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## Editing Object Databases

LookoutDirect creates the *native* database of an object automatically when you create the object. The native database is documented at the end of each object class definition in the online help and in the *LookoutDirect Object Reference Manual*.

You can create new data members through aliasing, or modify the parameters of any existing native data member. These parameters include such things as alarm setpoints, deviation filters, scaling factors, historical logging, and alias names.



**Note** Any object in LookoutDirect can have its native database modified. However, this is most practical for objects with large native databases, such as driver objects and DataTable objects.

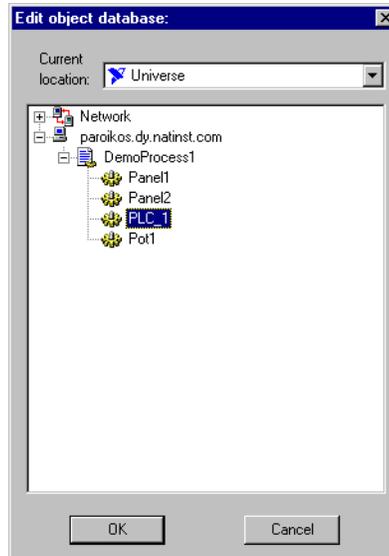
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## Editing Database Parameters

1. For the purposes of this illustration, create a Modbus object, the same way you created the a Pot object. Use the name PLC\_1 for your object, and accept the default parameters.

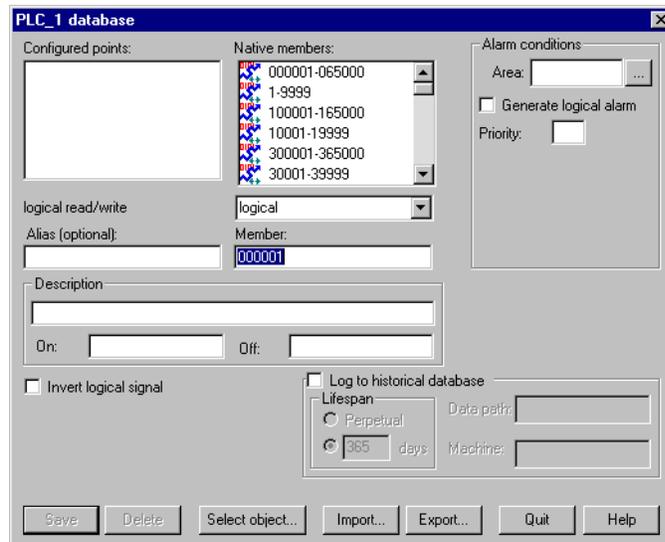
The Modbus object can be added to your system without a physical connection while you are learning to use LookoutDirect. Let the default settings stand when you create the object.

2. There are two ways to access the dialog box you use to edit a database.
  - From the LookoutDirect menu bar, select **Object»Edit Database**. In the **Edit object database** dialog box, navigate to your demo process running on your local computer and select PLC\_1.



- In the LookoutDirect Object Explorer, right-click on the object you want to edit the database for, and select **Edit Database**.

The following dialog box appears.



3. Follow these steps for each data member to be configured:
  - a. Identify the desired data member by entering it into the **Member** data field. If you are modifying a data member that has been

previously configured, you can select it from the **Configured points** list box.

For this example, select 40011 as the modbus data member.  
Enter FlowRate as the alias.



**Note** Parameter fields automatically change depending on the data member you select. LookoutDirect automatically determines whether the data member is logical or numeric, and presents you with the appropriate parameter attributes.

- b. Configure appropriate parameters shown in the following illustration. See the individual parameter sections in this chapter for details on setting each parameter.

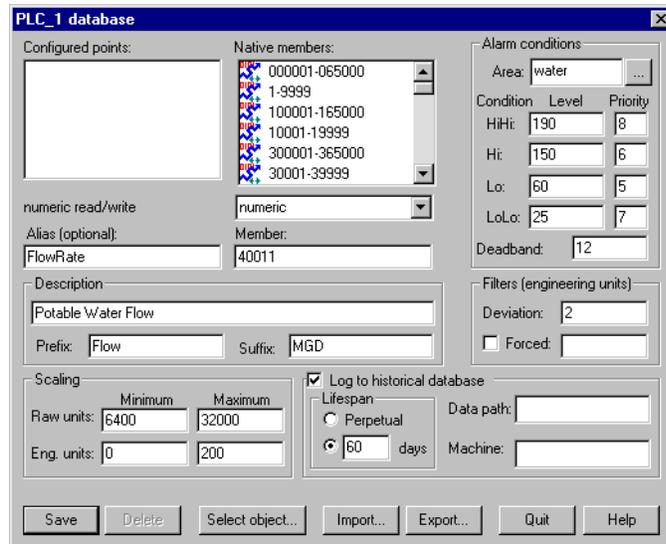
- c. Select **Save** or **Update**. (If you are modifying a data member that was previously defined, the **Save** button changes to an **Update** button.)

LookoutDirect stores all the new parameter settings for the specified data member when you select **Save** or **Update**. In addition, LookoutDirect adds the modified data member to the **Configured points** list box for future reference. LookoutDirect immediately reflects these changes throughout your configuration.

4. Select **Quit** to exit the dialog box.

## Numeric Member Parameters

The following diagram and paragraphs describe numeric data member parameters. Logical data members, covered in the following section, share a number of the same parameters.



