in Notification Device Group Manager, and he would be able to see details but not make updates in Notification Device Setup and Variable Rule Manager.

See "Authorizing applications and application functions" on page 34 for detailed instructions.

How Smart Alec uses variables

Variable Setup is used to identify variables to be used in Smart Alec. Variables represent values that can change at any time. The values can come from a number of places, such as a production line, a spreadsheet, and others. Some examples of variables are temperature or production rates, alarms, and security lock status. (See "Identifying variables" on page 50 for detailed instructions.)

In this example, the amount of sales (12,345) is the variable.

Various rules (pre-defined conditions with resulting actions) govern variables, what is done with them, and what happens when their values change.

Smart Alec constantly monitors variables for a change in their values. When there is a change, any rule associated with that variable will be analyzed and its actions may be triggered. Examples of possible actions include starting or stopping a message, updating the value of a variable if it is included in any message, and setting off an alarm. (See "Using variable rules" on page 80 for detailed instructions.)

One of the most important concepts to understand is that you can use variables and variable rules to control things that happen in Smart Alec. Both a variable and a rule defining it or controlling the results of a change in its value can execute an action in Smart Alec.

Types of variable rules

There are three types of rules for variables.

- **Counter Rule** – A rule to define a variable and its appearance when it's displayed (e.g., what color, flashing or not). When there is a change in the value of the variable, the counter rule is used to update the variable's value ("counter") on a

notification device where the variable is part of an active message.

- **Counter Rule with Alarm** – A rule to define a variable and to set high and low thresholds for a variable in addition to a normal range. When there is a change in the value of the variable, the counter with alarm rule is used to update the variable's value ("counter") on a notification device where the variable is part of an active message. If the value goes outside either the high or low threshold, it will be displayed with a different appearance from the normal way it's displayed (e.g., color, flashing or not.) Only works on variables used in a message, not the text.
- **Display Command Rule** – A rule to identify variables to use as tools to trigger display commands, which, in turn, trigger actions, such as displaying a message, based on comparing the value of a variable with another value. This rule is in the format of:

  If <value1> compares favorably to <criteria1>,

  (and/or <value2> compares favorably to <criteria2>)

  then do <display command>.

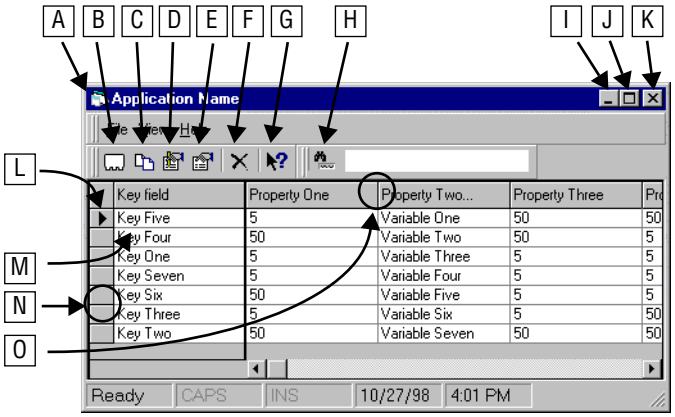
  Examples:

  1. If temperature of machine >= 212°, then display the "temperature alarm" message.
  2. If counter = 1000, then display the "production goal" message.
  3. If sales >= 1000 and net profit >= 1 million , then display the "congratulations" message.

How the Smart Alec windows work

The picture below is representative of the windows in Smart Alec. The table following indicates its features and functions.

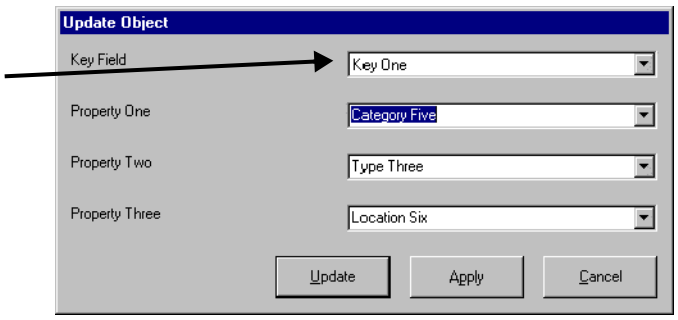
Duplicate, Update, Details, and Delete are described generically below. The New Item function is described in general below, and is described in detail individually in the section for each Smart Alec application.



Feature	Name	Function
A	Menu button	Pull-down menu for the application.
B	New item	Create a new item of this type. The properties will need to be filled in.
C	Duplicate this item	Duplicate the item selected and show its properties so they can be changed as needed to create another item that is similar to the original.
D	Update this item	Show all properties for this item so they can be updated as needed. You can also access the screen to update an item by double-clicking to the left of the row. (See L.)
E	Details	Show all properties for this item, but do not allow any updating.
F	Delete this item	Delete this item from Smart Alec.
G	What's this button	After you click on another section of the window, information about that section will be displayed. Not in effect in Smart Alec at this time.
H	Search function	Use this after selecting a column to search for a specific value.
I	Minimize button	Put the application down to the Windows task bar.
J	Resize button	Toggle the size of the window.
K	Close button	Close this application.
L	Item selection	Click in this column to select an item or double-click to open it. (See D.)

Feature	Name	Function2a1331376j]a13313.60.s3360lls 2 12.3360lls 2 12.3j3313.
M	Right-click	Right-click on the name of the item to show properties and allow updating.
N	Row height	Click and drag the bottom edge of the row to adjust the height of the row.
O	Column width	Click and drag the right edge of the column to adjust the width of the column.

The picture below is representative of the add/update/details windows in Smart Alec. The table following indicates its features and functions.



Feature	Name	Description
A	Item name	Name of the item selected. Cannot be changed after the item is created. If you need to change it: duplicate the item, change the new item's name, then delete the original item.
B	Item properties	Must be added, can be updated with proper authorization, can not be updated in details mode.
C	Drop-down selection	Allows selection of items already created.
D	Add/Update	Adds or updates this one item and exits this window.
E	Apply	Allows you to save the values for this item and then view/update the values for any other item of the same type.
F	Cancel	Exits this window without making any changes.

Working with Smart Alec application components

The functions for Duplicate, Update, Details, and Delete are similar in each Smart Alec application. This section describes these functions generically, but uses the *Variable Rule Manager* as an example for the application items.

Where an application's function differs from these generic functions, it is described in a section for that application. The function for Add is described for each application and gives explanations for all properties for the item being added.

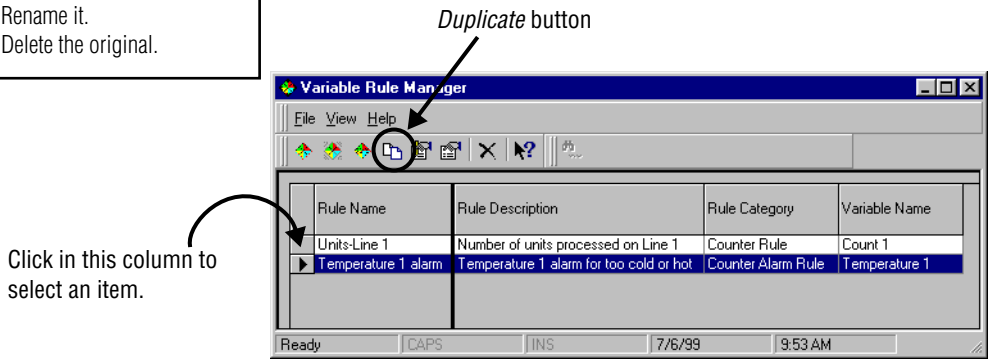
Duplicating an item

NOTE

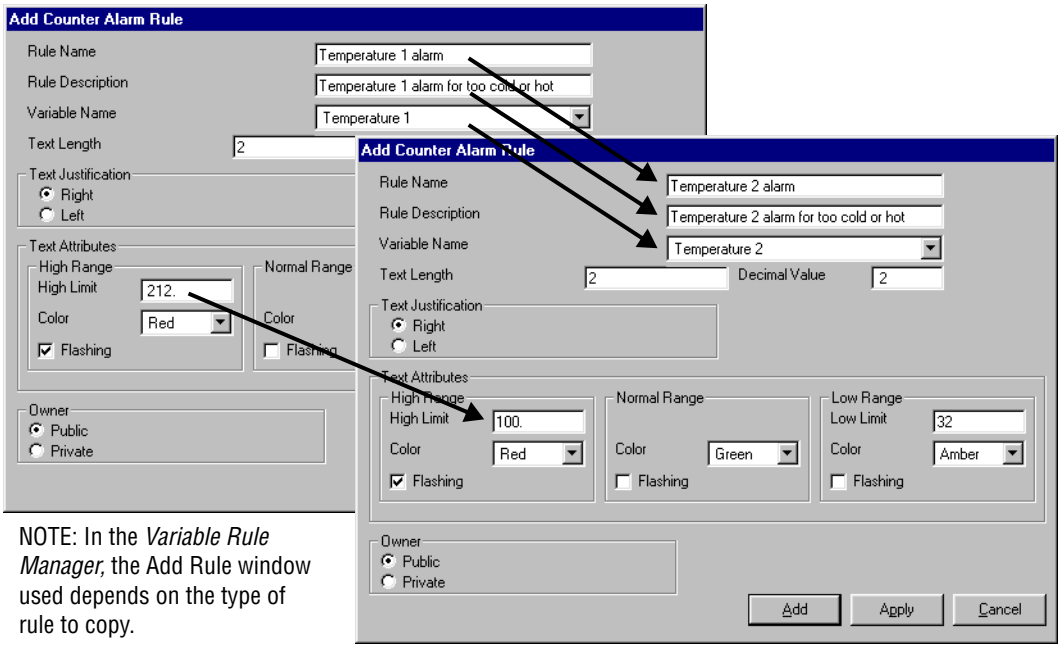
Since you can't change the name of an item with the *Update* function, use duplicating to rename an item:
1. Create a copy.
2. Rename it.
3. Delete the original.

You can duplicate any item and change the name and any properties.

1. Highlight the row for the item to copy. Then either choose *File* > *Duplicate* or click the *Duplicate* button.

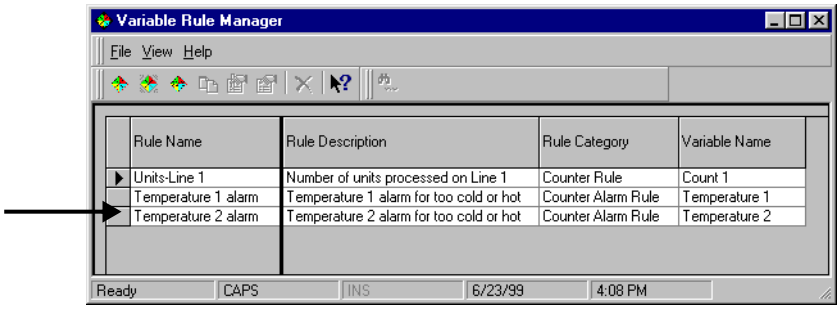


2. The window for adding an item will appear. Change the name of the item and any properties that are different. Then click either *Add* or *Apply*.



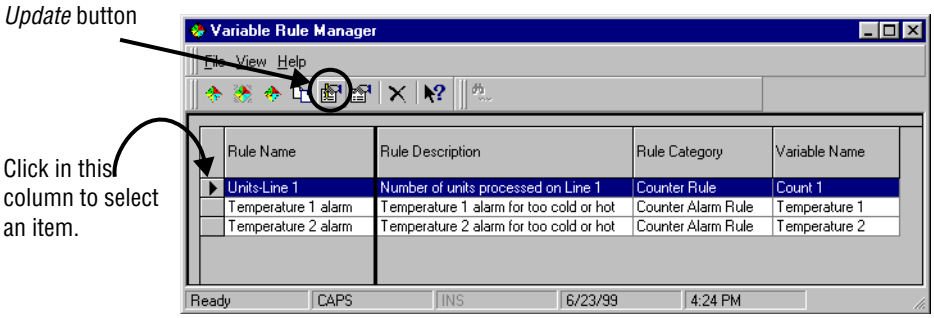
NOTE: In the *Variable Rule Manager*, the Add Rule window used depends on the type of rule to copy.

3. Clicking the *Add* button takes you out of the window for adding an item, and the new item is shown in the list. Clicking the *Apply* button adds the new item into the list, but you won't see that until you exit the window for adding an item, with either *Add* or *Cancel*.

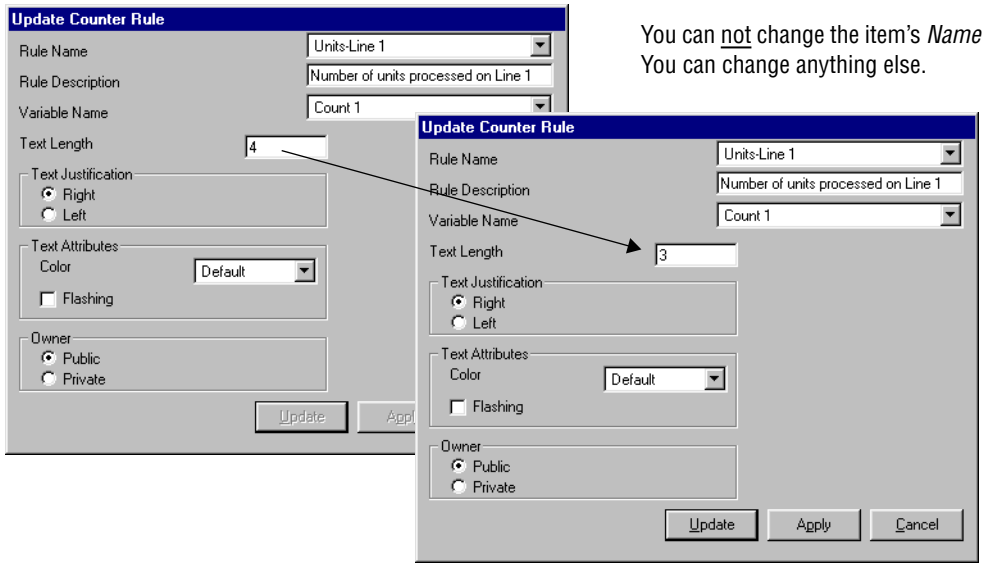


Changing an item

1. Highlight the row for the item to change. Then either choose *File* > *Update* or click the *Update* button.



2. Make your changes. Then click *Update*.

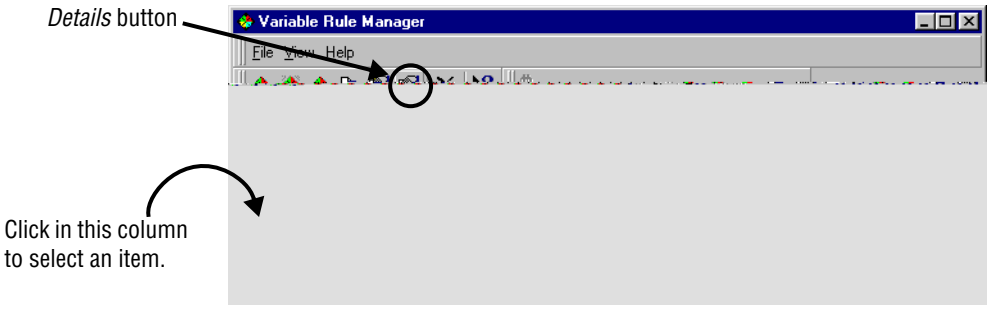


You can not change the item's *Name* here. You can change anything else.

You can change more than one item in sequence this way:
1. Make the changes in the first item.
2. Click *Apply*.
3. Choose another item using the name drop-down arrow.
4. Make changes in the new item.

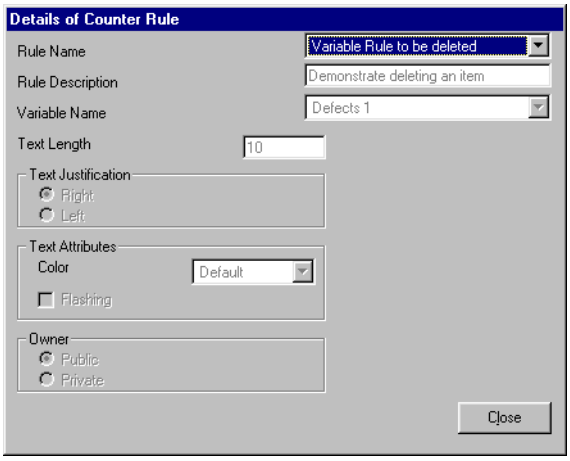
Viewing details of an item

1. In the far left column, highlight the entire row for the item for which you wish to view details.



2. From the *File* menu, choose *Details*, or click on this:

3. The Details screen will appear. This simply shows the settings for the item. You can not change any of the settings here.



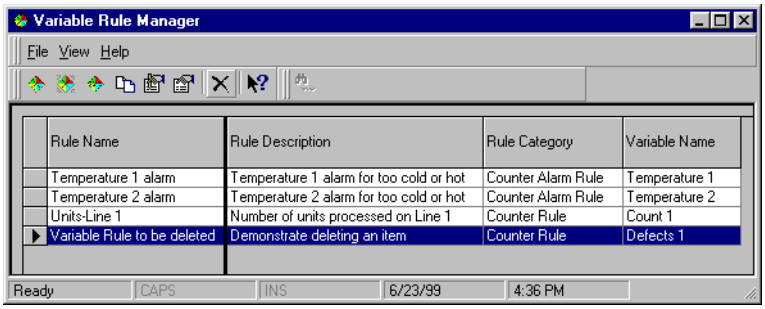
4. You can choose another item using the name drop-down arrow.

Deleting an item

1. In the far left column, highlight the entire row for the item you wish to delete from the system.

Delete button

Click in this column to select an item.



2. From the *File* menu, choose *Delete*, or click on this:

3. You will be asked if you want to delete this item.
4. Choose *Yes* to delete the item.

Setting up the Smart Alec system

Overview

Typically, Smart Alec is used by only one person in an organization. Even if there is more than one person using Smart Alec, all users can be set up to have full access rights to all applications, application functions, and system inputs and resources. This setup is called a "single-user" system.

However, if there is more than one person using Smart Alec, your system may require security to be set so some users have *unlimited* usage and others have *limited* usage of Smart Alec. This setup is called a "multi-user" system. In a multi-user system, those users with limited usage of Smart Alec generally can only access applications for managing the system, not those for setting up the system.

Setting up the Smart Alec software

NOTE

Default settings are provided for each user, application, or resource.

A number of things must be set up in the Smart Alec environment for first-time use:

- Create user environments.
- Authorize applications and application functions.
- Identify system resources (notification device interfaces, notification devices, variables.)
- Establish input data sources, such as DDE or sockets.

