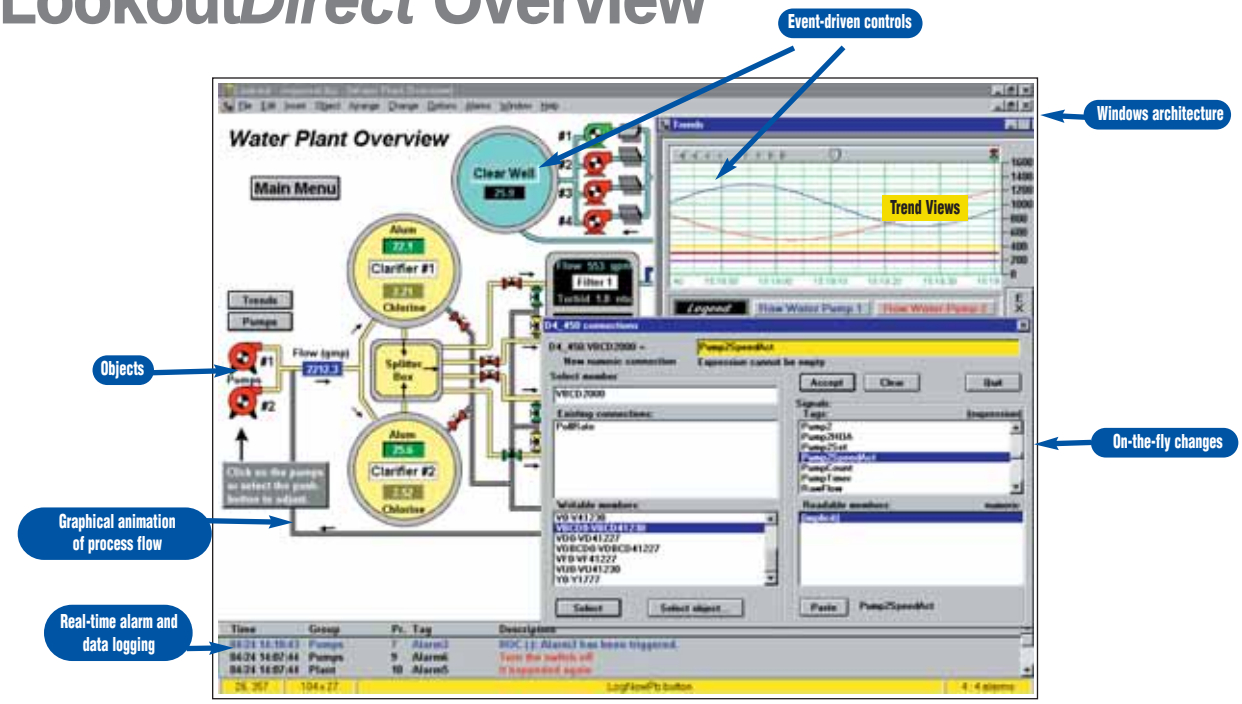
Lookout*Direct* Overview



The "what you need" HMI

For those of you familiar with human machine interface (HMI) products, you might recognize the name Lookout®. Marketed by National Instruments, Lookout is one of the industry's leading HMI products. We offer our own tailor-made version of the Lookout program, Lookout***Direct***.

Lookout***Direct*** is a feature-packed 500- I/O version of the original package and includes drivers for the top 10 PLC/RTU products, plus our own ***Direct***LOGIC driver.

Lookout***Direct*** has an easy-to-use configuration package that requires no programming or scripting. Its object-oriented, event-driven architecture provides an outstanding graphical interface to your process. Users can easily create graphical representations of their devices and link those objects to their PLC system for real-time data acquisition, graphical animation, alarm generation, report printing, and network connection to your business system.

What is object-oriented?

Lookout***Direct*** is fundamentally object-oriented. An object is a software model of something physical that is completely self-contained. There are many object classes, such as switches, trends, timers, drivers, etc. An object is simply an individual instance of an object class. For example, if you use 10 timers and 20 switches, you have selected only two different object classes, but a total of 30 objects. Objects have a predefined database, a set of parameters and built-in functionality. They encapsulate their data, parameters, and functionality into one bundle. Once you select the objects you need, simply connect them together as if you were physically hardwiring a control panel.

Not a programmer? Not a problem!

Developing an application in Lookout***Direct*** only requires that you know how to find the letters on your keyboard and how to move and click your computer mouse. Select a data point and connect it to an object.

Debug online

Once you have installed your application on the plant floor, you can debug and modify it without irritating the operators. Since the process is online, even while you are editing, they won't miss important data or alarms, and you won't get kicked out of the control room! This feature alone can save a lot of time and agony.