**Alias** renames any native data member. You can think of an alias as a sort of nickname. For example, the Modbus driver object includes the native data member 40011 that represents an analog input. You can give this native data member an alias like `FlowRate`. From then on, you can reference the alias `FlowRate` instead of its native name 40011. All associated parameters (such as **Scaling**) are also applied to the alias value.

An alias is a good way to insulate your LookoutDirect configuration from changes in your PLC, RTU, or I/O configuration. For example, consider a flow transmitter wired to an analog input at 40011. You can give 40011 the alias name `FlowRate`, just as you did in the example. Multiple control panels can then display the `FlowRate` data member and numerous other objects in LookoutDirect can use it. If you later rewire the transmitter to the analog input at 40012, you need only modify the alias `FlowRate` to reflect the new I/O address. LookoutDirect instantly reflects this change everywhere `FlowRate` is used.

You can modify all associated parameters of an existing alias *except* the alias name itself. If you attempt to modify an existing alias name, the **Update** button changes to a **Save** button and you will only create a new alias.

Most developers implement aliases on objects with large native databases, such as driver objects (like Modbus and Tiway) and DataTable objects.



**Note** An alias is optional in some instances. You can apply alarming and logging parameters to any native data member and save it to the *Configured points* list without giving it an alias name. Scaling, however, operates somewhat differently. In order to read scaled data, you read it from the alias, not the native data member.

The **Description** appears as the message text in the alarm window. It can have spaces, and it can be lengthy. You do not have to enter quotes in this field.

**Prefix** and **Suffix** are part of the description, but do not appear in the alarm window. They are just additional descriptive text.

Define **Scaling** by entering **Raw units** and **Eng. units**. The raw numeric data member is converted (scaled) to an engineering unit value. The PLC in this example generates a raw value ranging from 6,400 to 32,000. *LookoutDirect* converts that raw signal to range from 0 mgd to 200 mgd. The conversion is linear. See your hardware specifications and calibration records for the minimum and maximum raw units associated with analog devices. If you leave the **Raw units** and **Eng. units** fields blank, *LookoutDirect* performs no scaling on the signal.

In order to scale this data, you can use an alias in combination with the native data member. Read or write the raw units by connecting to the native data member, and read or write out the engineering units from the aliased value.

**Deviation** filters out insignificant variations of numeric signals. The following figure shows two values plotted on a trend. One line is the raw unfiltered value. The other, stair-stepped line, represents the filtered value after passing through a **Deviation** of 2.



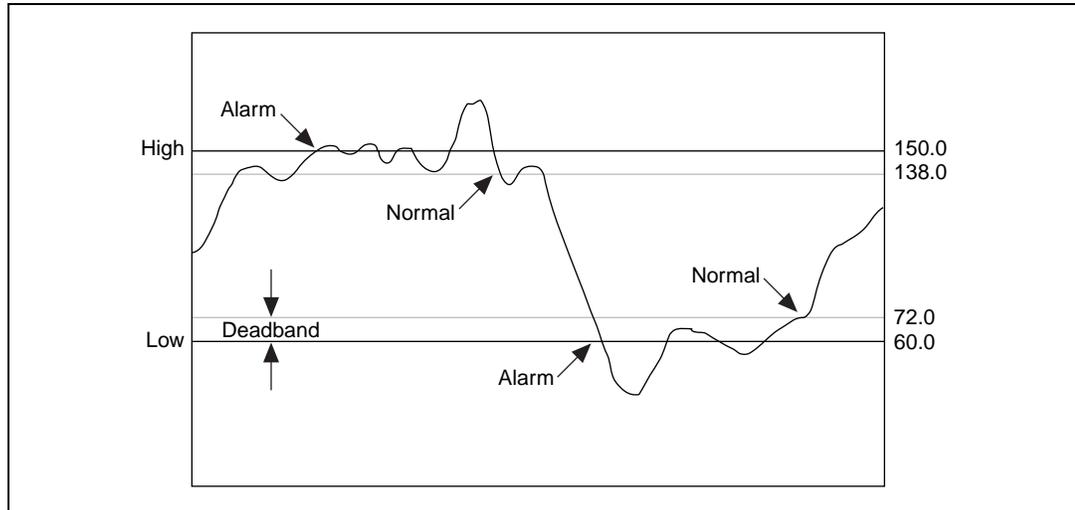
The Citadel database also uses **Deviation** as the criteria which triggers logging of new historical data to disk. See Chapter 7, *Logging Data and Events*, in the *LookoutDirect Developer's Manual* for more information on logging data.

Use the **Forced** data field to manually enter a constant value for the data member. When you select the **Forced** checkbox and enter a value in the field, *LookoutDirect* forces the engineering unit value to be equal to the value you entered, regardless of the actual value of the native data member. You might use this when a sensor fails or during sensor maintenance, or any time a PLC receives a bad signal from the transmitter.

Use the **Alarm condition** parameters to define alarm limits and their associated priorities. *LookoutDirect* compares the alarm setpoints to the engineering units value (that is, the post-scaled, post-filtered number). If you do not enter scaling parameters, *LookoutDirect* applies the alarm parameters directly to the raw signal.

You can assign an alias or native data member to any existing alarm **Area** or you can create a new **Area**. To create a new **Area**, enter the new area name in the field. See Chapter 9, *Alarms*, in the *LookoutDirect Developer's Manual* for more information on alarms.