Creating user environments

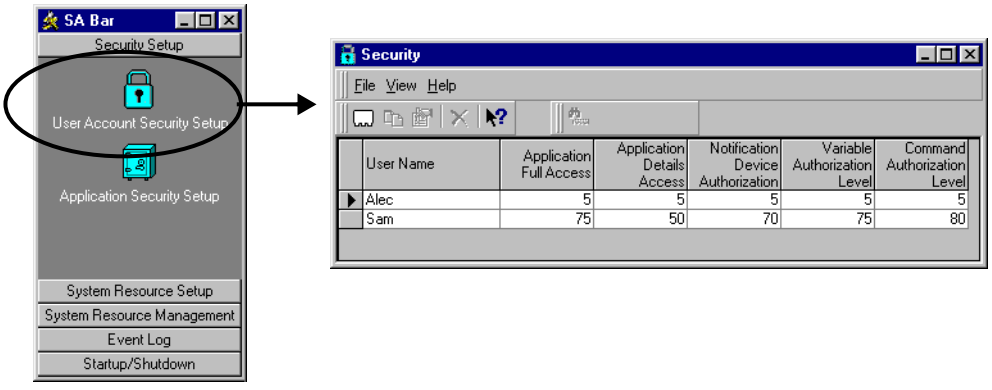
The Smart Alec system is designed so that it can be used by many different people in a company in different ways. The purpose of *User Account Security Setup* is to establish users and to assign levels of authorization to any user for applications, variables, commands, and notification devices. In other words, you decide if users can access a given resource (application, device, etc.) and what functions they can do with it.

In a multi-user environment, some people may need to have different access to various applications. For example, an administrator will need to have full access to all applications, while regular users might have access to only a few applications that they use. The Smart Alec security system allows users who have sufficient access authorization for applications to create, update and delete users.

However, in a single-user environment, you only need to establish who the users are. All users have the same access to all system resources, so there is minimal setup for users.

Accessing the User Account Security Setup application

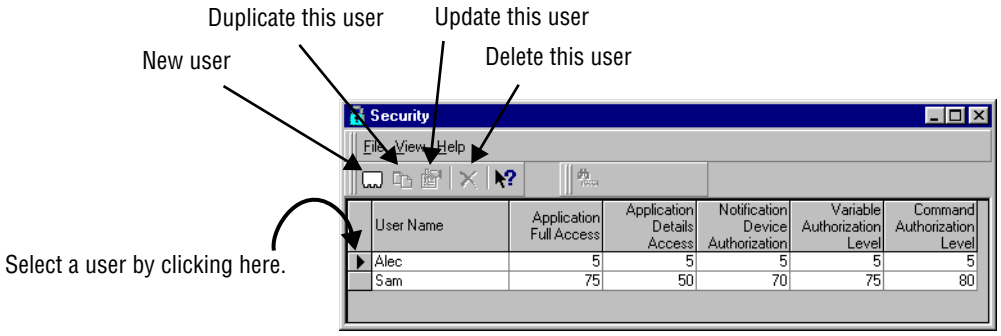
From the *Security Setup* group on the *SA Bar*, click once on *User Account Security Setup*. A screen like the one shown below will appear, listing any existing users.



Setting up a user

In the user security screen, each row shows all the security authorizations for a given user.

- Select a user by clicking to the left of the row once.
- Add a new user by clicking the *New User* button.
- View, duplicate, update, or delete the chosen user by using the buttons on the toolbar or from the drop-down *File* menu.
- You can also access the screen to update a user by double-clicking to the left of the row.



The Smart Alec system comes installed with a default user of "Alec" so you can access the system immediately as user "Alec". "Alec" has no password assigned. You can keep the user as "Alec," or you can change the name or authorization of this user as desired.

Default Authorizations

The default authorization for applications and system resources for user "Alec" is 5. These authorizations give high-level administrative access.

The default authorization for applications and system resources for any other user is 50. These authorizations give normal access. In a single-user environment, you should not change this setting.

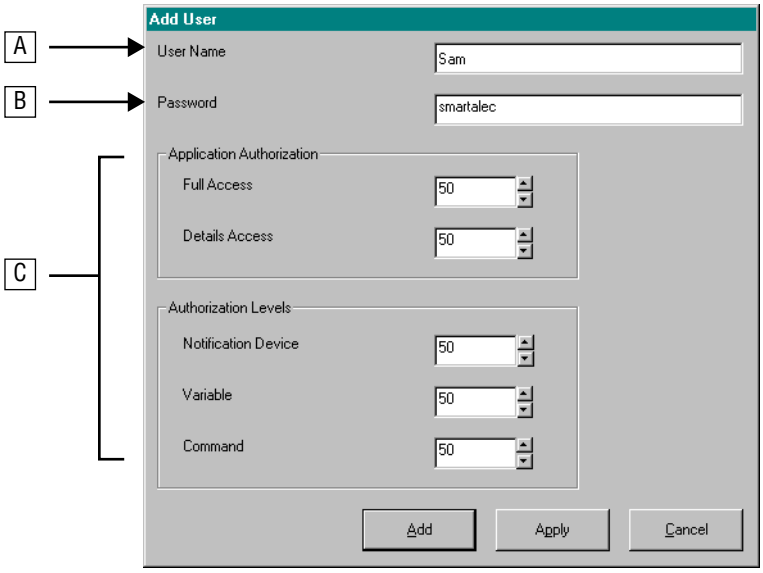
See "Security authorization" on page 12 for a conceptual understanding.

Adding a user

To add a new user, do the following:

1. From the *File* menu, choose *New,* or click on this button:

2. Fill in the values as appropriate for the new user.



Item	Name	Description
A	User name	Name by which this user is known.
B	Password	For security, a set of characters to be entered by the user when logging into the system. May be left blank, if desired, except that, to use the Socket Handler Setup (see page 56) there must be a password.
C	Application Authorizations and levels	System processors validate requests against the level authorized for the user. If the user's level of authorization is equal to or higher than that required, the request is processed. These are set to a default of 50. *In a single-user environment,* these should not be changed from 50. *In a multi-user environment,* these are normally set to either 5 (administrator) or 50 (general), but they can be set to any desired level.

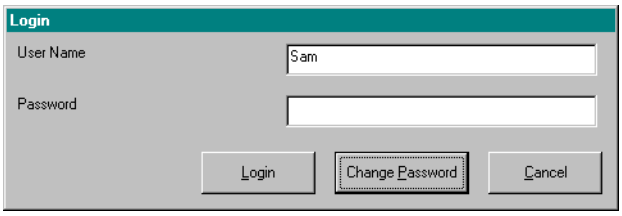
NOTE: For better understanding, see "System security" on page 2 and "Security authorization" on page 12.

Authorizing user passwords

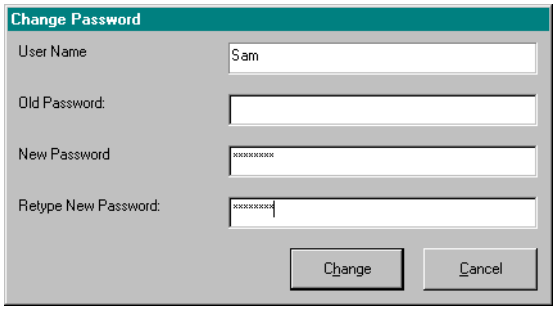
User-authorized password

You, as a user, can add or change your own password at the *Login screen*.

1. When logging into Smart Alec, click *Change Password*.



2. If there was an existing password, you must type that in. Then type the new password, and retype it again exactly the same way. You can use a new password, as shown below, or you can use a blank password for *New Password*. Using a blank new password, in effect, deletes any old password.

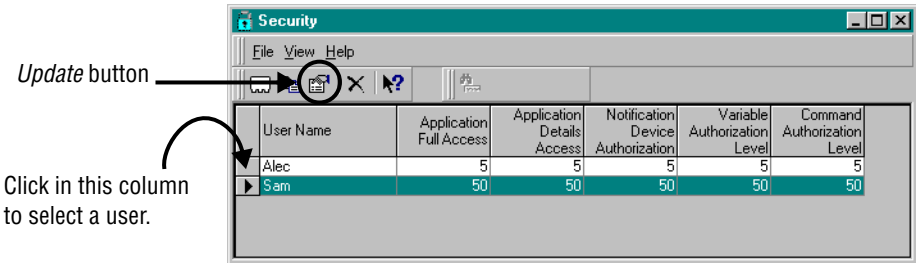


3. Click *Change*.
4. You will next be logged into Smart Alec.

Administrator-authorized password

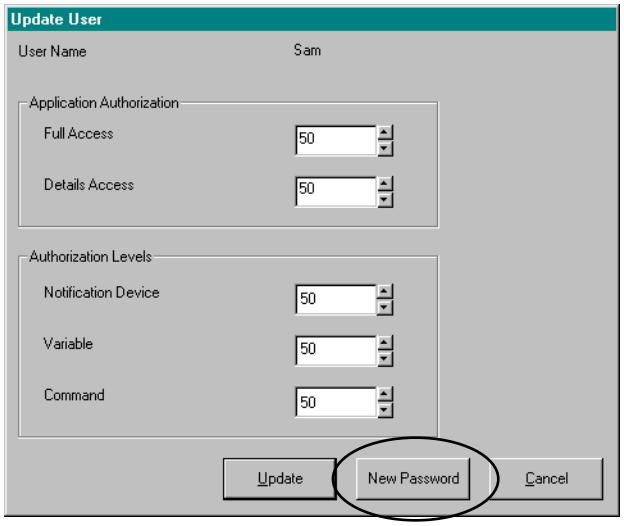
The administrator can add or change the password for a user.

1. From the *User Account Security Setup* and *Security* application, highlight the entire row for the user by clicking in the column to the left of that user.



2. From the *File* menu, choose *Update*, or click on this:

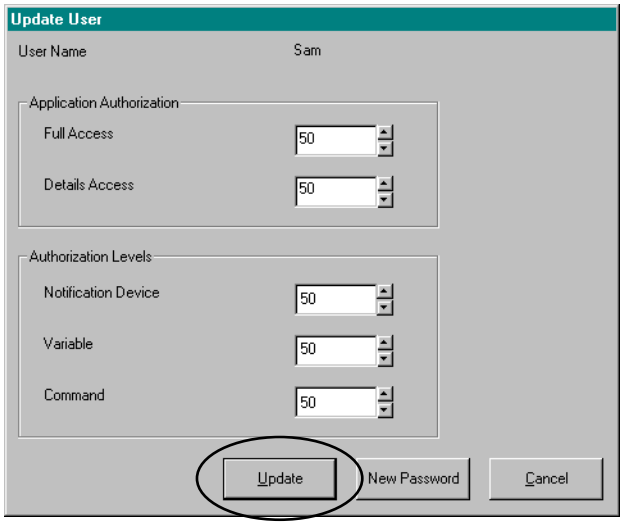
3. Click *New Password*.



4. Type in the new password and click *Ok*. Regardless of what the old password was, the

default password supplied is “smartalec”. You can use “smartalec” (as shown below,) you can use a different password, or you can use a blank password. Using a blank password here, in effect, deletes any old password.

5. Click *Update*.



Authorizing applications and application functions

The purpose of *Application Security Setup* is to designate what level of authorization is needed by users to access specific applications and the functions in each.

In a single-user environment, all users have the same access authority for all application categories and all functions for each application. This access authority is automatically preset to 50 for applications and application functions.

In a multi-user environment, the system administrator can set the access authority required for each application to unique levels. The level is set for both "update" (make changes to data) and "details" (only view details of data) functions. If the level of authorization assigned to a user is equal to or greater than the level of authorization required for a given application, the user can access that function for that application. (Levels of authorization go from a low of 99 to a high of 1. The lower the number, the higher the authority.)

Understanding application functions

Update

A user with sufficient authorization for update application access can use all functions in any Smart Alec application for which he has authority. This is especially common in a single-user environment, where all authorization values are the same for all users, so all users can access all applications and all application functions.

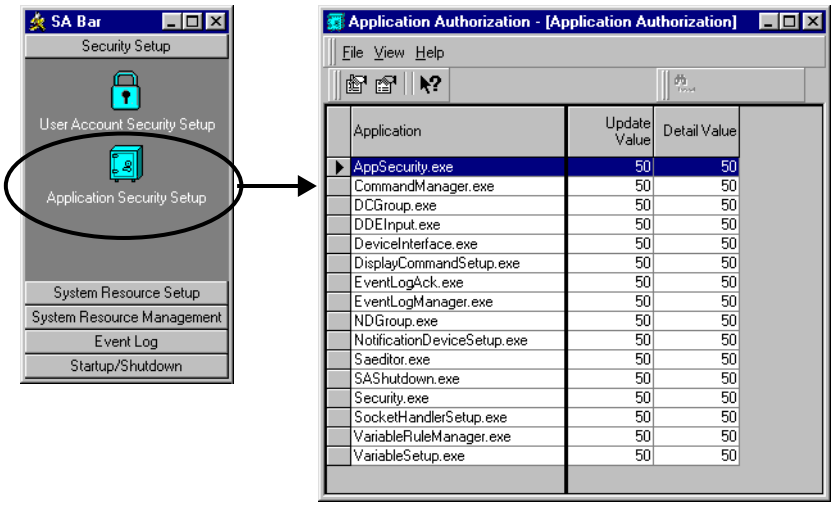
Details

A user with sufficient authorization for details application access, but not enough to update applications, can only access the details function in any Smart Alec applications to which he has authority. This is especially common in a multi-user system configuration,

where some users only need to view data in the Smart Alec system.

Accessing the Application Security Setup application

From the *Security Setup* group on the *SA Bar*, click once on *Application Security Setup*. A screen like the one shown below will appear, listing existing settings.



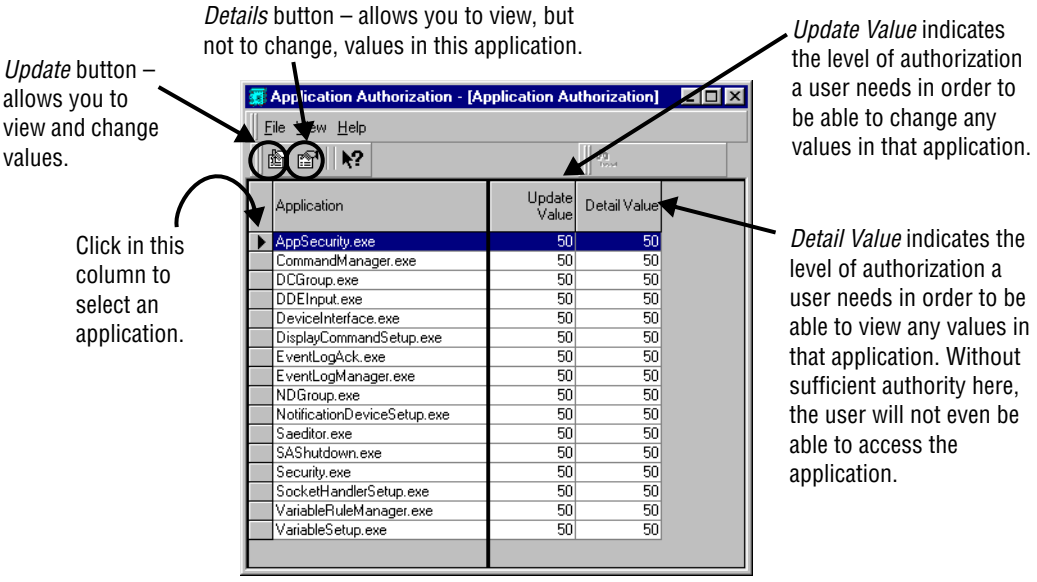
Authorizing application security

The initial value for update and detail authorization levels is automatically preset to 50 for all users and for all applications.

In a single-user environment, the authorization level should remain at 50.

The Smart Alec administrator can change either the update or detail values for any application (in *Application Security Setup*) or for a user's security (in *User Account Security Setup*.) The result will create a multi-user environment and can block access to some functions for some users.

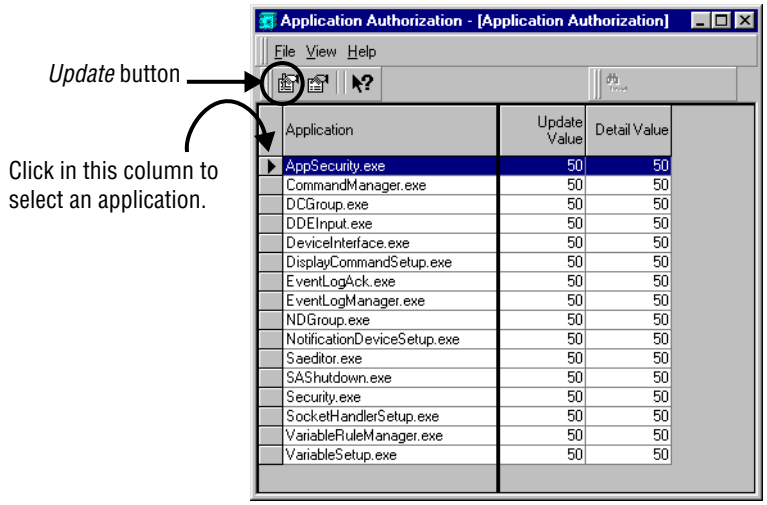
The graphic below indicates the meaning of the *Application Security Setup* window.



Application	Application name
AppSecurity.exe	Application Security Setup
CommandManager.exe	Command Manager
DCGroup.exe	Display Command Group Manager
DDEInput.exe	DDE Data Source Setup
DeviceInterface.exe	Notification Device Interface Setup
DisplayCommandSetup.exe	(not used as a user application)
EventLogAck.exe	Event Log Acknowledgement
EventLogManager.exe	Event Log Manager
NDGroup.exe	Notification Device Group Manager
NotificationDeviceSetup.exe	Notification Device Setup
Saeditor.exe	Message Manager
SAShutdown.exe	Smart Alec Shutdown
Security.exe	User Account Security Setup
SocketHandlerSetup.exe	Socket Handler Setup
VariableRuleManager.exe	Variable Rule Manager
VariableSetup.exe	Variable Setup

Authorization for each application can be changed individually as follows:

1. Highlight the application to change by clicking in the column to the left of that application. Then click *Update*.



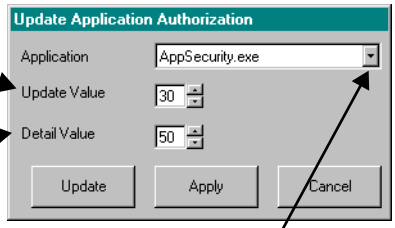
NOTE

Remember, the lower numbers mean that more authority is needed to access the application.

2. Assign the values needed for a user to have authority to update and to view details. Then click either *Update* or *Apply*.

Update Value indicates the level of authorization a user needs in order to be able to change any values in that application.

Detail Value indicates the level of authorization a user needs in order to be able to view any values in that application. Without sufficient authority here, the user will not even be able to access the application.