Part Number	Price	Description
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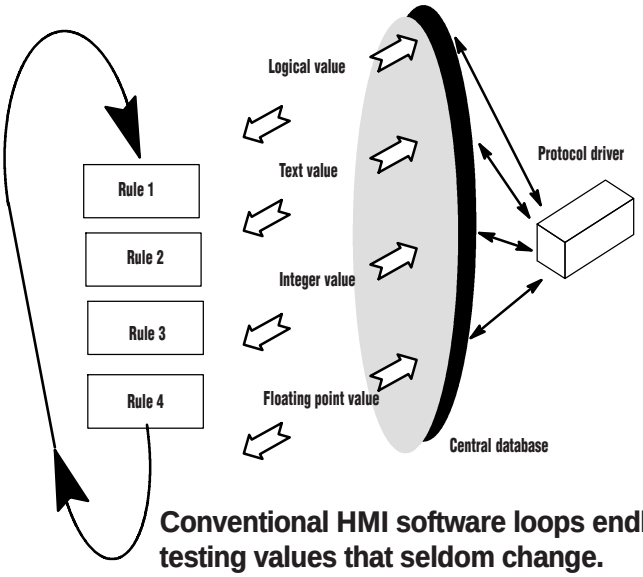
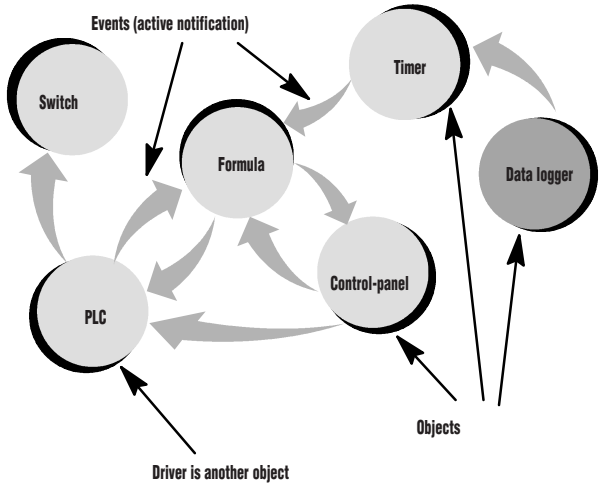
PC-LKD-RTE	<--->	Lookout***Direct*** runtime package
PC-LKD-DEVUPG	<--->	Lookout***Direct*** development package upgrade
PC-LKD-RTEUPG	<--->	Lookout***Direct*** runtime package upgrade
PC-DL-PLUS	<--->	***Direct***LOGIC Plus Driver Object for National Instruments Lookout Software. Allows for connection from Lookout to the ***Direct***LOGIC line of PLCs

Event-Driven vs Loop-Driven



Conventional HMI software loops endlessly, testing values that seldom change.



Lookout*Direct* is event-driven for efficiency and performance.

What is event-driven?

It is very important to understand that Lookout***Direct*** is entirely event-driven, not loop-driven like many other industrial automation software products. The diagram above illustrates the big advantage of an event-driven application. Each object is totally independent, and remains in its current state until an event occurs. There is no waiting for the process to loop around to the top again before changing state or starting another process. However, with loop-driven software, as the loop database grows larger and larger, the response times get slower and slower. This wastes valuable time for you, your computer, and your process. This is commonly called a passive notification system.

In Lookout***Direct***, everything is event-driven – monitoring, data logging, alarming, and supervisory control. An event is triggered by changing a setpoint, turning on a switch, or activating a timer. When an event occurs, it sends a signal throughout the object network, changing only those objects related to that specific event. All non-related objects remain in their current state, using no processor time. Also, the objects themselves may generate a different event to start another process, creating a chain reaction but only affecting those objects in the chain. This event-driven approach gives Lookout***Direct*** a dramatic speed advantage compared to loop-driven products. This can be referred to as an active notification system.

Event-driven vs. loop-driven

If an event-driven program is described as an active notification and a loop-driven program as passive notification, you can clearly get the idea that one is going to be more take-charge than the other. Would you rather the information get to you when you need it or as soon as it's ready, or do you want to constantly keep asking "Is it ready, is it ready?" To go a little further, imagine that you were expecting information from a lot of different sources. If you had to ask each one of them over and over for the information, not only would you waste valuable time, but also the time of the entire process. Lookout***Direct*** uses event-driven architecture to avoid all of the wasted time polling or searching for information. Instead, it detects the arrival of the information.