Use the alarm **Deadband** parameter to prevent fluttering between alarm and normal states when the signal value hovers near an alarm limit. The following figure shows a value plotted against its **Hi** and **Lo** alarm setpoints.



LookoutDirect generates an alarm the moment the value violates the **Hi** or **Lo** alarm setpoints. The alarm returns to normal when the value drops below the high alarm setpoint minus the Deadband, or goes above the low alarm setpoint plus the Deadband. The Deadband also applies to all **HiHi** and **LoLo** alarm limit setpoints.

The **Log to historical database** parameters define how long to store a value in the Citadel database on your hard drive. If you do not select this option, LookoutDirect does not log the value to your disk. If any scaling or filtering parameters are defined, LookoutDirect logs the scaled, filtered value (that is, the engineering unit value).



**Tip** If you intend to display data with a LookoutDirect Hypertrend object, you must log the data to the historical database.

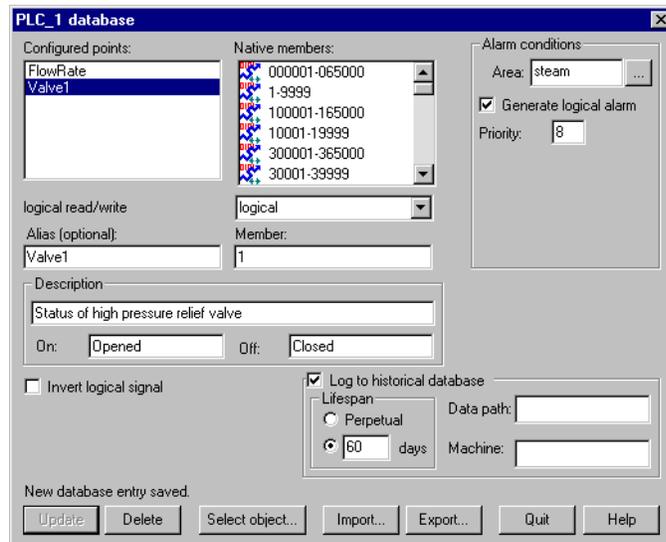
When you log data, it will go to the database directory you set up in the **Create Process** dialog box.

See Chapter 7, *Logging Data and Events*, in the *LookoutDirect Developer's Manual* for more information on logging data.

## Logical Member Parameters

Some of the parameters of logical data members are different from those of numeric data members. Scaling of a logical signal consists of the **Invert Logical Signal** checkbox. When you choose this checkbox, an ON value is represented by an OFF value, and so on. When you do not select it, ON is ON and OFF is OFF.

A logical database is shown being configured in the following figure.



Alarm parameters of a logical signal include the alarm **Area** assignment field and the **Generate Logical Alarm** checkbox. When selected, the data member generates an alarm whenever the value is ON; the alarm condition clears whenever the value is OFF. Notice that if the **Invert Logical Signal** checkbox is selected, the value used here is the inverted value. See Chapter 9, *Alarms*, in the *LookoutDirect Developer's Manual* for more information about alarms.

## Text Member Parameters

The text data member database contains only **Alias**, **Member**, and **Description** fields. You can log text data to the database, but the only way to query for the logged text string is through the *LookoutDirect* SQLExec object.

## Importing and Exporting Object Databases

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Use the import database service to copy database member parameters from an Excel spreadsheet file directly into an object. Use the export database service to copy an object database into an Excel spreadsheet file. This is what you can do using these services:

- Export object database parameter definitions to Excel for the purpose of documentation.
- Export an object database to Excel, perform global replacements on data member parameters, and then import the changes.
- Create a name list in Excel or in an application that exports to Excel, then copy that name list into Lookout*Direct*.
- In a process using multiple duplicate driver objects (such as a gas pipeline or water distribution system), define a single driver object database parameters in Excel. Import that database into multiple driver objects.

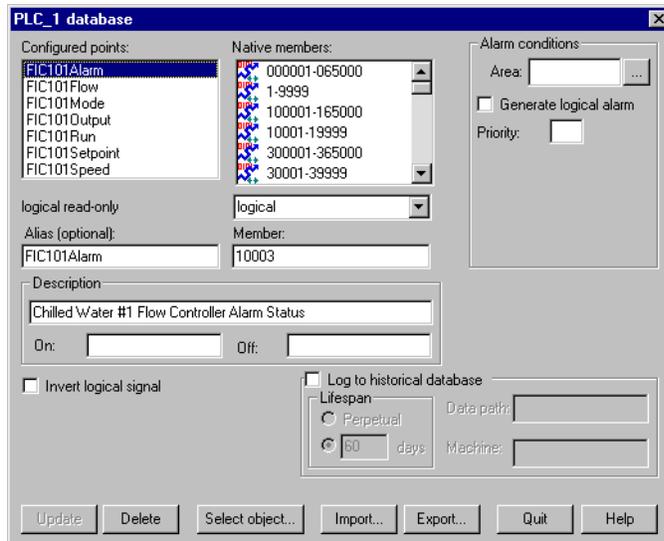
Although you can import and export any object database, you may find that these services are most useful for objects with large native databases, such as driver objects and Data Table objects.