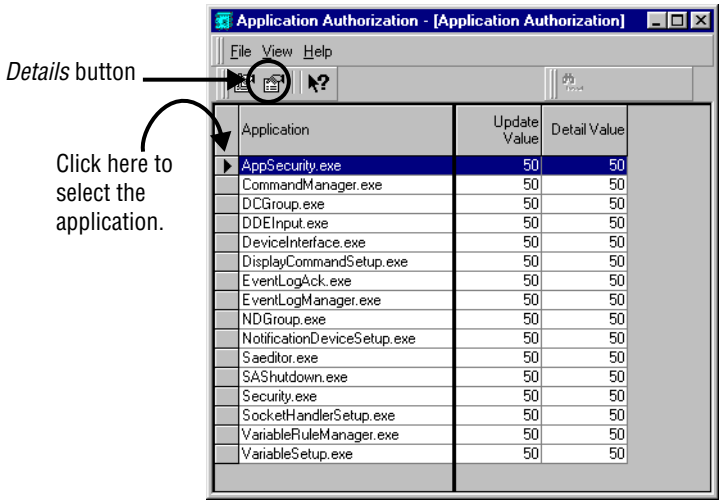
Use this drop-down arrow to select another application to view and change.

3. The following are suggested values for both update and details levels for a single-user environment and for a multi-user environment with an administrator and one or more general users.

System application name	Common application name	Value for single-user environment	Value for multi-user environment
AppSecurity.exe	Application Security Setup	50	5
CommandManager.exe	Command Manager		50
DCGroup.exe	Display Command Group Manager	50	50
DDEInput.exe	DDE Data Source Setup	50	5
DeviceInterface.exe	Notification Device Interface Setup	50	5
DisplayCommandSetup.exe	(not used as a user application)	50	50
EventLogAck.exe	Event Log Acknowledgement	50	5
EventLogManager.exe	Event Log Manager	50	5
NDGroup.exe	Notification Device Group Manager	50	50
NotificationDeviceSetup.exe	Notification Device Setup	50	5
Saeditor.exe	Message Manager	50	50
SAShutdown.exe	Smart Alec Shutdown	50	5
Security.exe	User Account Security Setup	50	5
SocketHandlerSetup.exe	Socket Handler Setup	50	5
VariableRuleManager.exe	Variable Rule Manager	50	50
VariableSetup.exe	Variable Setup	50	5

Viewing application authorization levels

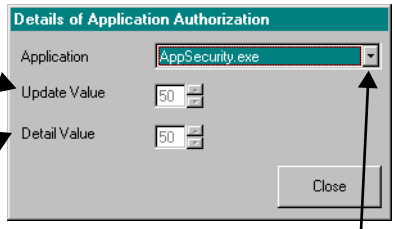
1. Highlight the application by clicking in the column to the left of that application. Then click the *Details* button.



NOTE

Remember, the lower numbers mean that more authority is needed to access the application.

2. You can now see the values needed for a user to have authority to update and view details for this application. Then click *Close*.



Update Value indicates the level of authorization a user needs in order to be able to change any values in that application.

Detail Value indicates the level of authorization a user needs in order to be able to view any values in that application. Without sufficient authority here, the user will not even be able to access the application.

Use this drop-down arrow to select another application to view.

Identifying notification device interfaces

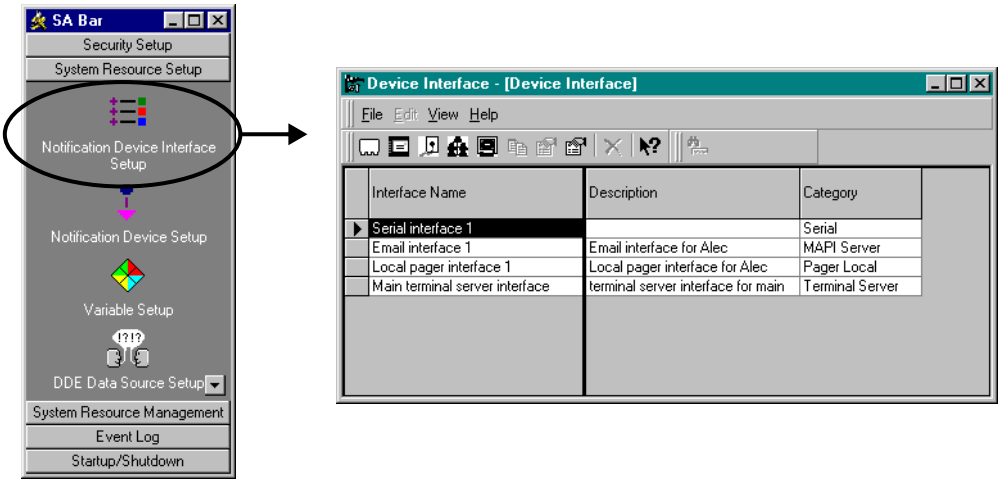
Use *Notification Device Interface Setup* to designate the type of hardware to be used for sending messages to notification devices. Notification device interfaces must be set up before notification devices can be initialized, since the notification devices use the interfaces.

Types of notification device interfaces

There are several types of notification device interfaces. Please see "Appendix 3: Notification Device Interfaces" on page 96 for descriptions.

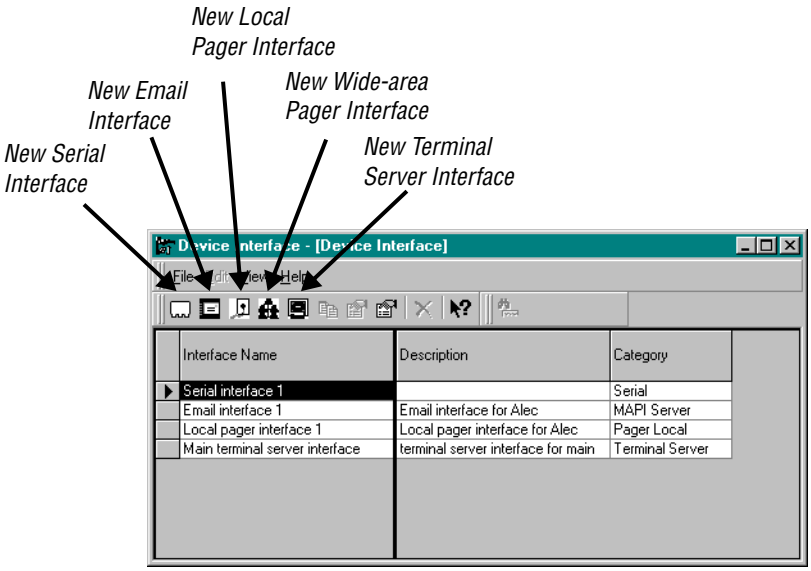
Accessing the Notification Device Interface Setup application

From the *System Resource Setup* group on the *SA Bar*, click once on *Notification Device Interface Setup*. A screen like the one shown below will appear, listing any existing notification device interfaces.

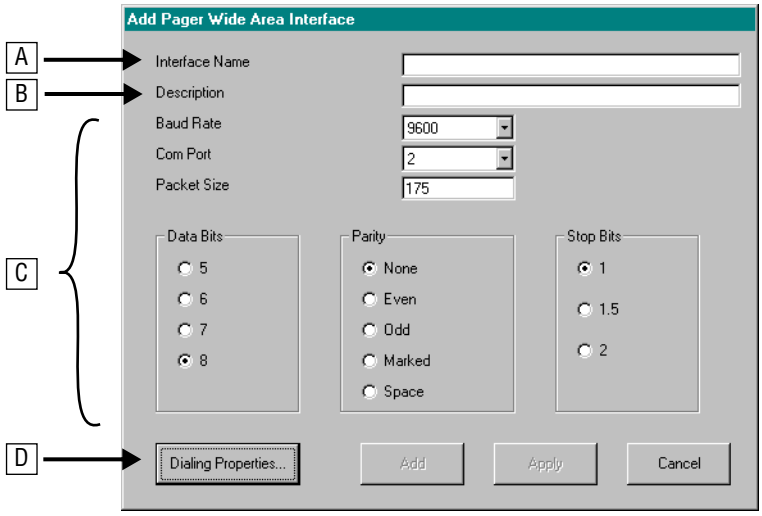


Adding a notification device interface

1. Choose the correct button for the type of notification device interface you wish to add. Please see "Appendix 3: Notification Device Interfaces" on page 96 for descriptions of the various types.

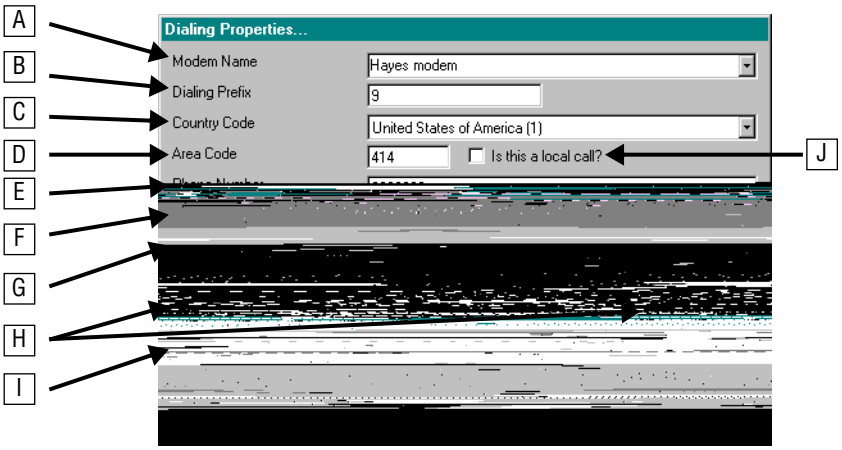


2. For this example, we will add a wide-area pager interface, as shown here. See the table below for explanations.



Item	Name	Description
A	Interface name	Name of the interface as it will be known.
B	Description	Description of the interface, for clarity. (Optional)
C	Interface settings	Choose appropriate settings for this interface. Contact your wide-area paging service if needed.
D	Dialing properties	Choose this button to set up how and where to dial. This function is only for the wide-area pager interface.

3. For this example, choose the correct settings for the wide-area pager interface. See the table below for explanations.



Item	Name	Description
A	Modem name	Name of the modem used for the pager. At least one modem must already be installed.
B	Dialing Prefix	The prefix to dial to access a public telephone line.
C	Country Code	Country where the paging service is.
D	Area Code	Area code where the paging service is.
E	Phone Number	Phone number to use to access the paging service.
F	Number to Dial	Complete phone number to dial, created automatically by Smart Alec from the components you use in this window.
G	Modem Initiation String	Initialization string to use for this modem. See the documentation for your modem for more information.
H	Call Waiting settings	Set these if the phone line being used for dialing has call waiting.
I	Number of retries	Number of times to attempt connection.
J	Local call	Indicates that this is a local call.

Settings for additional notification device interfaces

In addition to the wide-area pager illustrated above, here are settings for serial, email, local pager, and terminal server interfaces. Note that there is no modem interface.

Serial interface

Item	Name	Description
A	Interface name	Name of the interface as it will be known.
B	Description	Description of the interface, for clarity. (Optional)
C	Interface settings	For an ALPHA sign, use 9600 baud, 8 bits, no parity, and one stop bit.

Email interface

Item	Name	Description
A	Interface name	Name of the interface as it will be known
B	Description	Description of the interface, for clarity (Optional)
C	Email profile	Email identity to use. See your system administrator if unsure.
D	Email password	Password that is valid for the email profile

Local pager interface

Item	Name	Description
A	Interface name	Name of the interface as it will be known.
B	Description	Description of the interface, for clarity. (Optional)
C	Interface settings	Choose appropriate settings for this interface. To find these (except Packet Size) click *Start > Settings > Control Panel > System*. Next, click the *Device Manager* tab and then *Ports*. Finally, click the *COM port* you need and then the *Port Settings* tab.
D	Packet size	The maximum number of bytes the pager can process at a time. refer to the documentation for the pager for details.

Terminal server interface

Item	Name	Description
A	Interface name	Name of the interface as it will be known.

Item	Name	Description
B	Description	Description of the interface, for clarity. (Optional)
C	IP address	The four-node Internet Protocol address of the terminal server

Identifying notification devices

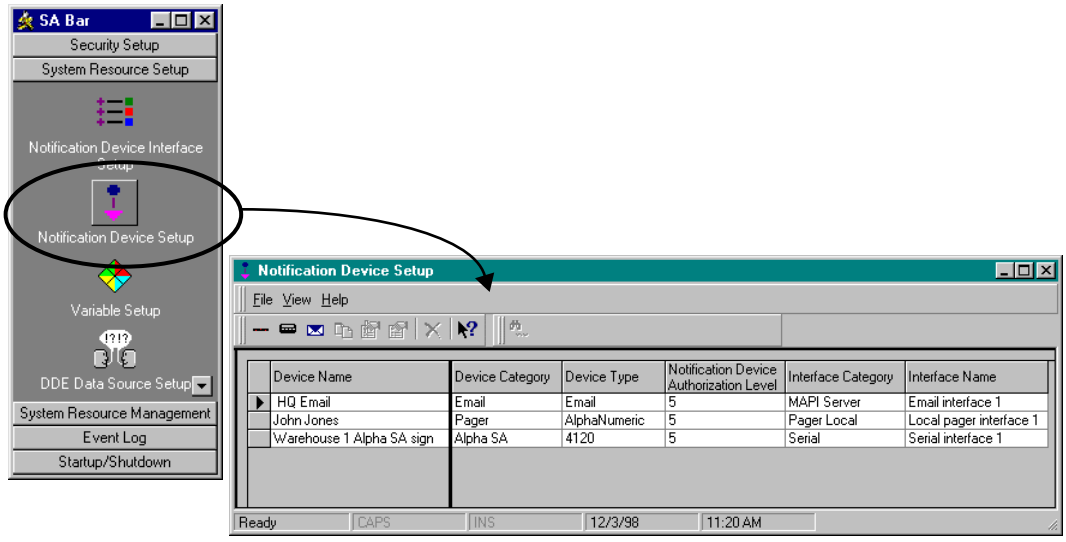
Use *Notification Device Setup* to designate the names and properties to be used for places where messages will be displayed (i.e., signs, pagers, and email).

Notification devices have properties. Examples of some properties that may be required are:

- Device name
- Description
- Device type
- Device address
- Authorization level
- Name of the notification device interface to use
- Cap code

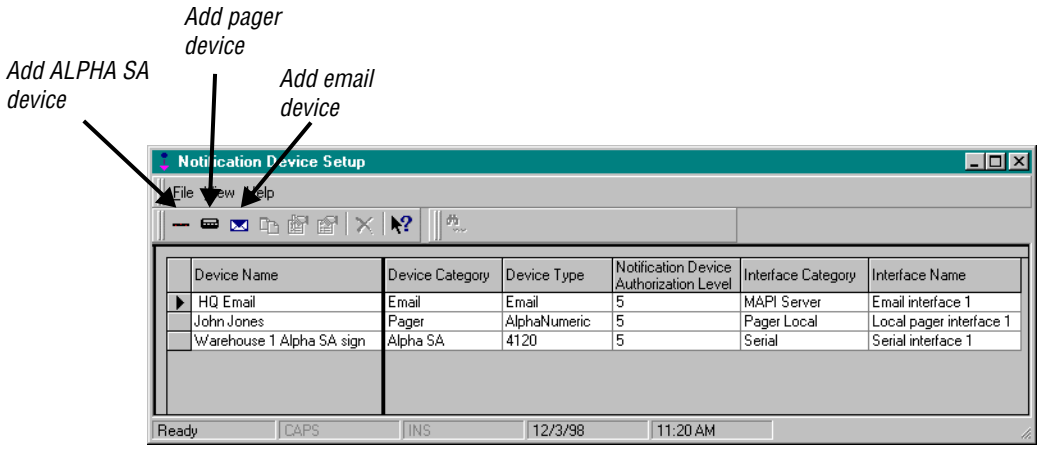
Accessing the Notification Device Setup application

From the *System Resource Setup* group on the *SA Bar*, click once on *Notification Device Setup*. A screen like the one shown below will appear, listing any existing notification devices.

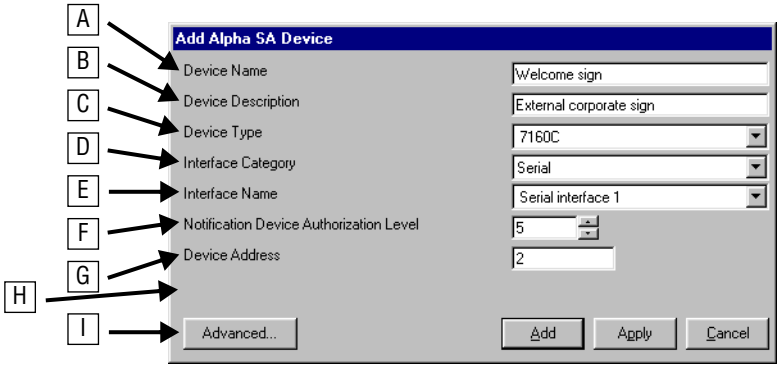


Adding a notification device: ALPHA, pager, email

1. Choose the correct button for the type of notification device you wish to add.



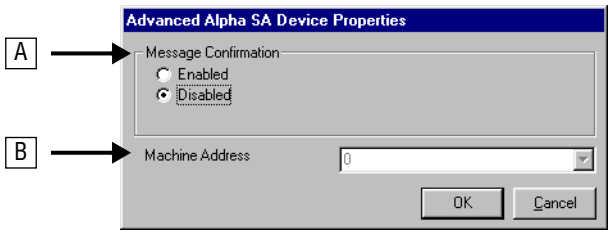
2. For this example, we will add an ALPHA SA device, as shown here. See the table below for explanations.



Item	Name	Description
A	Device name	Name of the device as it will be known.
B	Device description	Description of the device, for clarity. (Optional)
C	Device type	Model of ALPHA SA sign
D	Interface category	Type of notification device interface (serial, pager local, or terminal server)

Item	Name	Description
E	Interface name	Specific notification device interface. The only options available are those belonging to the selected Interface category.
F	Notification device authorization level	Authorization level a user would need to access this notification device.
G	Device address	Serial address assigned to the ALPHA SA sign. (This is displayed when the sign is powered up.)
H	Cap code – or – Interface port address	For Pager Local interface category, – or – For Terminal Server interface category,
I	Advanced	Choose this button for more advanced functions. See the next step.

3. For a new ALPHA SA notification device, the *Advanced* button is for these properties.



Item	Name	Description
A	Message confirmation	When *Message Confirmation* is enabled, the sign sends a response to the sender to confirm that the message has been received.
B	Machine address	Address of the computer where the ALPHA SA sign is installed or associated. (The sign might be wired directly, or associated by modem, LAN, or wireless transmission, etc.) The *Machine Address* is currently not used.