Lookout*Direct* Features

Communications

Lookout***Direct*** can communicate with various external physical devices such as PLCs, RTUs, controllers, etc. In addition to our ***Direct***LOGIC PLCs and Ethernet connections, the following drivers are included:

- Allen-Bradley PLC5
- Allen-Bradley SLC500
- ASCII
- Delta-Tau (motion control)
- GE-Series 90
- Mitsubishi FX
- Modicon Modbus ASCII, Plus, RTU
- Omron
- OPC Client and Server
- TIWAY
- Field Point I/O

Networking

Browse and select networking makes connecting multiple Lookout***Direct*** stations easy within a production facility or at remote locations. Click to select and connect to any other Lookout***Direct*** PC in a TCP/IP based network, online and in real-time without shutting down your process. With the communications capabilities of Ethernet modules, virtually any number of users at any location can access the network. Not only will you be capable of sharing data across the network with other machines, but you will be able to link other Windows applications (via OPC) directly to Lookout***Direct.***

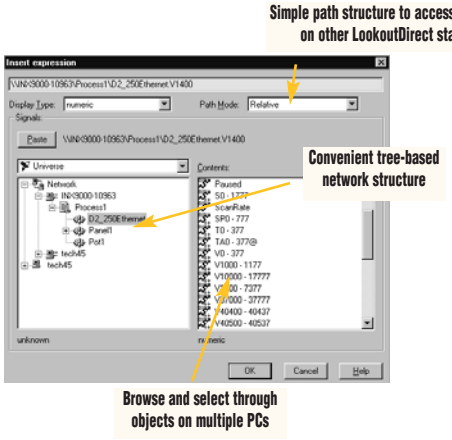
Data logging

Having complete historical records of your process is invaluable. Lookout***Direct*** creates and maintains your process history automatically with a combination of various archiving mechanisms.

- **Distributed historical data logging** — allows Lookout***Direct*** to save and retrieve data anywhere in a network
- **Spreadsheet logger** — creates standard ASCII that can be opened/edited with most spreadsheet and database programs.
- **Citadel threaded database logger** — creates a historical database that can be retrieved by the ODBC driver.
- **Event logger** — creates a chronological audit trail of "who did what and when".

Trends

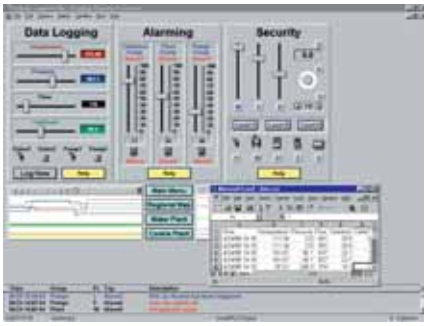
Lookout***Direct*** combines historical and real-time data in a single seamless trend graphic called Hypertrend. You can easily scroll or jump to any specific time along the trend or you can use the pop-up window to search for peaks, valleys or specific values. The software is capable of recalling and displaying data at a rate of more than 25,000 values per second. This performance provides the information you need in real time.



Supervisory control

The control capabilities range from very simple to very complex. Using object classes and complex formulas, you can create a wide variety of control devices. The devices can be connected in almost any combination to handle almost any situation.

Alarming



Lookout***Direct*** provides you with an alarm set that most other packages offer, plus more. It triggers alarms with an event or any combination of events you specify. Alarms can be as simple or as complex as needed. The alarming is so versatile that you can group your alarms in any manner, turn off any nuisance alarms, prioritize them, and acknowledge alarms and events from anywhere in the network.

Security

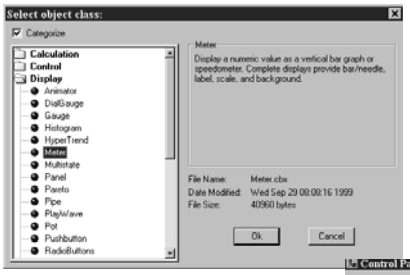
A well-designed security system prevents unauthorized access while remaining transparent to the user. Lookout***Direct*** allows you to quickly log on to respond to any situation and keeps a permanent record of all actions while you are logged on.