### Exporting an Object Database

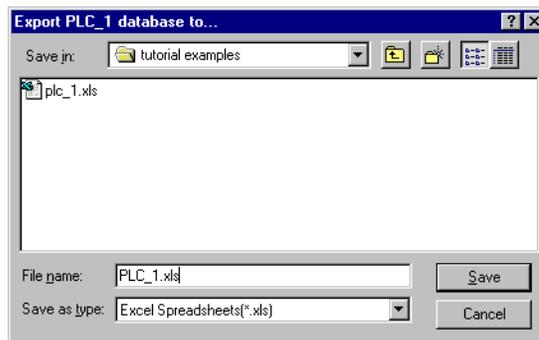
Follow these steps to export an object database:

1. Open the **Edit Database** dialog box, either through the menu or the Object Explorer, choosing the object you want to export from.

The following diagram shows a Modbus object that already has a number of logical and numeric data members defined.



2. In the database dialog box, click on the **Export** button.



3. In the **Export Object Database to** dialog box, choose a directory path, enter a filename and click on **OK**.

When you export a database, LookoutDirect does not export every possible data member (many driver objects have a capacity for thousands of members). Instead, LookoutDirect exports configured points; that is, data members that have at least one parameter already defined. LookoutDirect also exports native members that are in use (that is, connected to other objects).

The spreadsheet file that the Lookout*Direct* **Export** command creates is in Excel Version 2.0 format. An example of the .xls file is shown in the following illustration.

	A	B	C	D	E	F	G	H
1	Command	Alias	Member	Description	Prefix	Suffix	Eng min	Eng max
2								
3	insert	FIC101Alarm	10003	Chilled Water #1 Flow Controller Alarm Status				
4	insert	FIC101Flow	40001	Chilled Water #1 Flow Rate		CFS	0	
5	insert	FIC101Mode	10002	Chilled Water #1 Flow Controller Mode	Auto	Manual		
6	insert	FIC101Output	40003	Chilled Water #1 Flow Controller Output		%	0	
7	insert	FIC101Run	10001	Chilled Water #1 Feed Pump	On	Off		
8	insert	FIC101Setpoint	40004	Chilled Water #1 Flow Controller Setpoint		%	0	
9	insert	FIC101Speed	40002	Chilled Water #1 Feed Pump Speed		%	0	
10								

## Creating a Database Spreadsheet

The easiest way to create a database spreadsheet for an object is to create the object in Lookout*Direct*, define the parameters for one logical data member, one numeric data member, and one text member (if necessary). You then export the database to a spreadsheet file.

This creates a basic spreadsheet file with all the necessary column labels for Lookout*Direct* to read. The three data members you edited in Lookout*Direct* furnish examples you can follow to rapidly create or edit more data members of the same type, using the convenient tools of your spreadsheet program.

Notice the figure above, that row 1 contains column labels. These include the names of all possible data member parameters. Lookout*Direct* references the labels of a spreadsheet file, not the column letters, so if you were to create a spreadsheet to import into Lookout*Direct* manually, you would have to spell all column labels correctly. Lookout*Direct* ignores white space and is case-insensitive. The following list contains all possible column labels, in the order in which Lookout*Direct* inserts them when creating a spreadsheet file.

- Command
- Member
- Alias
- Description
- Prefix
- Suffix
- Eng min
- Eng max
- Raw min

- Raw max
- Invert?
- Deviation
- Force?
- Forced value
- Alarm area
- Lolo level
- Lolo priority
- Lo level
- Lo priority
- Hi level
- Hi priority
- Hihi level
- Hihi priority
- Logical priority
- Log data?
- Lifespan

Lookout*Direct* requires the column labels **Command** and **Member**. All other column labels are optional. **Command** must be in cell A1. The order in which the other column labels appear makes no difference.

Any time you import a database, Lookout*Direct* reads the first 30 columns (A–AD) and ignores columns that do not have labels.

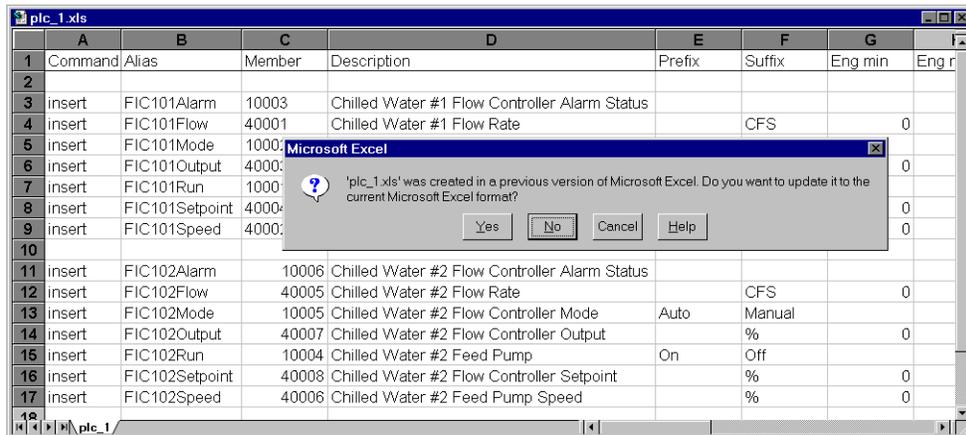
The rows below the column labels (below row 1) each represent a database data member. For example, row 5 in the spreadsheet in the previous figure represents the data member whose alias name is FIC101Mode.

You can easily add rows to define new data members. Copy the rows associated with FIC101, for example, and then modify the new rows slightly by identifying different native members and giving them new aliases and descriptions.

After you have edited and expanded your spreadsheet file, you can save it and import the new values back into Lookout*Direct*, adding all the new data members to those you configured earlier as template samples.