Settings for additional notification devices

In addition to the ALPHA SA device illustrated above, here are settings for pager and email devices.

Pager device

Item	Name	Description
A	Device name	Name of the device as it will be known.
B	Device description	Description of the device, for clarity. (Optional)
C	Device type	Choose numeric or alphanumeric
D	Interface category	Type of notification device interface (pager local or pager wide area)
E	Interface name	Specific notification device interface. The only options available are those belonging to the selected Interface category.
F	Notification device authorization level	Authorization level a user would need to access this notification device.
G	Pin #	Pager identification number
I	Advanced	Choose this button for more advanced functions, as for the ALPHA SA device above.

Email device

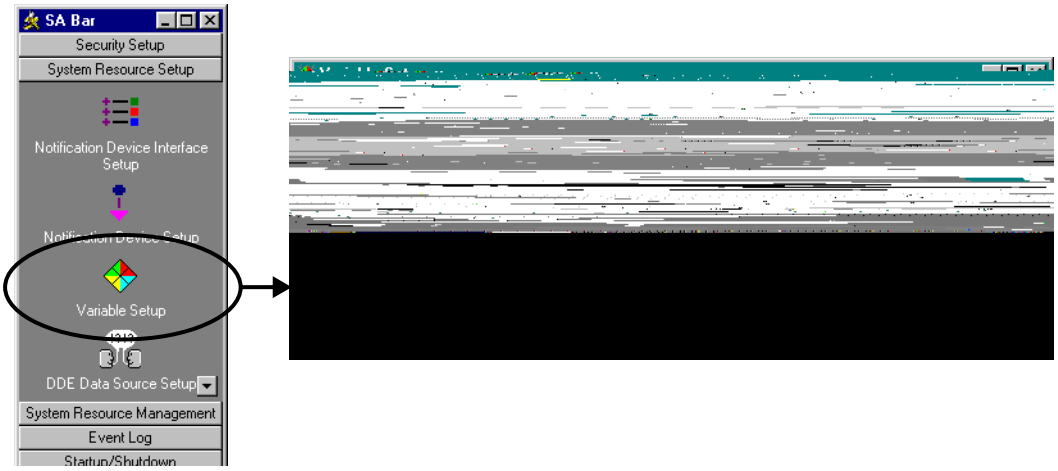
Item	Name	Description
A	Device name	Name of the device as it will be known.
B	Device description	Description of the device, for clarity. (Optional)
C	Device type	Choose email.
D	Interface category	Type of notification device interface (pager local or pager wide area)
E	Interface name	Specific notification device interface. The only options available are those belonging to the selected Interface category.
F	Notification device authorization level	Authorization level a user would need to access this notification device.
G	Email address	Destination address for the e-mail message

Identifying variables

Use *Variable Setup* to designate real-time ("as it happens") variables to be available in Smart Alec. Variables represent values that can change at any time. The values for the variable can come from a number of places outside of Smart Alec, such as a production line, a spreadsheet, manual data entry, and others. (See page 103 for a more complete definition of variable.)

Accessing the *Variable Setup* application

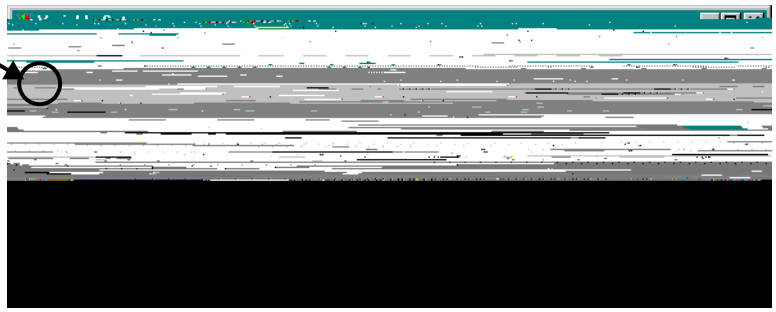
From the *System Resource Setup* group on the *SA Bar*, click once on *Variable Setup*. A screen like the one shown below will appear, listing any existing variables.



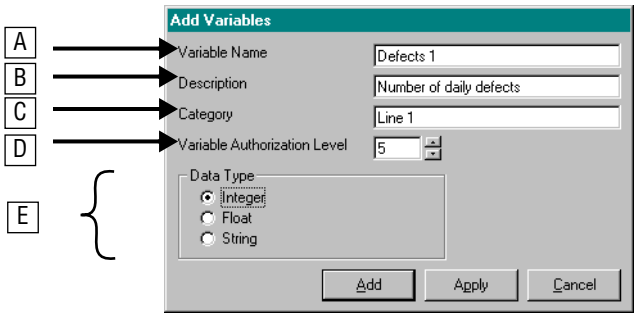
Adding a variable

1. Choose the button to add a new variable.

Add a variable



2. For this example, we will add a variable called "Defects 1", as shown here. See the table below for explanations.



Item	Name	Description
A	Variable Name	Name of the variable as it will be known
B	Description	Description of the variable, for clarity (optional)
C	Category	User-defined category for the variable (optional)
D	Variable Authorization Level	Security level needed to use the variable
E	Data Type	Format of data for the variable: • Integer: a whole number (with no fraction) • Float: any number other than an integer. Can include decimals. • String: text, including alphabetic, numeric, and other characters

Establishing DDE input data sources

Use *DDE Data Source Setup* to designate what data will be coming from outside of Smart Alec using DDE (Dynamic Data Exchange), where it will come from, and how you want to use it. The link to this data can be used to provide values for variables.

Smart Alec can act as a DDE client. It needs a DDE server to communicate with in order to provide values for variables. Many existing programs already function as DDE servers, such as Wonderware's Intouch and Microsoft Excel. To use these or any other DDE-server applications with Smart Alec, you must use the service, topic, and item names which are to supply values for the variables from the DDE server. The DDE server application's documentation should provide these. (The discussion in the following sections uses Microsoft Excel as an example.)

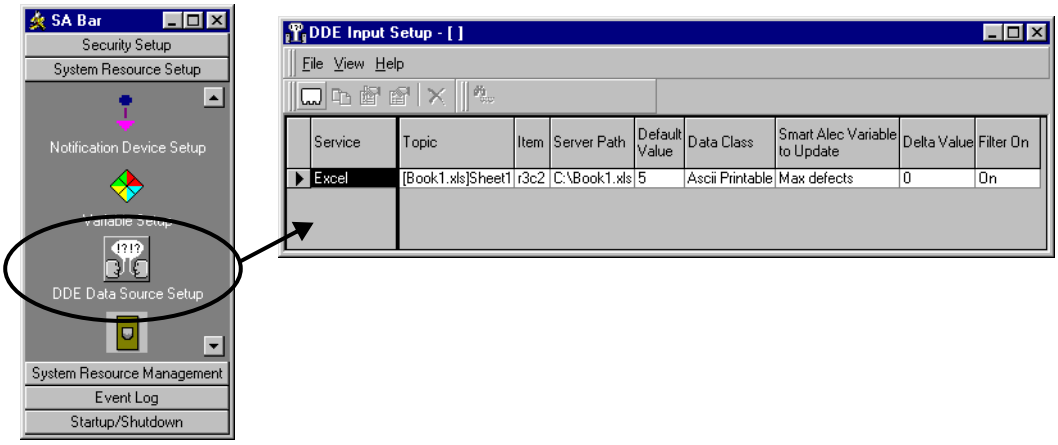
Smart Alec establishes a request-and-advise loop when it requests an item from a DDE server. This means that Smart Alec requests the item's value once from the DDE server and then the DDE server is responsible for sending the item to Smart Alec each time the item changes value.

NOTE: When using DDE, Smart Alec must be installed on the same computer as the external data source, and that source must be Windows-based. When using NetDDE, Smart Alec must be installed on the same network as the external data source, and that source must be Windows-based.

Also, the external data source must be running before starting the Smart Alec system. Otherwise, the Smart Alec DDE processor (DDEInputHandler.exe) will not run.

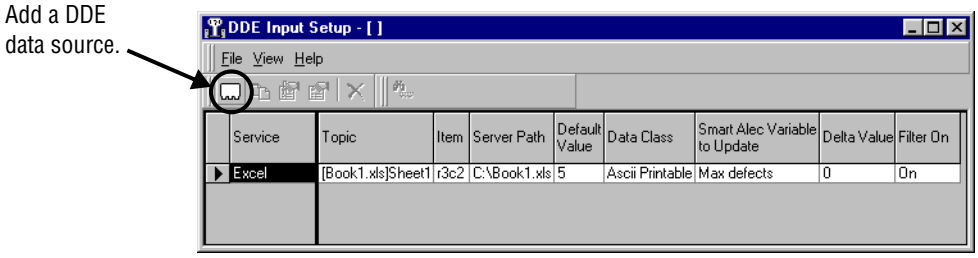
Accessing the *DDE Data Source Setup* application

From the *System Resource Setup* group on the *SA Bar,* click once on *DDE Data Source Setup.* A screen like the one shown below will appear, listing any existing DDE data sources.

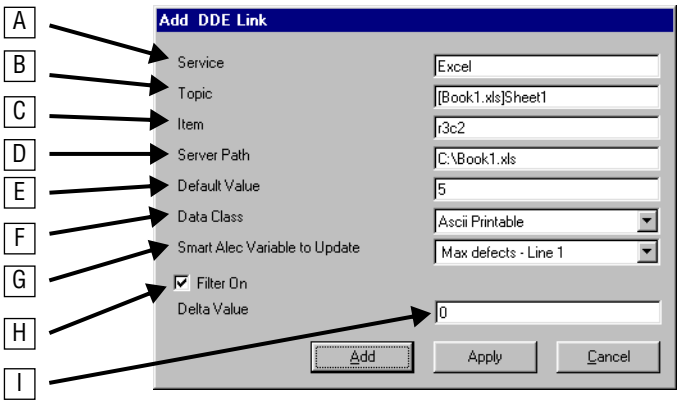


Adding a link to a DDE data source

1. Choose the button to add a new DDE data source.



2. For this example, we will add a link to a Microsoft Excel spreadsheet as DDE data source. See the table below for explanations.



Item	Name	Description
A	Service	Name of the application the data comes from.
B	Topic	Refer to the documentation for your DDE server application to determine the correct *topic* for that application. In this example, the *topic* identifies the specific Excel workbook you want (set off by brackets) and the specific worksheet within that workbook. For Excel, you must identify both the workbook and the individual worksheet if there is more than one worksheet. If there is only one worksheet in that workbook, then you can simply type the name of the workbook rather than specify workbook and worksheet.
C	Item	The specific piece of data to be used. In this case, the cell (row and column) is used.
D	Server path	The full path to the file for the DDE data source. If the file is on a computer other than the one where Smart Alec is running, you must include both the server and full path to the file. See your network administrator to determine the best way to specify the *Server path* to that computer. NOTE: The DDE server application must be running before the DDE link can be active.
E	Default Value	The value to be used for the variable when none is supplied by the DDE data link, such as if the DDE server stops running for any reason.

Item	Name	Description
F	Data Class	The type of data sent into the Smart Alec system from the DDE server. • Raw data: All data received from the DDE server will be sent to Smart Alec without any preprocessing or formatting. This assumes that all the data sent to Smart Alec is valid for presenting on a notification device. • ASCII printable: ASCII control codes (non-printable characters) will be deleted before sending the data on to Smart Alec, leaving only data that is valid for presenting on a notification device. NOTE: Regardless of the *Data Class*, all DDE data is restricted to 128 characters. If the value is longer, it will be truncated (cut off) to 128.
G	Smart Alec Variable to Update	The variable in Smart Alec for which this data will supply the value. The variable must first be established. See "Identifying variables" on page 50.
H	Filter On checkbox	Indicates that you want to filter the DDE data with a *Delta Value*. If you do not check this on, Smart Alec will update the value of the variable whenever the value changes, however small that change is. (NOTE: Some DDE server applications update all values whenever any of the values change. Microsoft Excel is one application that does this.) This may cause more processing than you want, depending on the frequency of the changes.
I	Delta Value	The number that is used to set a "plus or minus" range for the value of the variable. (So if the value of the variable is 5 and the *Delta Value* is 2, then the range would be from 3 to 7.) The value of the variable is compared with this range. If the value of the variable is outside the range (higher or lower), then that value of the variable is used to update the variable wherever the variable is used for a command. Otherwise, the value of the variable is not updated.

Accessing DDE input data

For accessing DDE input data, DDEInputHandler.exe must be running. (See "All background processor applications" on page 10.) Before this application starts, you must be running any application which is to provide data using DDE. This is because if DDEInputHandler.exe does not find any DDE data source, it shuts itself down without retrying. When running and accessing a valid DDE source, DDEInputHandler.exe feeds data to the Smart Alec system and variables are updated.

Establishing socket input data sources

Sockets are a way (besides DDE) to import data into Smart Alec from external data sources, using a client/server relationship.

NOTE: A user must have a password in order to set up sockets. See "Creating user environments" on page 28.

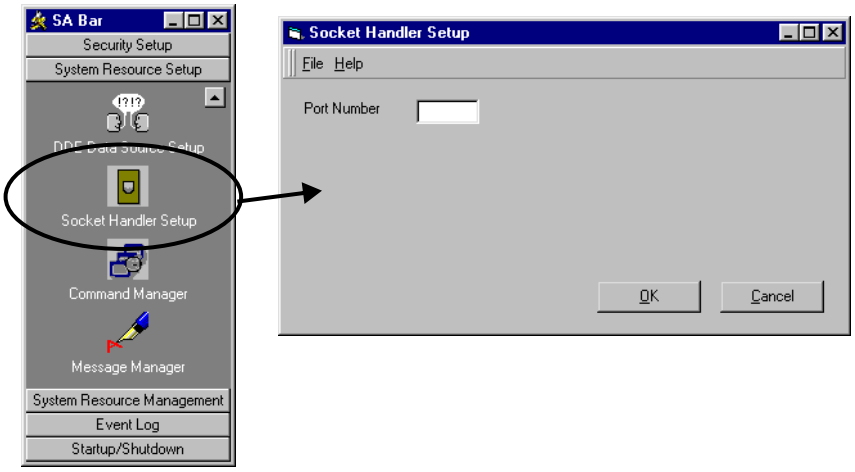
General steps for communications using sockets

In general, the steps for using sockets with Smart Alec are as follows:

1. Start and log into Smart Alec. See "Logging into Smart Alec" on page 7.
2. Establish the specific computer port number to use between Smart Alec and the external system. See "Accessing the Socket Handler Setup application" below.
3. Initiate a socket connection between the systems.
4. Send data from the external data source to Smart Alec. Please see"Appendix 6: SA 2.1 Socket Interface – API Process Guide" on page 104 for detailed instructions on using sockets to send data into the Smart Alec system.

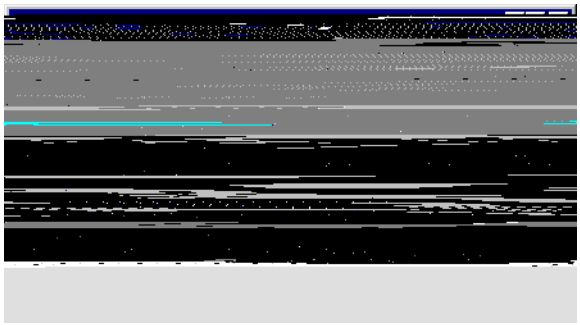
Accessing the *Socket Handler Setup* application

From the *System Resource Setup* group on the *SA Bar*, click once on *Socket Handler Setup*. A screen like the one shown below will appear.



Setting the port number

1. Type the port number to use for the socket connection. Valid port numbers are 1025 and above. The default port number is 8150.



2. Click *OK*.

Managing the Smart Alec system

When using the Smart Alec system, you can:

- Create messages.
- Create and schedule commands for messages.
- Group notification devices and display commands.
- Create rules for variables.
- Monitor and manage events that occur in Smart Alec.

Creating messages

A message is a unique, unified set (file) of information – a "thought". It can be saved and/or sent to a notification device. Its "look and feel" is based on that specific device.

A message is defined using the Message Manager. It may include some or all of the following properties, either specified or defaulted:

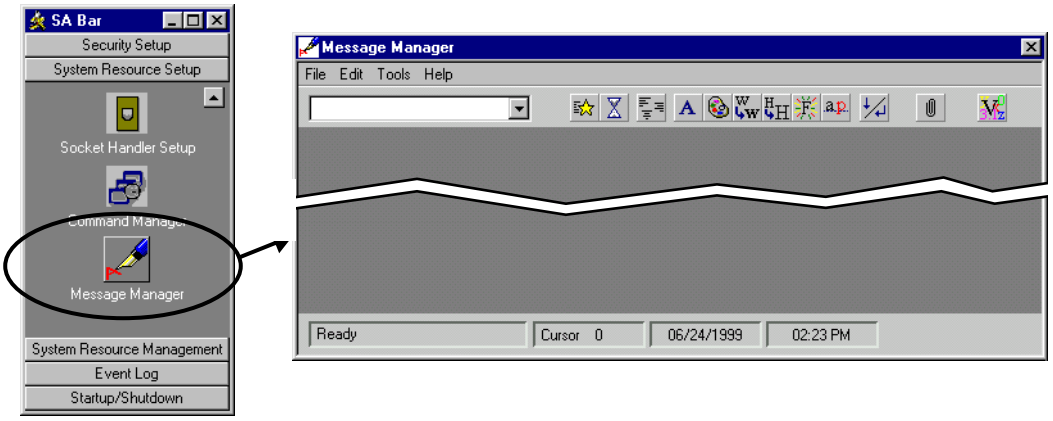
- Text
- Graphics
- Formatting
- Time/date/temperature
- Variables
- Animation

A message does not include the following, which are designated using **Command Manager** for the message:

- Scheduling
- Location/destination
- Priority

Accessing the *Message Manager* application

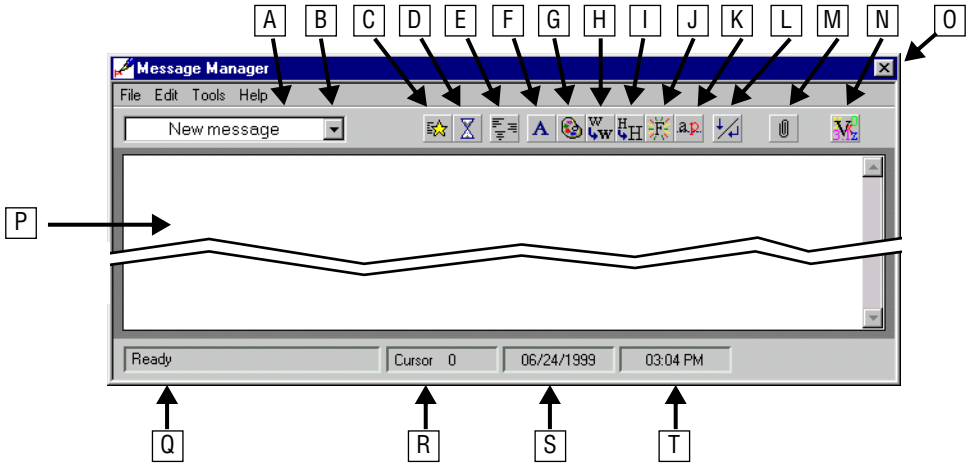
From the *System Resource Setup* group on the *SA Bar*, click once on *Message Manager*. A gray screen, like the one shown below, will appear the first time you start *Message Manager*. After you create one or more messages, when you start up *Message Manager*, it will show a blank white screen with the message called "New message".



NOTE: When you first create messages and the commands for them, you may want to practice with a few messages to achieve different effects on the notification device. If you don't achieve the desired effect with a message, it may be easier to delete the message and create a new message.

Components of the Message Manager window

The picture below is representative of the *Message Manager* window. See the table below for explanations of the components.



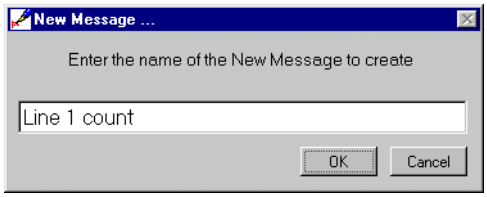
Item	Name	Description
A	Message name	Name you want to give to the message.
B	Message selection	Drop-down box to select from the full list of created messages.
C	Mode button	Allows you to set modes, which are special effects that change the way a message appears on a sign, and the position of a message on the sign.
D	Mode pause (speed) button	Allows you to set the length of time to pause before repetition of this message.
E	Justification button	Allows you to set character spacing and left-, center-, or right-justification.
F	Fonts button	Allows you to select the font and the number of LED rows to use for characters that follow.
G	Color button	Allows you to set the color to use for whatever follows.
H	Width button	Allows you to set characters that follow to display as wide or double-wide.
I	Height button	Allows you to set characters that follow to display as double-high.
J	Flash button	Allows you to turn flashing on or off for whatever follows this control, until changed by another Flash control.
K	True descenders button	Allows you to indicate that characters that follow are to be displayed using true descenders, so that, for instance, the tail of a “g” drops below the main base line of text.

Item	Name	Description
L	New line/New page button	Allows you to indicate that whatever follows is to go on the next line or the next page of the sign.
M	Object button	Allows you to insert time, date, animation, and temperature, (Counter is also an option, but it is not used in the Smart Alec system.)
N	Variable button	Allows you to insert a placeholder for an existing variable.
O	Close box	Closes the *Message Manager.*
P	Message area	Area for message text, variables, etc., as well as controls for the message and its contents.
Q	Status bar	Indicates current status and error messages.
R	Cursor position indicator	Shows the position of the cursor in the message.
S	Date indicator	Shows the current date.
T	Time indicator	Shows the current time.

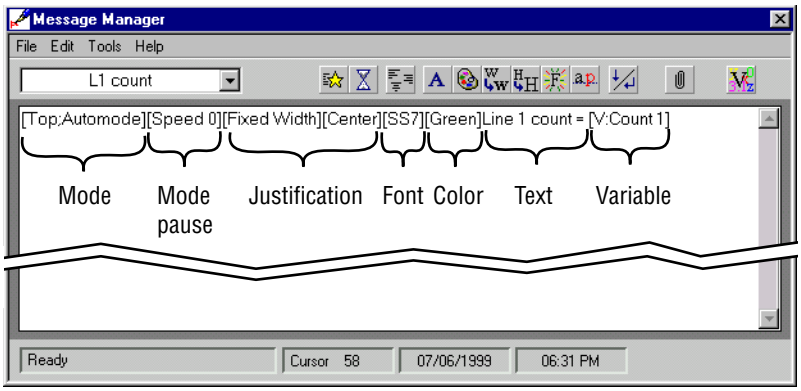
Creating a new message

1. Choose *File* > *New.*
2. Enter the message name. Click *OK*.

NOTE: There is no default button selected anywhere in *Message Manager*, so you need to actually select the *OK* button, not just press **Return** on the keyboard. You can either use the mouse to select the *OK* button or tab to it.



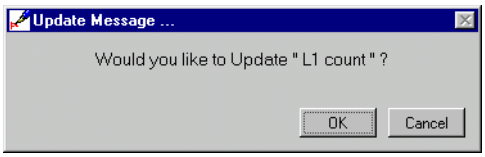
3. Use the *Message Manager* buttons and their pop-up screens to define the formatting and components of the message. An example is shown below.



4. Choose *File* > *Update*.

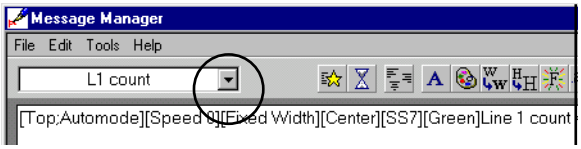
NOTE: You should choose *File* > *Update* to save your message. There is no prompt to save when you close the *Message Manager* with the close box. (However, there is a prompt to save when you close the *Message Manager* with *File* > *Exit* and also when you select a different message.)

5. You will be prompted to verify that you want to update this message. Select the *OK* button.

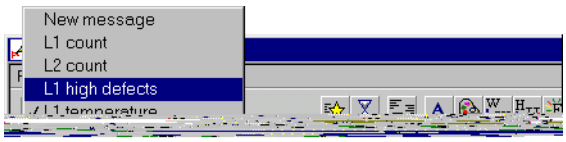


Selecting a different message

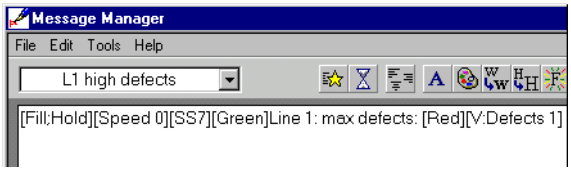
1. Click on the message selection drop-down box.



2. This gives a list of all the messages available. Click on the message you want to edit.



3. The message you choose is shown in the message name box and the message area.



Changing a message

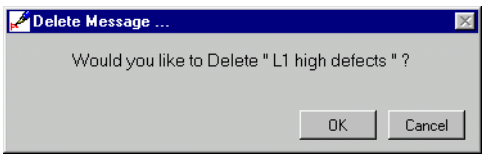
1. Select the message to be changed.
2. Make the changes you need.
3. Choose *File* > *Update*.
4. You will be prompted to verify that you want to update this message. Select the *OK* button.

NOTE: A changed message will only be displayed as changed after a) it is deleted from and resent to the notification device with **Command Manager**, or b) the Smart Alec system is restarted.

Deleting a message

1. Select the message to be deleted.
2. Choose *File* > *Delete*.

3. You will be prompted to verify the delete.



4. The message will be deleted and the next message in the list will be displayed.

Displaying a message on a notification device

To actually display a message on a notification device, there must be a command for it. See "Using commands to control messages" on page 67.

If you have changed a message, the change will only take effect after

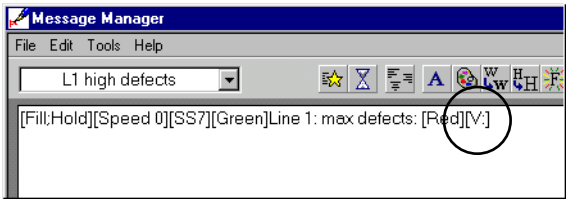
1. a command is issued for a different message and then a command is issued to replace the old changed message with the new changed message, or
2. the Smart Alec system is restarted.

NOTE: Restarting the system does not reissue commands which were in progress before the restart.

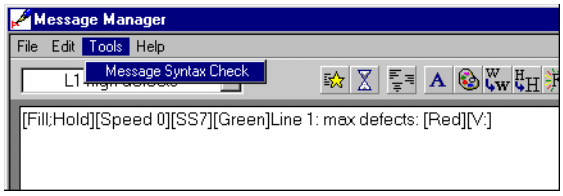
Checking the message syntax

"Syntax" refers to the construction of words, phrases, sentences, or messages according to established rules. The construction must be correct for a message to be displayed correctly. The *Message Manager* can check the syntax of messages for you. Follow the steps below to determine and fix any errors.

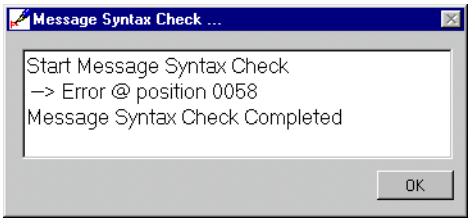
1. As an example, say you accidentally deleted the name of a variable to be used in a message.



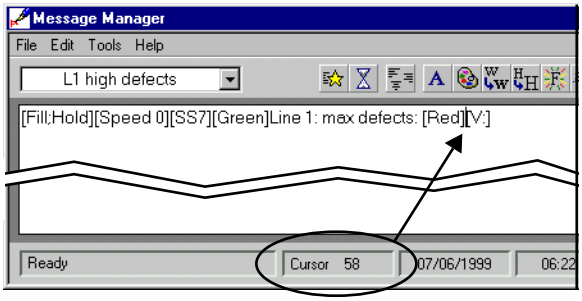
2. Choose *Tools* > *Message Syntax Check*.



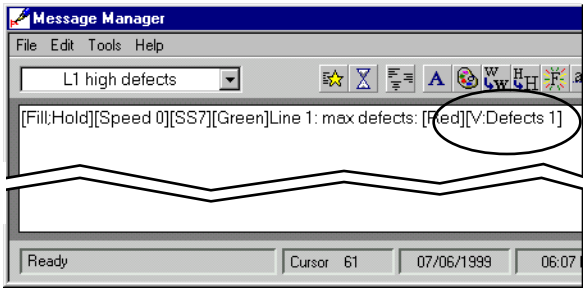
3. If there are errors, as there are here, a window will show the cursor position of the start of the error and when the process is complete.



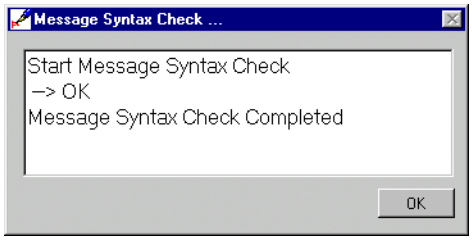
4. Place the cursor in the message where indicated by the column number and message statistics.



5. Determine the error and correct it.



6. When there are no errors in the message, the syntax check so indicates.



Using commands to control messages

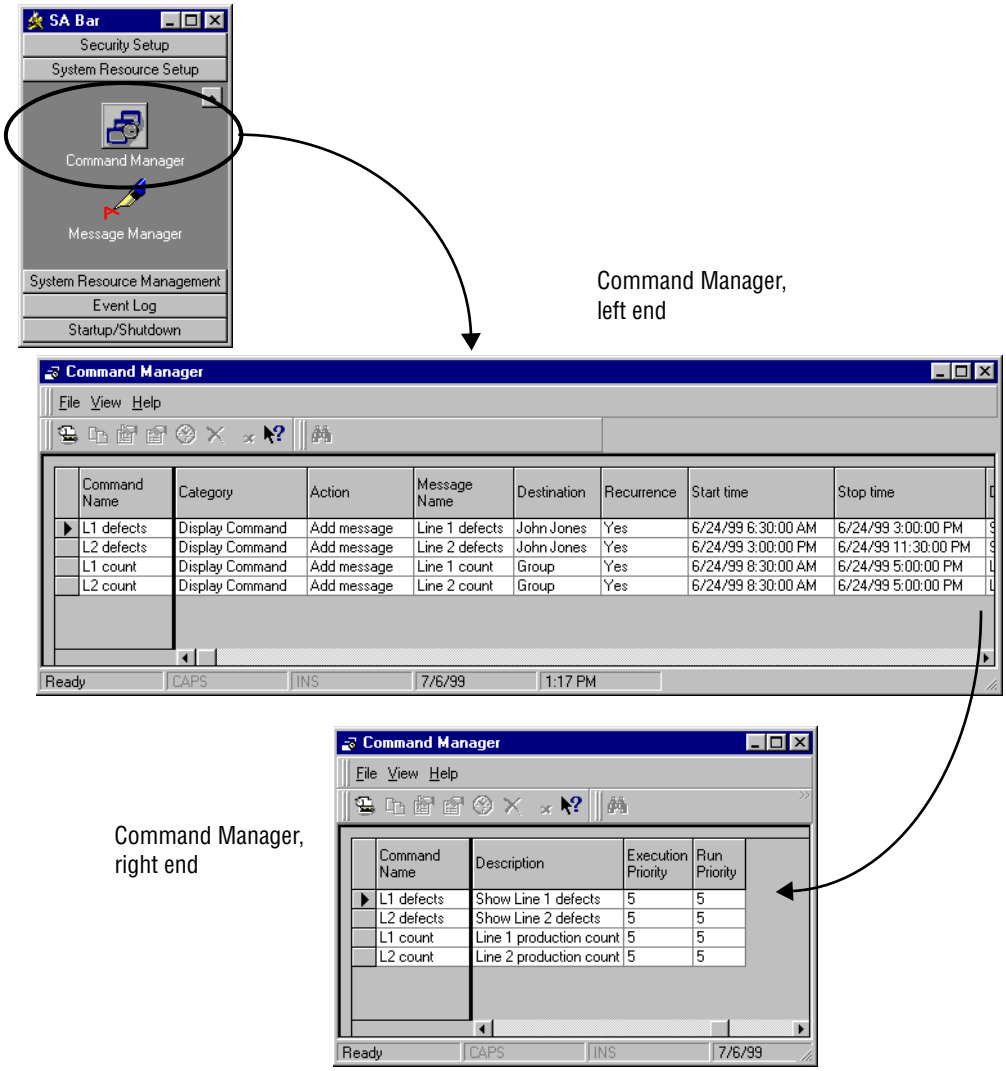
A command is used to control messages:

- Add a single message
- Delete a single message
- Erase all messages from the display, or
- Replace all messages with a single message

Commands can be scheduled for a specific date and time or for a recurring time period.

Accessing the *Command Manager* application

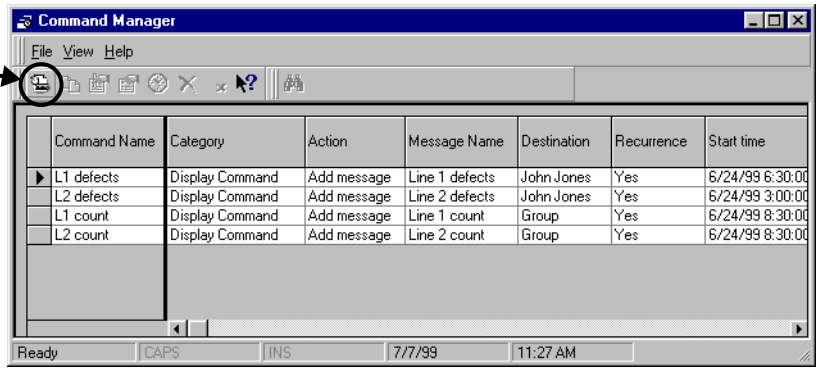
From the *System Resource Setup* group on the *SA Bar,* click once on *Command Manager.* A screen like the one shown below will appear listing any existing commands.


SA Bar
Security Setup
System Resource Setup
Command Manager
Message Manager
System Resource Management
Event Log
Startup/Shutdown
Command Manager,
left end
Command Manager
File View Help
Command Name
Category
Action
Message Name
Destination
Recurrence
Start time
Stop time
L1 defects
Display Command
Add message
Line 1 defects
John Jones
Yes
6/24/99 6:30:00 AM
6/24/99 3:00:00 PM
L2 defects
Display Command
Add message
Line 2 defects
John Jones
Yes
6/24/99 3:00:00 PM
6/24/99 11:30:00 PM
L1 count
Display Command
Add message
Line 1 count
Group
Yes
6/24/99 8:30:00 AM
6/24/99 5:00:00 PM
L2 count
Display Command
Add message
Line 2 count
Group
Yes
6/24/99 8:30:00 AM
6/24/99 5:00:00 PM
Ready
CAPS
INS
7/6/99
1:17 PM
Command Manager,
right end
Command Manager
File View Help
Command Name
Description
Execution Priority
Run Priority
L1 defects
Show Line 1 defects
5
5
L2 defects
Show Line 2 defects
5
5
L1 count
Line 1 production count
5
5
L2 count
Line 2 production count
5
5
Ready
CAPS
INS
7/6/99

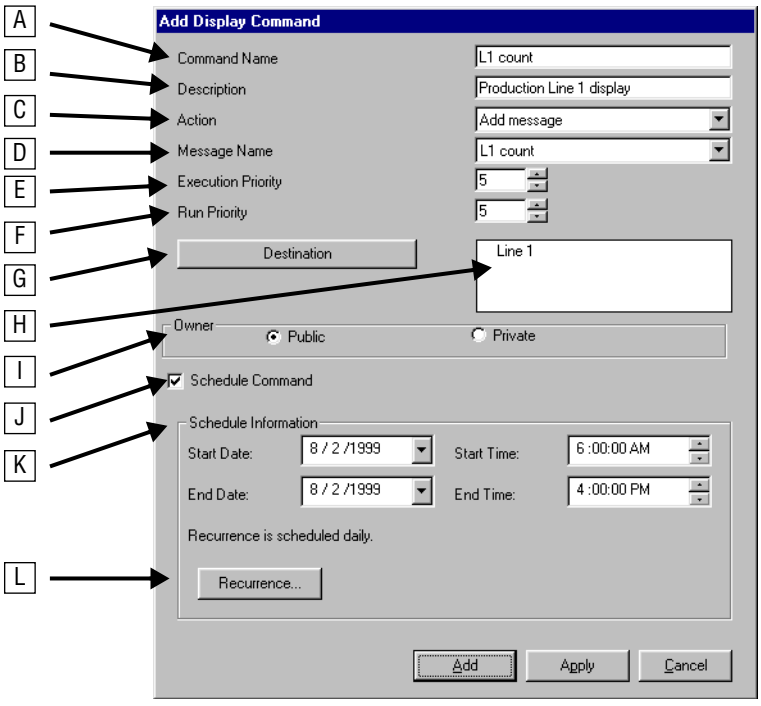
Adding a command

1. Choose the button to add a new command.

Add a command.