If you are working with a version of Excel more recent than 4.0, the program asks you if you want to update your spreadsheet to a newer format when you

select **File»Save**. This dialog box is shown in the following illustration . *Be sure to select No*. LookoutDirect does not currently accept Excel spreadsheet files from versions greater than 4.0.



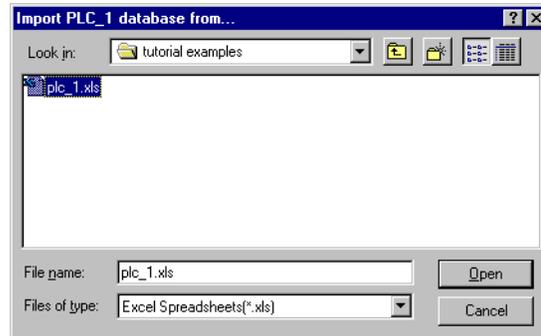
## Importing an Object Database

Editing a spreadsheet file for several similar data members, and then importing it as an object database, can be much faster than working in the LookoutDirect dialog boxes one at a time. When you import a database, LookoutDirect reads the first 30 columns (A–AD) It ignores columns that do not have labels and columns beyond AD.

Each row in the Command column (column A) contains either the keyword `insert` or the keyword `delete`. When you import a database, LookoutDirect ignores rows that do not have the `insert` or `delete` keyword. It adds those records whose command keyword is `insert`. It removes those records whose command keyword is `delete`. To determine exactly which records to delete, LookoutDirect uses the record alias name; or if the record does not have an alias name, it matches the record member name.

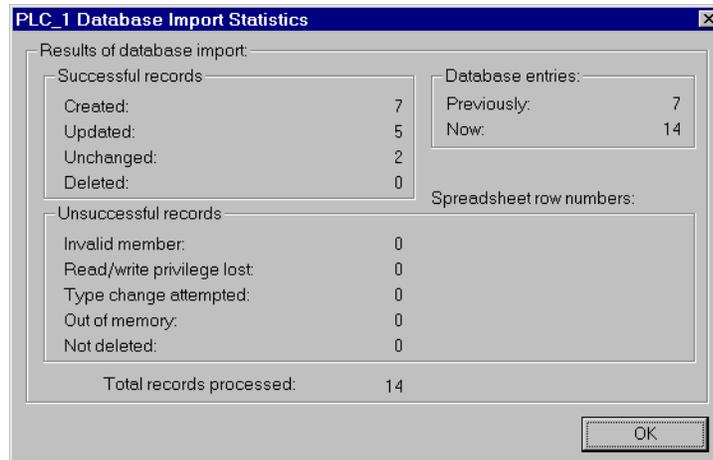
Follow these steps to import an object database:

1. Open the **Edit Database** dialog box, either through the menu or the Object Explorer, choosing the object you want to import from.
2. In the object database dialog box, click on the **Import** button.

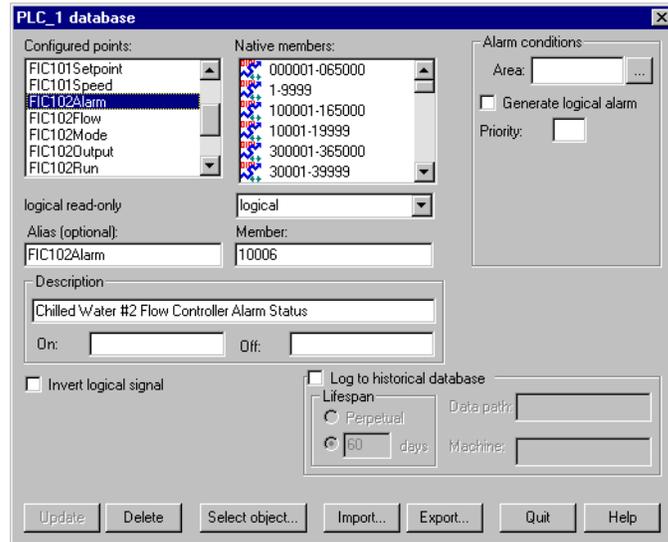


3. In the **Import Object Database from** dialog box, choose a directory path, select the filename and click on **OK**.

When finished, LookoutDirect presents you with a set of database import statistics, as shown in the following illustration.



As you can see in the following figure, the data members added to the database spreadsheet were successfully added to the **Configured points** list.



## Copying an Object Database

The import and export features make it easy to copy the database of an object. This is especially useful when creating large SCADA applications, such as gas pipelines with multiple compressor stations.

The key to defining multiple driver objects that require duplicate databases is to first create an object in *LookoutDirect* for each RTU or PLC. Then create a single database in Excel. Next, import that database into each driver object.



# Glossary

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Prefix	Meanings	Value
m-	milli-	$10^{-3}$
k-	kilo-	$10^3$
M-	mega-	$10^6$

## A

absolute date absolute time	<p>Numeric system <i>LookoutDirect</i> uses for keeping track of dates and times, in which midnight (0 hours), January 1, 1900 is represented by 1, midnight of January 2, 1900 is represented by 2, and so on. The absolute date/time number 36234.47222250 represents 11:20 A.M., March 15, 1999.</p> <p>The numeric value for 1 second in <i>LookoutDirect</i> is .000011574, the numeric value for 1 minute is .000694444, and the numeric value for 1 hour is .041666667.</p>
ACK	Acknowledge (an alarm or event).
active notification	A feature of event-driven software systems in which the application is alerted of value changes when they occur instead of through continuous, loop-driven queries.
address space	An OPC term for the area you browse to find what items are available on an OPC server. Part of the standard OPC interface, this space may arrange items hierarchically.
alarm	Software notification of a condition in a process. This alarm may call attention to a value that has exceeded or fallen below certain levels, set in the object database or in an Alarm object.
alias	Name given to a data member using the <b>Edit Database</b> dialog box. This name can be descriptive or mnemonic, and can be associated with other data member configurations such as scaling, logging, and alarming. A data member can have more than one alias, each with different associated configurations.