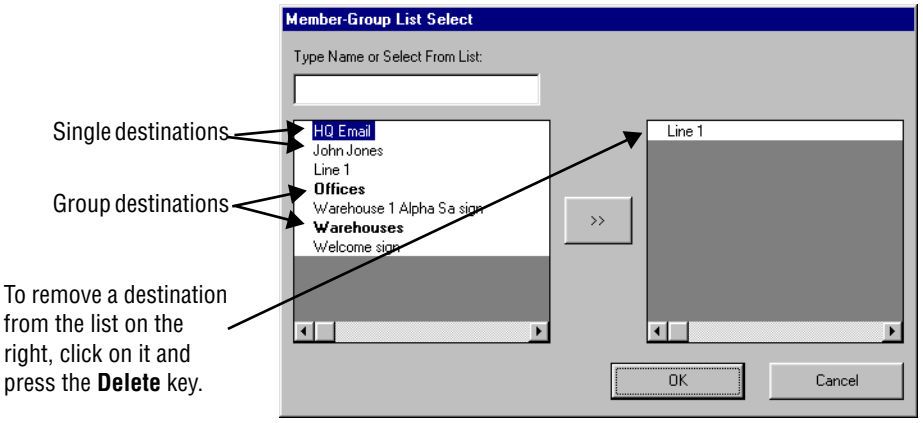
2. This example creates a command to add the message for the Line 1 production count on the Line 1 sign. The table below and the next steps explain each item and how to create it.



Item	Name	Description
A	Command Name	Name of the command.
B	Description	A more complete explanation of the command.
C	Action	What you want to be done with the message(s): • Add a single message • Delete a single message • Erase all messages from the display, or • Replace all messages with a single message
D	Message Name	Select a message for the action. Valid for all *Actions* except "Erase all messages".
E	Execution Priority	The level of authority needed by a user to execute this command.
F	Run Priority	The priority of this command on the display, to be compared with other commands being executed on that display.
G	Destination button	Click this to bring up a list of available destinations to select from.
H	Destination	The list of one or more destinations selected for executing this command.
I	Owner	Specify who can access and use this command. • Public: This command can be used by anyone. Use this in a single-user system. • Private: This command can only be used by the person who created it. Use this only in a multi-user system.
J	Schedule Command checkbox	Check this on if you want to specify a time frame for this command. (Optional)
K	Schedule Information	Allows you to set the start date and time and end date and time.
L	Recurrence button	When the command is scheduled, you can click this button to bring up the options for repeating this command. The options are: • Daily (every x number of days or every weekday) • Weekly (every x number of weeks on specific days) • With an end date (none, after x number of occurrences, or by a specified date.)

3. Specify the *Command Name* and *Description*.
4. Choose an *Action* from the available options in the drop-down list.
5. Choose a *Message*, if applicable, from the available options in the drop-down list.
6. Set the *Execution Priority* and *Run Priority*.
7. Click the *Destination* button to bring up the list, as in the next step.

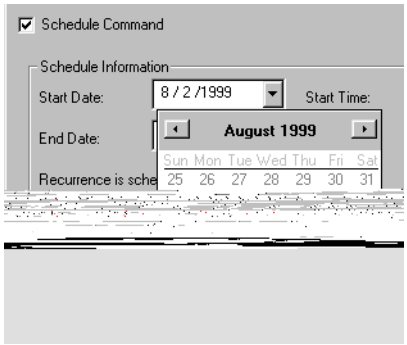
8. Select one or more *Destinations* by clicking (or Control-Click or Shift-Click) on a *Destination* and then on the double-arrow button. Then click *OK*.



9. Specify the *Owner*.
10. If you wish to specify a date and time for the command to be executed, click on the *Schedule Command checkbox*.
11. Next, set the schedule's *Start* and *End Date*. Do this by clicking on the down-arrow by the date. A monthly calendar will pop up. Select a date from the current month, or move to a different month with the left- or right-arrow. Click on the desired date on the calendar. It will be used for the schedule date. In this example, August 2 is chosen for the start date.

NOTE

If you set a schedule for this command, the Recurrence column in the main window (see "Accessing the Command Manager application" on page 67) will indicate either "yes" or "no". If there is no schedule, it will be blank.



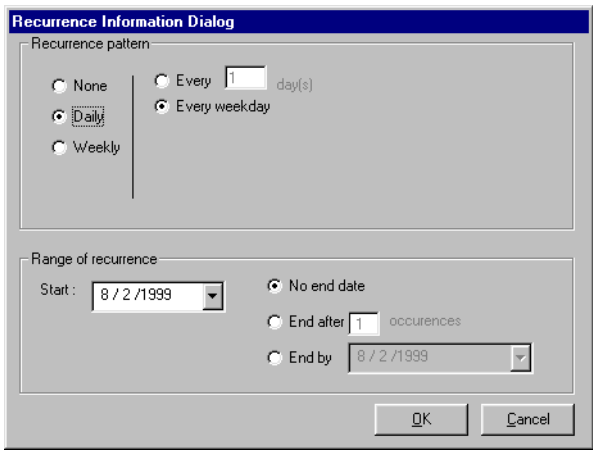
12. Complete the scheduling by setting the *Start* and *End Time*. Do this by clicking on each element of each time (that is, the hour, minute, or second) and then using the up- or down-arrows to increase or decrease the setting.

NOTE: You must set the start time and the end time to a time which is at least one minute later than the current time on your computer. These times cannot be the same as the current time.

NOTE: If you do *not* specify a schedule for this command, it will be executed based on the display command rule set up for this command in **Variable Rule Manager**.

13. You can set recurrence timing by clicking on the *Recurrence…* button. This gives these options:
    - None
    - Daily (every x number of days or every weekday)
    - Weekly (every x number of weeks on specific days)
    - With an end date (none, after x number of occurrences, or by a specified date.)

After you set the recurrence options, click *OK*.



NOTE: If you do *not* set recurrence timing, the command will be executed either for the scheduled date and time only, or based on the display command rule set up in **Variable Rule Manager** for this command, depending on how you have set it.

14. Click either *Add* or *Apply* for the *Add Display Command* window.

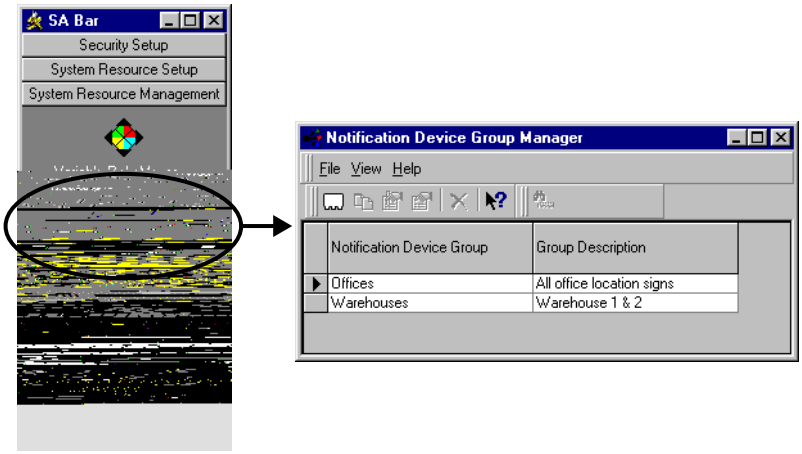
Grouping notification devices

Use *Notification Device Group Manager* to designate logical groups of devices to facilitate sending a message to multiple notification devices simultaneously.

NOTE: Notification devices are created using *Notification Device Setup*. See "Identifying notification devices" on page 46.

Accessing Notification Device Group Manager

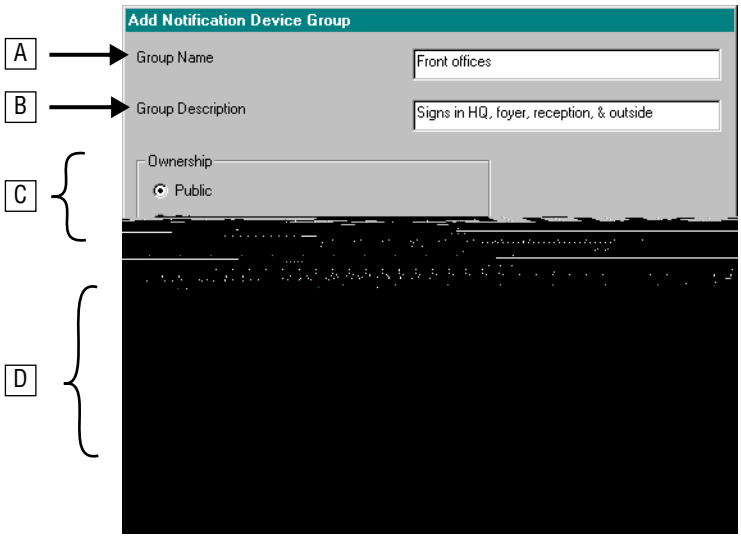
From the *System Resource Management* group on the *SA Bar,* click once on *Notification Device Group Manager.*



Adding a Notification Device Group

1. Choose the button to add a new notification device group.

2. For this example, we will add a notification device group called “Front offices”, as shown here. See the table below for descriptions.



Item	Name	Description
A	Group name	Name of the notification device group as it will be known
B	Group Description	Description of the notification device group, for clarity (Optional)
C	Ownership	Specify who can access and use this notification device group: • Public: This group will be available to everyone. Use this in a single-user system. • Private: This group will be available only to the person who created it. Use this only in a multi-user system.
D	Notification Device	Choice of notification devices to be included in the group. Click on any you wish to include.

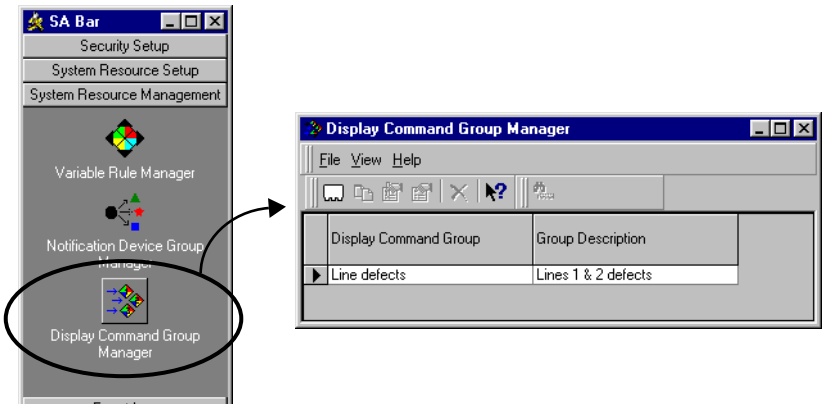
Grouping display commands

Use *Display Command Group Manager* to designate logical groups of display commands. Then you can create another command to submit the command group. Doing this lets you essentially issue a series of commands all at once.

NOTE: Display commands are created using *Command Manager*. See "Using commands to control messages" on page 67.

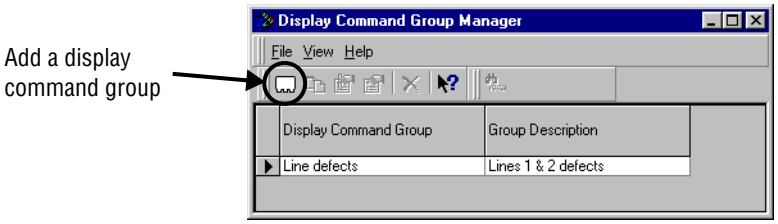
Accessing Display Command Group Manager

From the *System Resource Manager* group on the *SA Bar*, click once on *Display Command Group Manager.*

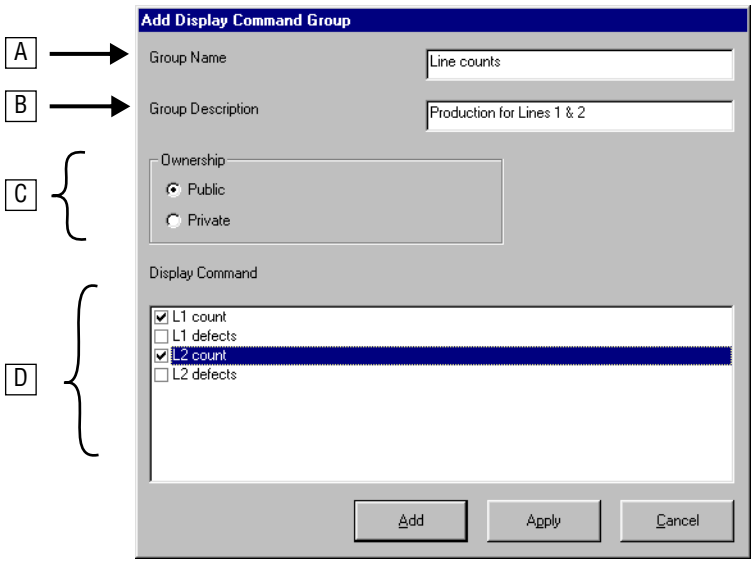


Adding a Display Command Group

1. Choose the button to add a new display command group.



2. For this example, we will add a display command group called "Line counts", as shown here. Click on either *Add* or *Apply*. See the table below for explanations.



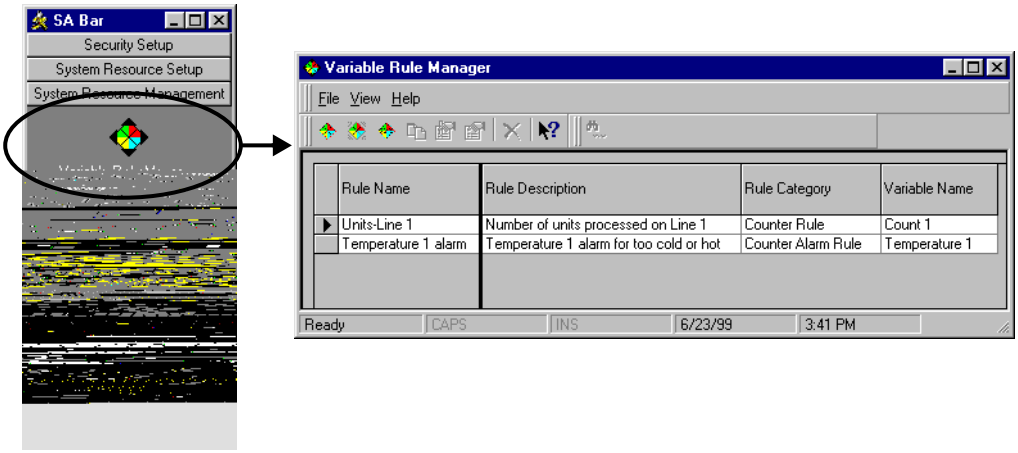
Item	Name	Description
A	Group name	Name of the display command group as it will be known
B	Group Description	Description of the display command group, for clarity (Optional)
C	Ownership	Specify who can access and use this display command group: • Public: This group will be available to everyone. Use this in a single-user system. • Private: This group will be available only to the person who created it. Use this only in a multi-user system.
D	Display Command	Choice of display commands available to be included in the group. Click on any you wish to include.

Using variable rules

Use *Variable Rule Manager* to designate rules (pre-defined conditions with resulting actions). Please see "How Smart Alec uses variables" on page 18 for more information.

Accessing the Variable Rule Manager

From the *System Resource Management* group on the *SA Bar*, click once on *Variable Rule Manager.* A screen like the one shown below will appear, listing any existing variable rules.

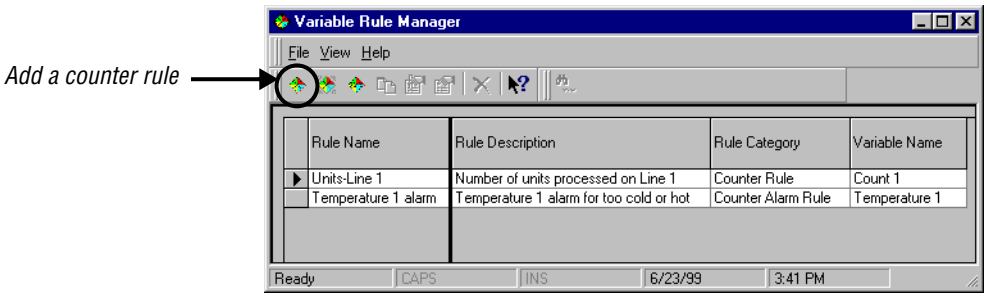


Adding a variable rule

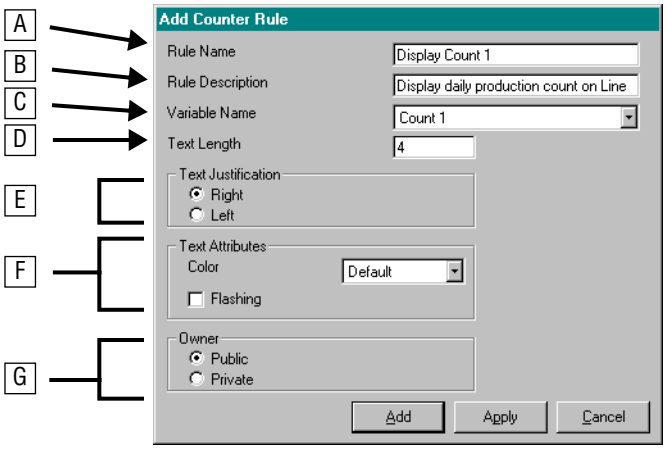
There are three types of variable rules. They are explained in "Types of variable rules" on page 18. All three will be shown here.

Adding a counter rule

1. Choose the button to add a new counter rule.



2. Enter the information to define usage of this counter rule. Click either *Add* or *Apply*. See the table below for explanations.



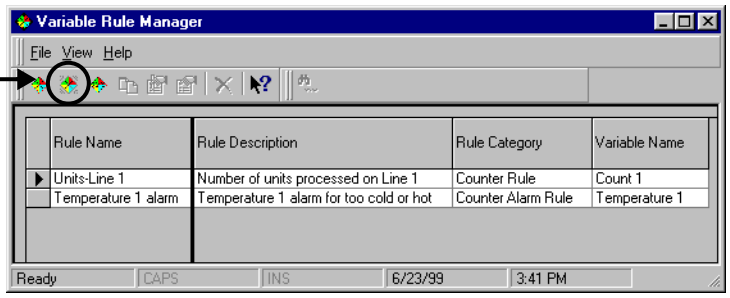
Item	Name	Description
A	Rule name	Name of the counter rule as it will be known
B	Rule Description	Description of the counter rule, for clarity (Optional)
C	Variable Name	Name of the variable which will be displayed
D	Text Length	Maximum number of characters to allow for the length of the variable to display
E	Text Justification	Whether text will be right- or left-justified

Item	Name	Description
F	Text Attributes	Color to use when displaying the variable and whether or not the variable will flash. Colors available depend on the notification device.
G	Owner	Specify who can access and use this rule. • Public: This rule can be used by anyone. Use this in a single-user system. • Private: This rule can only be used by the person who created it. Use this only in a multi-user system.