## B

- baud rate Measurement of data transmission speed, formally defined as the number of electronic state changes per second. Because most modems transmit four bits of data per change of state, is sometimes misused or misunderstood—a 300 baud modem is moving 1200 bits per second. *See* bps.
- .bmp files Graphic files in bitmap format. If you are using a .BMP file in *LookoutDirect*, you cannot resize it on screen. *See* Windows metafile.
- bps Bits per second—measure of the rate of transfer of data.

## C

- CBL compiler *LookoutDirect* uses the CBL (Control Block Language) compiler to compile a *LookoutDirect* source file (.1ks) into a binary file (.14p).
- .cbx file A *LookoutDirect* file containing a *LookoutDirect* object class. A .CBX (Control Block Extension) file can have one or more object classes in it.
- checksum A method of verifying that the number of bits received is the same as the number of bits transmitted. Used by TCP/IP and serial protocols.
- Citadel The *LookoutDirect* historical database that stores your data for access later.
- classes *See object classes.*
- client A *LookoutDirect* process that monitors a *LookoutDirect* server process. *LookoutDirect* clients should be computer independent so that they can be run from any computer on your network. *LookoutDirect* server processes run on computers actually connected to your control hardware.
- comm port Term sometimes used for a serial port.
- connection Input to a *LookoutDirect* object's writable data members. For more information, refer to Chapter 4, *Using LookoutDirect*, in your *Getting Started with LookoutDirect* manual.
- control objects *LookoutDirect* objects you use to control a process, change a data value, adjust a register, and so on.
- controllable objects *LookoutDirect* objects you can control with a *LookoutDirect* control object.

.csv files	Comma Separated Value file, a format widely accepted by spreadsheet and other data handling programs.
CTS	Clear to Send. Part of a handshaking protocol for certain devices that connect the serial port of a computer. See the <i>RTS/CTS Handshaking Settings</i> section of Chapter 3, <i>Serial Port Communication Service</i> , for detailed information.
cursor (data table)	The Lookout <i>Direct</i> data table can activate one row of data at a time using the data table cursor. See the Data Table reference in the online help or the Lookout <i>Direct Object Reference Manual</i> .

## D

DAQ	Short for Data AcQuisition.
data member	Data source or sink associated with a Lookout <i>Direct</i> object. A readable data member, or source, can be used in expressions or as inputs to other objects. A writable data member, or sink, can have at most one connection into it, created using the <b>Object»Edit Connections</b> dialog box. A data member can be both readable and writable.  <i>See also</i> native data member and <i>alias</i> .
data type	Kind of value (numeric, logical, or text) that a parameter or data member can hold.
database	Collection of data stored for later retrieval, display, or analysis.
datagram	Message sent between objects in Lookout <i>Direct</i> . A datagram contains a route and a value.
DCOM/COM	Distributed Component Object Model, a Microsoft standard in which client program objects request services from server program objects.  The Component Object Model (COM) is a set of interfaces, clients, and servers used to communicate within the same computer (running Windows 98/95 or Windows NT).
DDE	Dynamic Data Exchange, currently used in Lookout <i>Direct</i> to exchange data with other programs (such as Microsoft Excel) running on your network.

*Glossary*

deadband	A value that must be exceeded for an alarm to sound or a change in state to be recorded. For instance, if you have a low-level alarm set at 5 with a deadband of 2, the alarm will not trigger until the value being monitored drops to 5. The alarm will then stay active until the value being monitored moves above 7. A deadband keeps small oscillations of value from triggering an alarm and then canceling it too rapidly.
deviation	Set a deviation to filter out small changes in value when logging data. Before being logged to a database, a value must change by at least the deviation amount of the last logged value.
dialing prefix	Part of the Hayes AT command set for use with modems. See the <i>Dial-Up Modem Settings</i> section of Chapter 3, <i>Serial Port Communication Service</i> , for detailed information.
displayable objects	A <i>LookoutDirect</i> object class that has a displayable component, such as a Pot, a Switch, or a Pushbutton.
DLL	Dynamic Link Library, which is a collection of small, special-purpose programs which can be called by a larger program running on the computer. Sometimes called Dynamically Linked Library.
driver objects	<i>LookouDirect</i> objects used to communicate with PLCs, RTUs, and other I/O devices.
<b>E</b>	
edit mode	<i>LookoutDirect</i> mode in which you can alter and create objects within a process. Switch in and out of edit mode by pressing <Ctrl-space> or by selecting <b>Edit»Edit Mode</b> .
engineering unit	In <i>LookoutDirect</i> , used to refer to scaled or converted data. Thermocouple data, for instance, arrives in volts as the raw unit, and must be converted to degrees, an engineering unit.
environment services	Tasks <i>LookoutDirect</i> performs as a part of making your SCADA/HMI work easier. <i>LookoutDirect</i> environment services include serial communications, database and logging, security, networking, alarming, and so on.
Ethernet	A widely used, standardized local area networking technology, specified in the IEEE 802.3 standard.