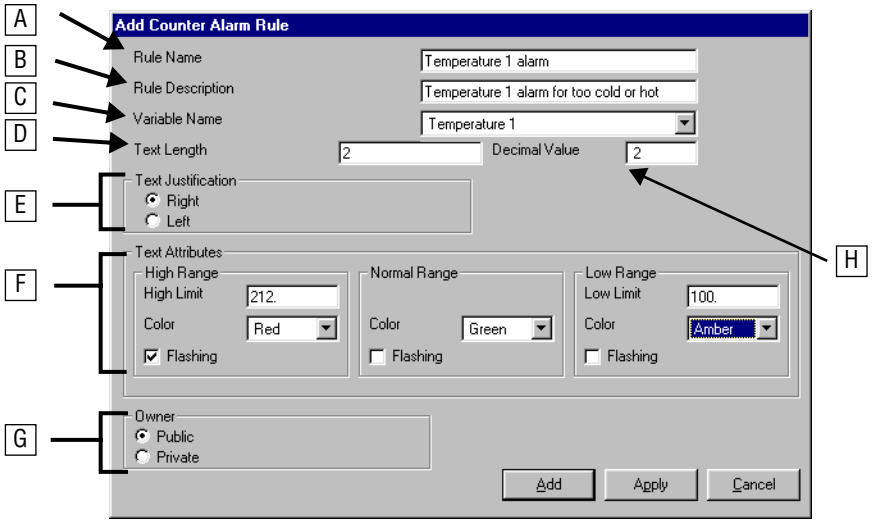
Adding a counter with alarm rule

1. Choose the button to add a new counter with alarm rule.

Add a counter with alarm rule



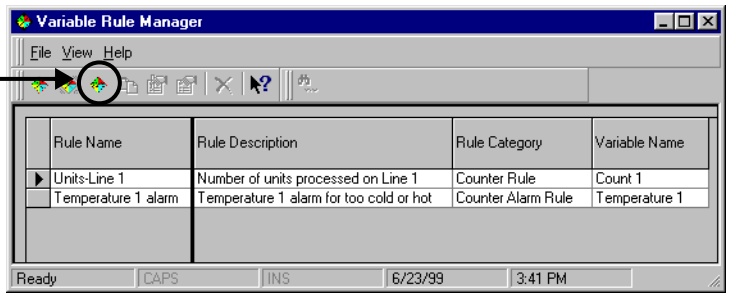
2. Enter the information to define usage of this counter with alarm rule. Click either *Add* or *Apply*. See the table below for explanations.



Item	Name	Description
A	Rule name	Name of the counter with alarm rule as it will be known
B	Rule Description	Description of the rule, for clarity (Optional)
C	Variable Name	Name of the variable to be displayed
D	Text Length	Maximum number of characters to allow for the length of the variable to display
E	Text Justification	Whether text will be right- or left-justified
F	Text Attributes	For each range: • Limit/threshold between this (high or low) range and the normal range • Color to use for displaying the variable • Whether or not the variable will flash
G	Owner	Specify who can access and use this rule. • Public: This rule can be used by anyone. Use this in a single-user system. • Private: This rule can only be used by the person who created it. Use this only in a multi-user system.
H	Decimal Value	If the value for the variable used in this variable rule has a decimal, the *Decimal Value* indicates how many decimal places to use in the value for the variable. (For example, if the value for the variable has 5 digits with a *Decimal Value* of 2, then the number “12345” would be considered as “123.45”.) NOTE: The *Decimal Value* property is only available if the *Data Type* of the variable is “float”. Otherwise, you will not see this property.

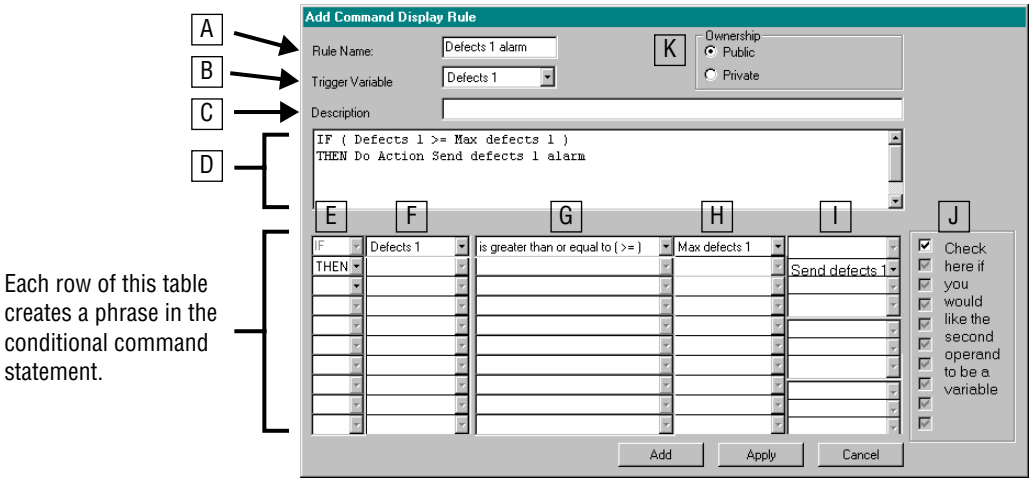
Adding a display command rule

1. Choose the button to add a new display command rule.



2. Enter the information to define usage of this display command rule. The final result of this window creates a statement expressing a conditional command, that is, a command that will only be executed if all the preceding conditions are met. See the table below for explanations.

NOTE: Use care when setting this statement. If this statement is not correctly set, either nothing will happen or the wrong action will be taken.



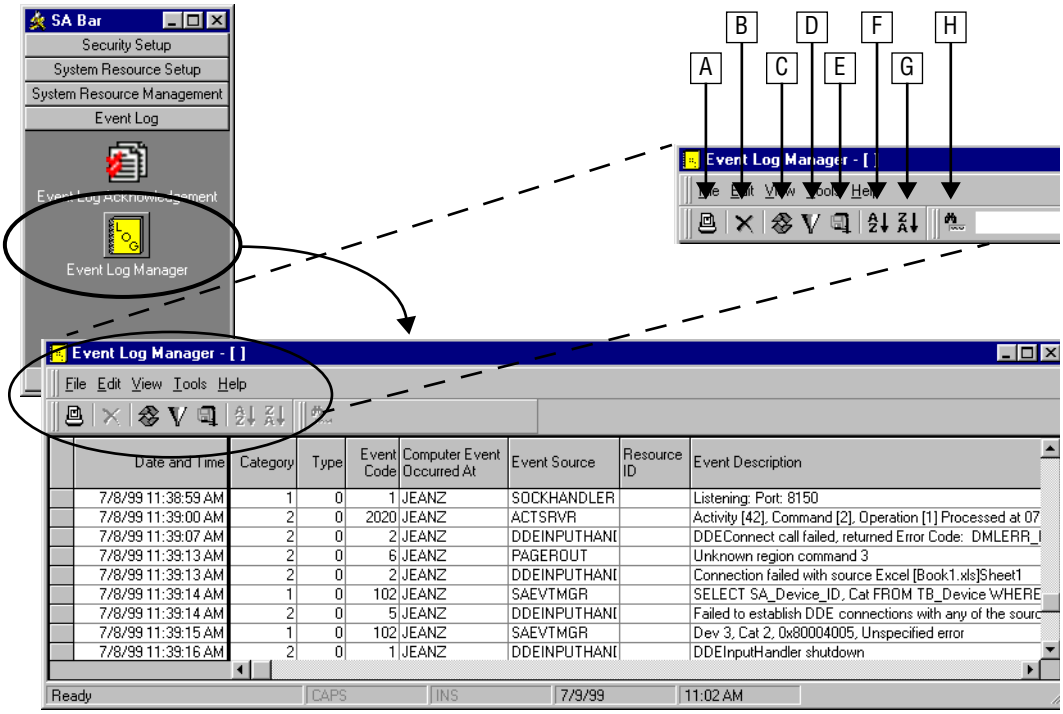
Item	Name	Description
A	Rule name	Type the name by which the rule is to be called.
B	Trigger Variable	Select the variable to be used to start this rule's test.
C	Description	Type the description of the rule, for clarity. (Optional)
D	Format	Shows the complete format of the rule you create. Automatically entered by Smart Alec as you complete the sections of the rule.
E	Boolean operators	Choose as appropriate from the following list: • If • And • Or • Then The choice depends on what you want the rest of the row to do in relation to the other phrases. The first row always starts with "IF" and Items F through J must be completed. The last row you use must always start with "THEN' and end (Item I) with the command you want to be done when the entire statement is executed. You can have rows in between the first and last rows and these can start with either "AND" or "OR" to create additional conditions that must be met before the command will be done.
F	Operand 1	Choose the variable to test from a list of existing variables.
G	Operator	Choose from the following list for comparing Operand 1 with Operand 2: • Is equal to (=) • Is not equal to (!=) • Is greater than (>) • Is greater than or equal to (>=) • Is less than (<) • Is less than or equal to (<=)
H	Operand 2	Specify the value to compare Operand 1 to. Can be a variable or a literal value. (See Item J.)
I	Resulting display action	Choose the display command to be executed when all conditions are met. The choice is from a list of existing display commands or groups of display commands.
J	Variable/literal value switch	Click as needed to set this as checked or unchecked. • Checked: the choices for Item H consist of variables in a drop-down list. • Unchecked: you can type in your own specific value for Item H.
K	Owner	Specify who can access and use this rule. • Public: This rule can be used by anyone. Use this in a single-user system. • Private: This rule can only be used by the person who created it. Use this only in a multi-user system.

Managing the log of Smart Alec system events

For system support purposes, Smart Alec monitors and creates a log of all events that occur within the system. This log is available to view by using the *Event Log Manager*. Some of the events may be serious enough that someone should review them and decide if something should be done about them. Smart Alec identifies these events and allows a user to acknowledge having seen them by using the *Event Log Acknowledgement* application. All events listed in the *Event Log Acknowledgement* application must be acknowledged before they can be deleted from the log.

Accessing the Event Log Manager

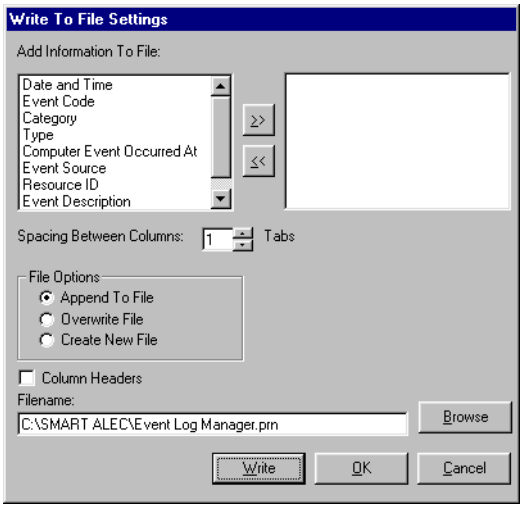
From the *Event Log* group on the *SA Bar*, click once on *Event Log Manager.* A screen like the one shown below will appear. See the table below for descriptions.



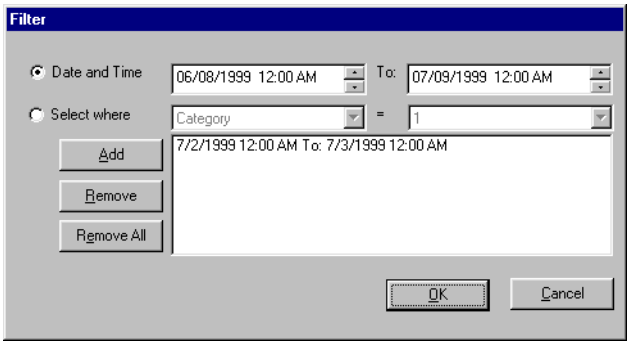
Item	Name	Description
A	Write to file	Create a tab-delimited print (.prn) file with user-selected fields from the database.
B	Delete	Delete selected event(s).
C	Archive	Save the entire database as a text (.txt) file.
D	Filter	Select only events that fit specific criteria (data/time and/or database field).
E	Compact database	Makes the event log database smaller by removing obsolete references.
F	Sort Ascending	Sort A to Z or 0 to 9.
G	Sort Descending	Sort Z to A or 9 to 0.
H	Search	After selecting a column, use this to search for a specific value.

Options for viewing the event log database in the *Event Log Manager*

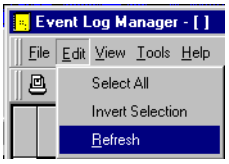
- *Write to a file:* Create a tab-delimited print (.prn) file with user-selected fields from the database.



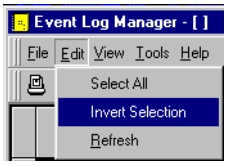
- *Filter:* Select only events that fit specific criteria (date/time and/or one or more database fields)



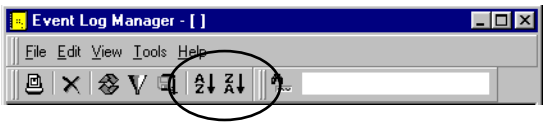
- *Refresh:* Update the list of events



- *Invert selection:* Select only those records not already selected.



- *Sort:* Sort high-to-low or low-to high.



Options for managing the event log database

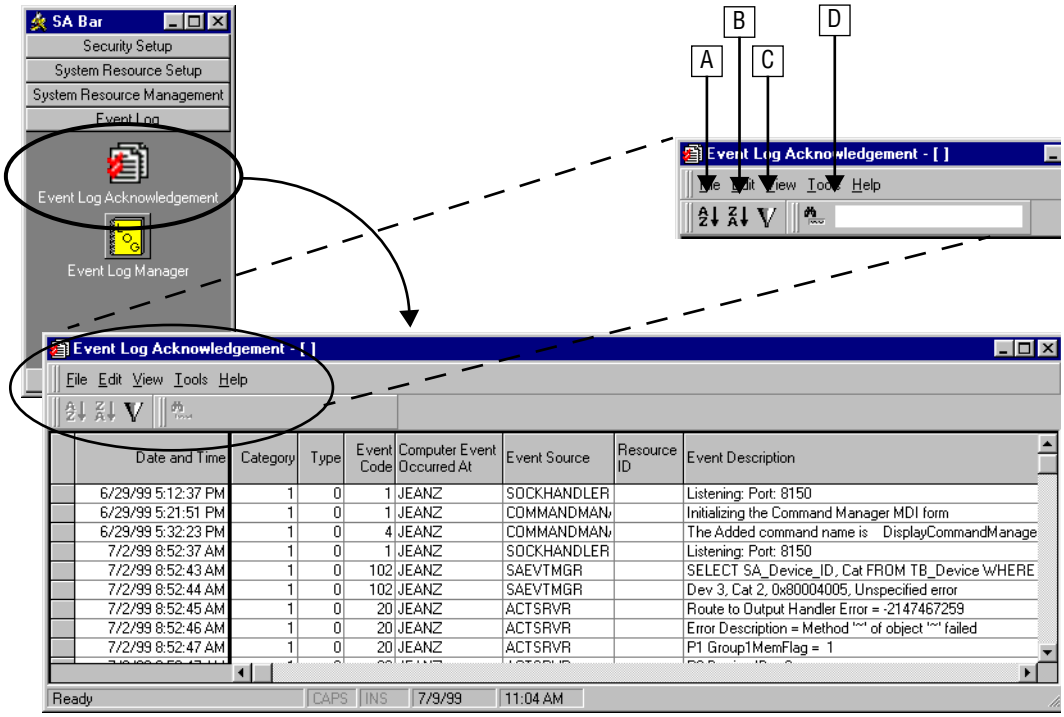
- *Select all:* Highlight all records. This allows you to then delete all records at one time.
- *Control database size:* Set preferences to limit the number of events listed in the database to a specific number, to overwrite the oldest records (never, as needed, or after x number of days), and to state the wording of the warning message when the number of events in the database has reached the limit.
- *Archive:* Save the entire database as a text (.txt) file.
- Compact: Make the event log database smaller by removing obsolete references.

Accessing the Event Log Acknowledgement application

When you acknowledge a record in the Event Log database, it is marked as acknowledged and is removed from the list of events needing acknowledging. You can use this list as a checkoff list for things to review and/or check into.

From the *Event Log* group on the *SA Bar*, click once on *Event Log Acknowledgement*. A screen like the one

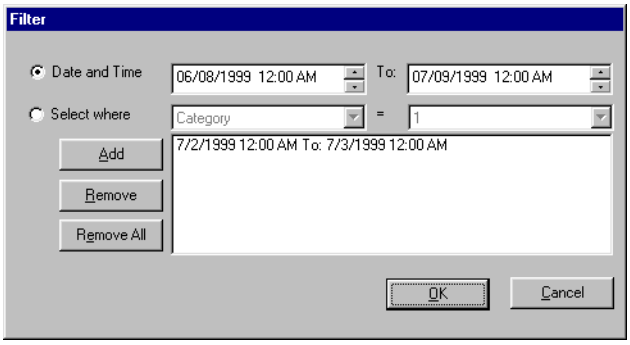
shown below will appear. See the table below for descriptions.



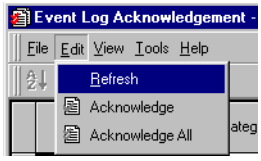
Item	Name	Description
A	Sort Ascending	Sort A to Z or 0 to 9.
B	Sort Descending	Sort Z to A or 9 to 0.
C	Filter	Select only events that fit specific criteria (data/time and/or database field).
D	Search	After selecting a column, use this to search for a specific value.

Options for viewing the event log in *Event Log Acknowledgement*

- *Filter:* Select only events that fit specific criteria (date/time and/or database field)



- *Refresh:* Update the list of events

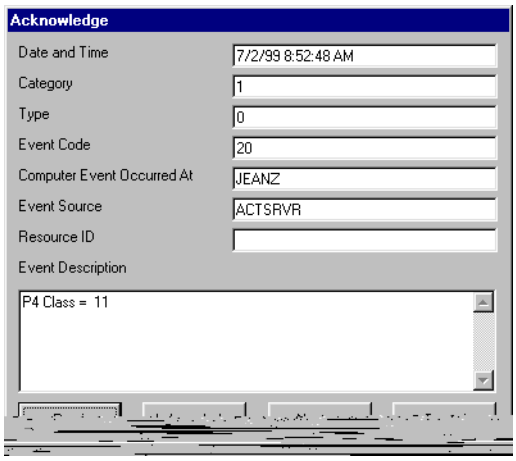


- *Sort:* Sort high-to-low or low-to high.

Options for acknowledging events

- *Preferences:* Sets the refresh rate. Also sets whether to always run the *Event Log Manager* in the background when Smart Alec starts up without waiting for a user to start it from the *SA Bar*.
- *Acknowledge:* Displays a window for the selected record showing all of the values for the event. Allows you to view the previous/next record. When you acknowledge a selected record, it is marked as acknowledged in the Event Log database and is removed from the list of events

needing acknowledging. You can use this list as a checkoff list for things to review and/or check into.



- *Acknowledge All:* Same as *Acknowledge* but applies to all records in the list without viewing any records.