event	Anything that happens can be an event. In <i>LookoutDirect</i> , events include such things as adjusting a control value, entering or exiting edit mode, opening or closing a control panel, and logging in or logging out of the system.
expression functions	Mathematical, logical, and other functions used by <i>LookoutDirect</i> expressions.
expressions	<i>LookoutDirect</i> expressions are often paths to a data member. They can also function like variables that, using a spreadsheet cell-type formula, become capable of performing flexible, real-time math operations, condition testing, and other complex operations functions. See Chapter 1, <i>Expressions</i> , for more information on expressions.
<b>F</b>	
failover	A failover is the takeover of a process by a standby computer when the primary computer fails for any reason.
FieldBus	An all-digital communication network used to connect process instrumentation and control systems.
FieldPoint	A National Instruments hardware product line for industrial automation, control, monitoring, and reporting.
frame	Sequence of bytes sent from a computer to a device or vice versa. The syntax of the frame depends on the protocol being used. A read frame contains enough information to specify a set of variables whose values the device should return. A write frame specifies a variable in the device and a new value to write into that variable. Some protocols support the writing of multiple variables in a single frame. A response frame is returned from the device to the computer, indicating whether the frame just sent to it was received successfully. If the frame just received was a read frame, the response frame contains a set of requested values.
functionality	The way an object works, operates, or performs a task. Functionality is a general concept that applies in the same way to all objects in a given object class. Parameters define the specific functionality of an individual object.
functions	<i>See</i> expression functions.

## G

gray proximity                      A term used in Lookout*Direct* color animation. This sets what percentage of gray will be replaced by a given color as conditions change in a monitored value or set of values.

## H

Hi and HiHi                          Alarm settings. Both warn that a value has gone above some setpoint. Generally a Hi alarm is used to alert an operator of a need for intervention. A HiHi alarm is usually used to alert an operator that the value has been exceeded by an even greater margin than a Hi alarm indicates, and is usually used to indicate an urgent need for action.

historical logging                    The process of storing data in a database for use at another time, or from another location.

HOA                                    Hand-Off-Auto control, used to set whether a value must be changed manually, is completely turned off, or functions automatically. You can use a Pot object and a complex expression to create this sort of control in LookoutDirect, or you can use a RadioButton object, depending on the particular requirements of the task you need to accomplish.

## I

I/O point                              Every read-only, write-only, or read-write connection Lookout*Direct* makes to external hardware is counted as an I/O point. Lookout*Direct* is licensed for use with a set number of I/O points. If you exceed the number you are licensed to use with your copy of Lookout*Direct*, a warning message appears on your computer screen warning you to shut down one of your processes within a specified time before Lookout*Direct* cuts back on I/O usage.

(implicit) data member              A Lookout*Direct* data member containing the fundamental data for certain object classes. When you make a connection to an (implicit) data member, you only use the name of the object, not the name of the object followed by the data member name.

**L**

.l4p files	File extension for Lookout <i>Direct</i> process files. These are the compiled files Lookout <i>Direct</i> runs when it runs a process.
.l4t files	File extension for a Lookout <i>Direct</i> state file, which stores the values for Lookout <i>Direct</i> controls and other objects with state information.
.lka files	File extension for Lookout <i>Direct</i> security files.
.lkp files	File extension for Lookout <i>Direct</i> process files in versions of Lookout <i>Direct</i> earlier than Lookout <i>Direct</i> 4.
.lks files	File extension for a Lookout <i>Direct</i> source file, which Lookout <i>Direct</i> compiles to make a Lookout <i>Direct</i> process file that Lookout <i>Direct</i> can run. This is the file you should make sure you keep backed up in case you need to recreate a corrupted process file, or in case some future version of Lookout <i>Direct</i> cannot run a process file compiled in an earlier version of Lookout <i>Direct</i> .
logging	The process of storing data in a computer database file. See Chapter 7, <i>Logging Data and Events</i> , for more information on logging data in Lookout <i>Direct</i> .
logical data member	A Lookout <i>Direct</i> data member of the logical data type.
.lst files	Extension for the Lookout <i>Direct</i> state file in versions of Lookout <i>Direct</i> earlier than Lookout <i>Direct</i> 4.

**M**

multiplex	A method of working with more than one data stream using only one communications channel. There are a number of different methods of multiplexing, depending on the hardware and software being used. A number of Lookout <i>Direct</i> driver objects support multiplexing hardware.
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## N

- native data member      Data members built into a Lookout*Direct* object class, as opposed to data members you create by using aliases.
- NetDDE      A way of networking using DDE (dynamic data exchange), retained in Lookout*Direct* 4 for compatibility with earlier versions of Lookout*Direct*.
- numeric data member      A Lookout*Direct* data member of the numeric data type.

## O

- object      A specific instance created from an object class.
- object classes      Software modules you use to create individual objects to perform tasks in Lookout*Direct*.
- object connections      Software links between objects used to transmit data and commands from one object to another.
- ODBC      Open DataBase Connectivity, a standard application programming interface (API) for accessing a database. You can use ODBC statements to access files in a number of different databases, including Access, dBase, DB2, and Excel.
- ODBC is compatible with the Structured Query Language (SQL) Call-Level Interface. ODBC handles SQL requests by converting them into requests an ODBC database can use.
- OPC      OLE for Process Control, an industry standard interface providing interoperability between disparate field devices, automation/control systems, and business systems. Based on ActiveX, OLE, Component Object Model (COM), and Distributed COM (DCOM) technologies.