Appendices

Appendix 1: Troubleshooting

Starting the background processing applications

If the Smart Alec applications that do the processing do not start with *Start* > *Programs* > *Smart Alec* for any reason, you can manually start them. In Explorer, double-click on alecstart.exe in the Smart Alec directory. This will start:

- SABar.exe (the primary user interface)
- SAevtmgr.exe (the background event manager)
- Sockhandler.exe (the background socket data manager)
- DDEInputHandler.exe (the background DDE data manager) If this does not run, it may be that the external data source is not running before starting Smart Alec. Start the external data source and then start Smart Alec.

(In Windows, you can see which programs are running by pressing Ctrl/Alt/Del together. Be sure to choose *Cancel* here rather than *End Task* or *Shut Down*.)

Where to go for additional help

If you need assistance, please follow this procedure:

1. Refer to relevant topics in this manual.
2. Refer to online Help for the specific application.
3. Contact your authorized Smart Alec reseller.

What you need to provide when you need assistance

If you need technical assistance, you will need to provide:

- full description of the problem
- the sequence of steps that lead up to the problem
- computer system hardware and relevant software application version numbers
- the version number of Smart Alec found in the splash screen when Smart Alec starts.
- the product serial number – found on the outside packaging and on the registration card
- the version number of any relevant Smart Alec applications, found by right-clicking on the application in Explorer, choosing *Properties* then clicking on the *Version* tab.

Appendix 2: Smart Alec computer requirements

Make sure your hardware system fits these minimum requirements:

- Personal computer, IBM or compatible
- Mouse and CD-ROM drive
- SVGA 800 x 600 color monitor
- Microsoft Windows 95,
  Microsoft Windows 98, or
  Windows NT Workstation 4.0
- 64 MB RAM
- Pentium 120 MHz processor, minimum
- 25 MB hard disk storage space

Appendix 3: Notification Device Interfaces

The Smart Alec system includes the following notification device interfaces.

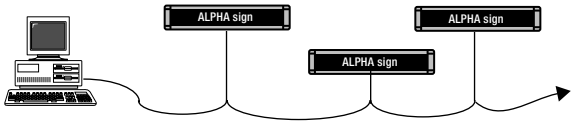
NOTE: You may have purchased notification devices from other third party sources. These are not supported by Adaptive Micro Systems. You will need to consult the third party source for any needed assistance.

Serial interface

A serial notification device interface uses cables to connect ALPHA SA signs into a network, and messages are sent over this cabling.

A serial interface works best when all the notification devices are in one building.

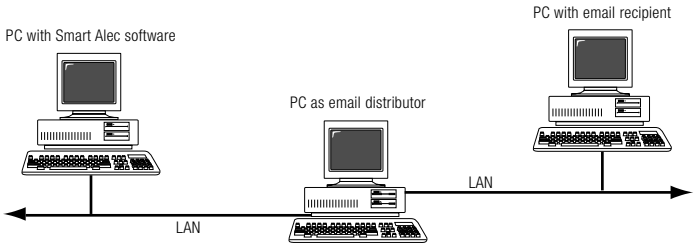
PC – sign – sign – sign – etc.



Email interface

An email notification device interface sends messages over a network using an email service.

PC – LAN network – PC used as email distributor – PC email

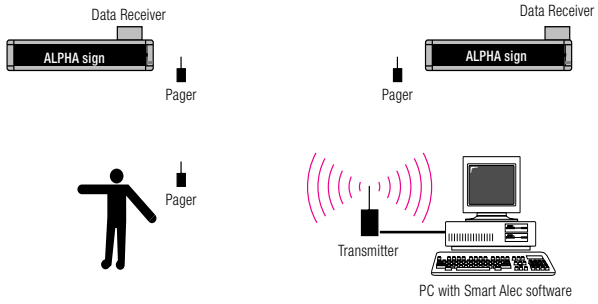


Local pager interface

A local pager notification device interface uses a transmitter attached to a computer and a wireless receiver attached to a notification device. Messages are sent from the computer via a transmitter to wireless receivers and pagers attached to the notification devices.

The advantage of this connection method is that wiring does not have to be strung between notification devices.

PC – pager base station – pager or pager-to-sign

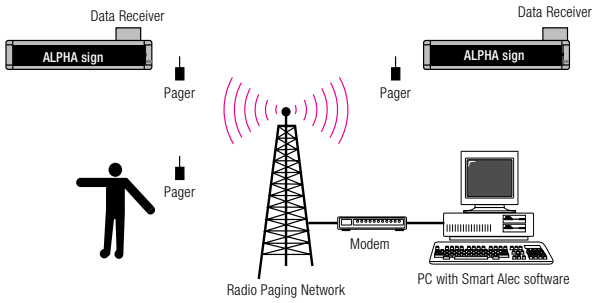


Wide area pager interface

A wide area pager notification device interface uses a modem attached to your computer and a wireless receiver attached to a remote notification device, either a display or a pager. Basically, when a message is sent, it is transmitted to the remote notification device when the computer modem calls the device's modem. Specifically, a message is sent from your computer to the attached modem. The modem then dials a paging service, such as SkyTel, and this paging service actually transmits the message to the wireless receiver.

A modem connection is often used for devices that are not in the same building and possibly not in the same city. It works best when message data does not change rapidly.

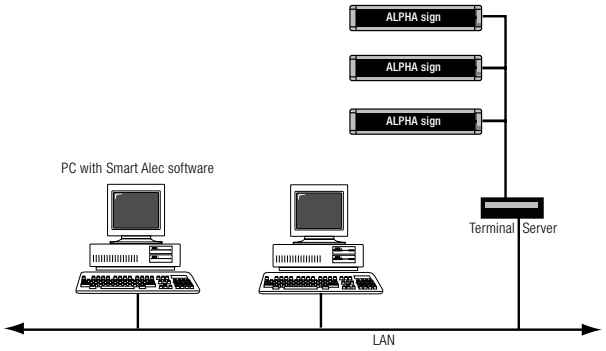
PC – modem – pager base station – pager or pager-to-sign



Terminal server interface

A terminal server notification device interface uses a Local Area Network cabling system to transmit messages to a device on the LAN with an IP address.

PC – LAN network – terminal server box – sign – sign – sign – etc.



Appendix 4: What modes are available on signs

Modes are special effects used to change the way a message appears on a sign.

Table 1: Modes available on signs.

Sign (FM = Full Matrix, CM = Character Matrix, LM = Line Matrix)		Modes																
								Rotate										
ALPHA sign	Type	Automode	Bulletin	Flash	Hold	Interlock	Roll	Standard	Condensed	Scroll	Slide	Snow	Sparkle	Spray	Starburst	Switch	Twinkle	Wipe
Series 200	FM	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Series 300	FM	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Series 4000	FM	●		●	●	●	●	●		●	●	●	●	●	●	●	●	●
Series 7000	FM	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●
Big Dot	FM	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Alphavision FM	FM	●	●	●	●	●	●	●		●			●				●	●
Alphavision CM	CM	●		●	●													●
790i	FM	●		●	●	●	●	●		●	●	●	●	●	●	●	●	●
Solar	FM	●		●	●	●	●	●		●			●				●	●
Director	CM	●		●	●													●
2.1-inch CM	CM	●		●	●													●
3.2-inch CM	CM	●		●	●													●
PPD	LM	●		●	●	●	●	●		●	●	●	●	●	●	●	●	●

Appendix 5: Glossary

Administrator

Normally the applications that are needed to set up the Smart Alec system are available only to an administrator, while the applications needed for routine management of messaging needs are available to all users. In an environment where only one person is responsible for using Smart Alec, this user is also the administrator, with full access to all applications.

Security is available so that, for instance, applications needed only by the Smart Alec administrator (to set up the system) are not accessible by normal users (for general management of the system.)

Command

A way for a user to communicate a request for a desired physical action at a notification device. A command consists of message content, notification device destination, and running priority. It is formatted according to what is needed for each particular notification device.

A command can, but does not always, trigger action, depending on priorities and prerequisite conditions. Pre-set variable display command rules can control when commands are processed, or commands can be scheduled.

Details

If you have enough "details" authorization to use an application, that application will appear in the SA Bar for you. You will be able to use that application and view details of any data in it, but you will not be able to make any changes to it.

Dynamic Data Exchange

Dynamic Data Exchange, or DDE for short, is a programming method by which Windows-based computer applications can exchange data when running simultaneously, generally on the same computer. This way they can "communicate" directly and actions in one system can be triggered by data in another system.

External data source

A source of data or information outside of the Smart Alec system. Also known as a data server. One example of an external data source could be a production line system, such as Intellution or WonderWare, providing machine statistics, like the number of parts produced per minute or a machine's temperature. Another example of an external data source could be a Microsoft Excel or Lotus 1-2-3 spreadsheet.

Message

A message is a unique, unified set (file) of information – a "thought". It can be saved and/or sent to a notification device. Its "look and feel" is based on that specific device.

A message is defined using the Message Manager. It may include some or all of the following properties, either specified or defaulted:

- Text
- Graphics
- Formatting (font, font size, color, etc.)
- Time/date/temperature
- Variables
- Animation

A message does not include the following, which are designated using **Command Manager** for the message:

- Scheduling
- Location/destination
- Priority

Multi-user environment

A "multi-user" environment is appropriate when users should not necessarily have access to the same applications and application functions; that is, access can be restricted for some users for applications, application functions, or system inputs or resources. For example, you may want to restrict a clerk's authority and not allow that person to send messages to the signs on the production floor. But you would want the building security manager to be able to send a fire alarm to every

sign. Also, you might not want either of these people to be able to set authority for other users.

Notification Device

An individual hardware component to which you send messages. Examples are: ALPHA SA signs, email, and pagers. All notification devices need notification device interfaces.

Notification Device Interface

Hardware with software settings needed to communicate properly with a hardware notification device. Please see "Appendix 3: Notification Device Interfaces" on page 96 for descriptions and examples.

Priority, Command

The level of authorization needed by a user to send a command to (or change a command for) a notification device. A lower number indicates more authority.

Priority, Running

The level of priority of a command sent to a notification device. A lower number indicates a higher priority. Each command has a priority. Messages with commands of the same priority are displayed on the notification device on a rotating basis. Messages with commands of a higher priority are displayed, while messages with commands of a lower priority are temporarily not displayed, until the messages with commands of a higher priority expire.

Single-user environment

A "single-user" environment in Smart Alec might have more than one user, but all users have full access rights to all applications, application functions, and system inputs and resources.

Update

If you have enough "update" authorization for an application, that application will also appear in the SA Bar for you. You will be able to view details and, in addition, you will be able to make changes using that application.

User

Any person who is both authorized and set up to submit information in any way to Smart Alec.

Each user has not only a name and password, but also is authorized for applications, system resources, data, and processing.

Variable

A variable represents real-time ("as it happens") data that can change (e.g., temperature or production rates, security lock status, alarms.) Since its value can change or vary, it's called a "variable." Variables' values are typically acquired and handled by Smart Alec's DDE or socket interfaces.

Variables can be used in two ways:

1. They can be embedded in messages. The value of the variable gets filled in wherever the variable is used in an active message, and it is refreshed whenever the value changes.
2. Variables can also be used to trigger commands for messages and events to start and stop.

As an example, you could have a variable called "Temperature" which is continually filled in with values from a thermometer. The variable could change, for instance, whenever there is at least a 1-degree change at the thermometer. Then, whenever "temperature" equals or exceeds 212° F, a message showing the temperature could be sent to a sign and an alarm could be triggered to sound.

Appendix 6: Socket Interface – API Process Guide

Purpose

The purpose of this appendix is to serve as a guide for a developer writing software to interface with the Smart Alec 2.1 system through the Socket Input Handler.

Definitions

- ASCII: American Standard Code for Information Interchange – A set of values corresponding to numbers, letters, symbols and codes for exchanging information. Used in computing to send data across various lines of transmission.
- Null terminated string: A series of ASCII characters ending with a byte valued at 0. This is similar to the standard implementation of a C++ character string class.

Theory of Operation

The Socket Input Handler is to be packaged with the first release of Smart Alec 2.1 as a direct interface into the system. It is currently able to handle a Data Source Variable Change of State (COS) process.

The user connects to the socket handler using a standard socket implementation for any computer platform and the Port number found in the main Smart Alec database. If the address and port are correct and the socket handler is running on the host computer, the handler will accept the connection. The system is designed to support unlimited users (from different or the same IP Address), as the host computer's resources permit.

Login Sequence

1. Initiate a standard socket connection with the host computer using the IP Address of the host computer and the port number found in the Smart Alec database.
2. The Smart Alec Socket Input Handler will accept the connection and log the IP address of the client system.
3. The client will send a 'Login Packet' described later in this document.
4. The Socket Input Handler will verify the login name and password with the database entries to determine if the client is a valid user.
5. If the user login is not valid, the Socket Input Handler will send an 'Error Packet' containing a message to that effect back to the client system. It will then immediately terminate the connection.
6. If the user login is valid, a 'Success Packet' will be returned to the client and operation will continue as normal.

Standard Operation

After a successful connection has been established, a valid user login has occurred and a 'Success Packet' has been returned, the Socket Input Handler sits in an idle state waiting for new packets to come in.

From there, the user is free to send new packets into the system at any time. A packet is introduced into the system by sending data serially across the socket connection. The elements of the packet are explained better later in the document, but the basic ordering is as follows:

- Class
- Subclass
- Message ID
- Priority
- Set of arguments

After the packet has been introduced into the system, the Socket Input Handler parses the packet header for information on how to process the data. The handler knows from the class and subclass how many arguments to look for and to where the packet needs to be routed.

Since the Socket Input Handler utilizes a synchronous transfer protocol, after each packet it receives, it responds to the client with either a 'Success Packet' or an 'Error Packet.' It is recommended, for the integrity of the system, that data is never sent from an individual source until a return packet has been received.

The Socket Input Handler was written using the MFC implementation of the CSocket class. Because of this, it is important that regardless of the system the client computer is running, data being sent to the handler is sent in network byte order. The issue comes about because manufacturers of different microchips have different views on how data should be stored in memory. For instance, a 32 bit DWORD on one system would be stored in the order: Byte 0 – 1 – 2 – 3, whereas another system might store it in the order: Byte 3 – 2 – 1 – 0. When it comes to networking, this issue has come about before. Some implementations of sockets have the ability to take care of this. If the developer notices that nothing is coming into the Socket Input Handler right, then there is a possibility that byte order is the issue. MFC CSockets are set to read from 'network byte order' ("Big Endian") and thus, so is this application.

General Packet Layout

The user sends information into the system serially as a packet. The structure for all types of socket packets is as follows:

Name:	Class
Type:	long int (32 bits)
Description:	Broad identifier for the type of message packet

Name: Subclass
Type: long int (32 bits)
Description: Specific identifier for the type of message packet

Name: Message ID
Type: long int (32 bits)
Description: Used by client system to identify a message. Upon response, the Message ID will be identical to the ID of the packet being responded to.

Name: Priority
Type: short int (16 bits)
Description: Used internally by Smart Alec for routing priority. This feature is not currently implemented. Send a short int with a value of 0.

Name: Arguments
Type: Set of null terminated ('\0') ASCII character strings. All ASCII characters are valid except ASCII 0 ('\0').
Description: A set of null terminated strings of data. The strings are sent sequentially with only the null terminator in between. Each class and subclass has its own packet definition for number of strings to send and rules for format.

Data Source Variable COS

Description

This type of packet alters the value of a variable already existing in the Smart Alec system. Typically, this is used to update a variable on a display device, give notice of an event, or display general information.

Packet Definition

Class: 8
SubClass: 8
Arguments: 2 Arguments are expected for this type of message packet

Name: Var_Name
Limits: 32 characters
Description: Name of the variable as identified in the database

Name: Var_Cur
Limits: 128 characters
Description: Updated value of the variable (in null terminated string format)

Login Packet

Description

This is the first packet that needs to be sent into the system. If the login values to not match up with a user in the Smart Alec system, the Socket Input Handler will return an 'Error Packet' indicating an invalid login and the connection will be terminated. If this is not the first packet sent, an 'Error Packet' will be returned indicating that the user is not logged in yet and the session will be terminated. If a second login is attempted after a successful login has already occurred on this connection, an 'Error Packet' will be returned indicating that the user is already logged in and the session will continue.

Packet Definition:

Class: 1
SubClass: 1

Arguments: 3 Arguments are expected for this type of message packet

Name: User_Name
Limits: 64 characters
Description: The name used to identify the account of a Smart Alec user

Name: User_Password
Limits: 255 characters
Description: The password for this Smart Alec user account

Name: Callback_Port
Limits: Between 1024 and 65535 (in ASCII characters)
Description: The number of a port on the client's system that has a listen connection open in the event of outstanding notifications after a broken connection. In this case, the socket handler will open a socket to that port on the client's system. This feature is not currently implemented. Send a null terminated string containing the number 0. (ie. '0' or ASCII 40)

Log Message

Description

This type of packet is primarily used as a diagnostic or debugging tool. It will place a message or note directly into the Smart Alec Event Log, the Socket Input Handler local log file, and the Smart Alec Trace System.

Packet Definition

Class: 0
SubClass: 0

Arguments: 1 Argument is expected for this type of message packet

Name: Message
Limits: 64 characters
Description: A message or note to place directly into the Smart Alec event log, the Socket Input Handler local log, and the Smart Alec event trace system. Smart Alec will log this message regardless of whether logging or tracing is enabled.

Socket Command

Description

This type of packet is used to issue a command directly to the Socket Input Handler. The scope of these commands is pretty limited, but can prove to be useful. The tools currently available are based on dynamically controlling tracing and logging.

Packet Definition

Class: 0
SubClass: 1

Arguments: 1 Argument is expected for this type of message packet

Name: Command
Limits: 32 characters (Case Insensitive)
Description: A control command to be issued directly to the Socket Input Handler

Available commands:
- None

Return Packets

These packets are returned upon completion of the processing of a submitted packet by the Socket Input Handler. The packet format is the same as with packets sent into the socket handler. The Message ID that comes back in this packet will be the same ID that was sent in the original packet.

Success Packet

Description

The success packet is a return packet used in the synchronous transport protocol to indicate that a packet entered into the system has been processed by the socket handler and routed to its proper destination. After receiving this packet, the client system is safe to send another packet.

Packet Definition

Class: 0
SubClass: 2

Arguments: 1 Argument is expected for this type of message packet

Name: Success Message
Limits: 32 characters
Description: A string indicating that processing is complete for a client's message

Error Packet

Description

The error packet is returned when a problem has occurred either with the incoming packet or within the Socket Input Handler application. The argument within the packet gives information on the nature of the error. It is recommended that the client system examine the nature of the error and make a determination whether it should continue sending data.

Packet Definition

Class: 0
SubClass: 3
Arguments: 1 Argument is expected for this type of message packet

Name: Success Message:
Limits: 32 characters
Description: A string indicating nature of the error that the Socket Input Handler encoun-

tered with this packet. These errors are explained in the Return Information Reference.