## P

- parameter      Input to an object, similar to a writable data member, whose value is specified in the object parameter list in a Lookout*Direct* source (.LKS) file. Typically, parameter values are set in the object **Object»Create** or **Object»Modify** dialog box.
- ping      A small utility program in Windows and DOS that checks to see if a computer can be reached across a network. Also used to indicate the running of that program.

pixel	Picture Element, the smallest bit of a picture. Has one color or shade of grey. The number of pixels per inch determine the resolution of an image.
PLC	Programmable Logic Controller.
poll	A software event in which a computer checks some value in a device or register. In <i>LookoutDirect</i> , a logical command that forces a device poll to check data member values.
poll rate	How often a device is polled.
pop-up panel	One variety of <i>LookoutDirect</i> control panel that can only be displayed at the size set by the process developer, and which cannot be maximized. When open, a popup panel remains on top of other panels until minimized.
process	In <i>LookoutDirect</i> , process refers to a <i>LookoutDirect</i> “program”, used for industrial automation, control, monitoring, or reporting.
process file	The <i>LookoutDirect</i> binary file <i>LookoutDirect</i> executes when running a process. Carries the .14p extension.

## R

raw unit	Data as it arrives in your process, such as voltage or amperage. Thermocouple data, for instance, arrives in volts as the raw unit, and must be converted to degrees, an engineering unit.
receive gap	A serial communications setting that determines the number of empty bytes (or amount of time) a driver receives before recognizing the end of a message frame and requesting another message. See the <i>Setting Receive Gap</i> section of Chapter 3, <i>Serial Port Communication Service</i> , for more information about the receive gap.
redundancy	A system for making sure that a computer can come online and run a <i>LookoutDirect</i> process if the computer currently running that process fails for some reason.
remote	In the context of <i>LookoutDirect</i> , remote is a position source location for a control. See the <i>Remote Position Source</i> section of Chapter 4, <i>Using LookoutDirect</i> , in the <i>Getting Started with LookoutDirect</i> manual for detailed information on the <i>LookoutDirect</i> remote position source.
resolution	The smallest signal increment that can be detected by a measurement system. Also, the number of pixels per inch on a computer monitor screen or dots per inch in printer output.

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RTS	Request to Send, part of a handshaking protocol for certain devices that connect the serial port of a computer. See the <i>RTS/CTS Handshaking Settings</i> section of Chapter 3, <i>Serial Port Communication Service</i> , for detailed information.
RTU	Remote Terminal Unit, a device similar to a PLC for use at a remote location, communicating with a host system through radio or telephonic connections.
run mode	Lookout <i>Direct</i> mode in which processes run but no editing changes can be made. Switch in and out of run mode by pressing <Ctrl-space> or selecting <b>Edit&gt;Edit Mode</b> .

**S**

SCXI	Signal Conditioning eXtensions for Instrumentation, a National Instruments product line for conditioning low-level signals.
security accounts	Also called user and group accounts, Lookout <i>Direct</i> uses security accounts to define what users or group of users have different operation privileges in Lookout <i>Direct</i> . See Chapter 6, <i>Security</i> , for detailed information on Lookout <i>Direct</i> security.
server	A process that provides data (services) to client processes. In Lookout <i>Direct</i> , server processes are intended to be run on one computer only, with direct connections to field hardware. Client processes interact with field hardware through server processes.
source file	Lookou <i>Direct</i> file that can be compiled to produce a binary Lookou <i>Direct</i> process file that runs a process. Uses a .1ks file extension.
SQL	Structured Query Language, used to get information from and update information in a database.
standby	A computer standing by to take over running a process if the primary computer fails or falls offline.
startup file	A Lookout <i>Direct</i> process file (.14p) you designate in the <b>System Options</b> dialog box that Lookout <i>Direct</i> will open and run any time Lookout <i>Direct</i> is opened.
state file	The Lookout <i>Direct</i> file that stores the value of all Lookout <i>Direct</i> control parameters and object data members in use in a process. Uses the file extension .14t.

system objects      Lookout*Direct* objects used to control other objects or process and analyze data.

## T

TCP      Transmission Control Protocol, a method (protocol) for sending data between computers. Used with IP, the Internet Protocol.

TCP/IP      TCP/IP sends data as packets, with IP handling the delivery of data and TCP keeping track of the individual packets.

text data member      Lookout*Direct* data member used for text data.

trace      A term for data from a single source over some period of time, stored in an ODBC-compliant database.

traces table      ODBC databases present data in the form of traces tables. A traces table contains a field or column of data for each data member being logged, along with a field you can use to query the database.

trend      Historical data showing the change in a value over time. Often used in connection with graphing the data for display.

## W

.wav files      File extension given to sound files. You can play a .wav file in Lookout*Direct* to add sounds or speech to alarms or events.

Windows metafile      A standard graphics file type for use in the Microsoft Windows operating environment. If you use a metafile graphic in Lookout*Direct*, you can enlarge or reduce it on the screen, use them as masks without specifying transparent pixels, and use the Lookout*Direct* Animator to animate the colors of the graphic.

.wmf files      File extension given to Windows Metafile graphic files.

## X

.xls files      File extension given to Microsoft Excel files.

*Glossary*