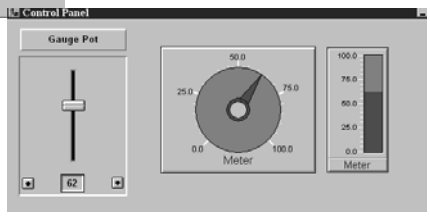
Lookout*Direct* Features

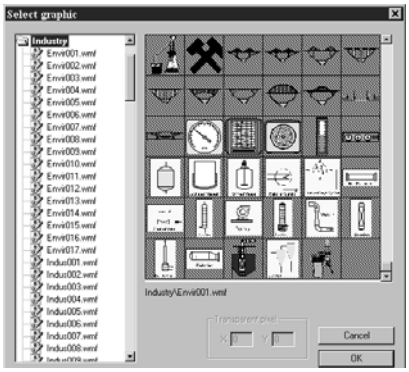
Lookout*Direct* Features			
Alarms	• Simple and complex alarm capabilities • 10 priority levels and unlimited groups • Unwanted/nuisance alarms filtered out • Ability to acknowledge individually, by group, or priority • Distributed alarming allows acknowledgement from any node on network • Automatic report generation of alarm history • Audio wave (.wav) files attached to alarms	***Recipe***	• Build recipes in Excel and import • 255 ingredients and 1000 separate recipes per object • Unlimited number of recipe objects; download new recipes on-line
Architecture	• Unique object-oriented design makes Lookout*Direct* extremely easy to learn and use and provides you with dozens of prebuilt tools. • Event-driven engine: it is a high performance system that can handle large projects with fast response time • True on-line configuration: modify your application without shutting down the process	***Report Generation***	• Create reports on control panel and send to printer • Launch third-party programs to generate complex reports • Preconfigured alarm and event reports
Data Logging	• Spreadsheet object creates standard ASCII text files in .csv format • Simple or complex logging trigger mechanisms • High-speed data logging with Citadel database • Efficient data compression for minimal disk usage • Filter signals to reduce unnecessary logging • Event logging of setpoint adjustments and complex/custom events	***Security***	• 10 security levels with password protection • Viewing security hides "sensitive" data • Control security prevents low-level operators from adjusting setpoints • Developer can "lock" executable to prevent unauthorized modifications • System security "locks" and prevents access to other programs • Action verification prompts you before making adjustments • Event logger creates permanent audit trail
Expressions/ Formulas	• Logical (Boolean) functions • Lookup functions • Mathematical functions • Statistical functions • Text functions • Trigonometric functions • Date/time functions	***Supervisory Control***	• Neutral zone (on/off control) • Sequencing • Timers (elapsed, delay on, delay off, pulse, one shot, interval, time of xxx, etc.) • Complex functions (mathematical, Boolean, lookup, arithmetic, trigonometric, text, date/time)
Graphics	• Ability to handle custom bitmaps and metafiles • Extensive graphical library included • Ability to import AutoCAD files as bitmaps or metafiles • Complex animation in X, Y and Z axis • Multi-state animation pumps, valves, motors and more • Variable speed rotation • Capable of Windows color depths and resolutions	***Telemetry***	• Radio with/without adjustable RTS/CTS timers • Full duplex and half duplex • Dial-up phone lines (Modbus RTU only) • Leased phone lines • Complex polling algorithms • Multiple protocols over a single radio frequency or phone line • Automatic data blocking
Networking	• Browse and select networking • View screens simultaneously on separate nodes • Make setpoint adjustments from any node • Acknowledge alarms from any node • Configure specific nodes for monitoring only • Configure peer-to-peer or client-server	***Trending***	• Integrated historical/real-time data in a single trend • Forward/backward scroll bar built in • High-speed access to historical data on hard drive • Cursor bar gives precise values at intersections • Ability to "jump" to specific point in time • Pan and zoom
New Connection and Object Browser	• View all object connections in a simple tree-based diagram • Debug connections by using convenient right-click "follow connection" command • Use drag-and-drop in creating objects for fast application development • Make connections to other Lookout*Direct* stations across the network in real-time	***Windows Connectivity***	• 32-bit for Windows NT/98/2000/WIN ME/XP (NT, 2000 or XP Pro recommended) (Does not support Windows Vista.) • OPC Client/ server capability for business system connectivity • Use the open database connectivity (ODBC) driver to retrieve data from the Citadel database • Use dynamic data exchange (DDE) to send/receive data to/from third-party software • Use spreadsheet object to create ASCII text files

Direct LOGIC PLUS

Due to the popularity of our ***Direct***LOGIC driver object and other features included in the Lookout***Direct*** software package, we are pleased to offer ***Direct***LOGIC PLUS for National Instruments Lookout.







Overview

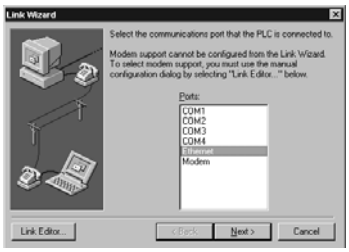
DirectLOGIC PLUS enables National Instruments Lookout users to add on the exclusive features of Lookout***Direct***. The main features included are:

- ***Direct***LOGIC Driver Object — this enables users to connect to ***Direct***LOGIC PLCs via Ethernet and serial using either K-sequence or ***Direct***Net protocol.
- Meter Object — an easy-to-use and scalable dial gauge or bar graph type display for monitoring any numeric signal.
- Over 300 graphics — additional graphics install into the appropriately defined folders in a scalable .wmf format.

*Direct*LOGIC driver object features

The Driver Object is the biggest feature and the driving force behind this product. The Ethernet connection to ECOM modules that is included is the best feature because of the high speed and flexibility it provides your application.

- Allows for connection to DL05/06 DL205 and DL405 ECOMs
- Connection to DL105 and DL305 PLCs
- Capability of using ***Direct***SOFT and Lookout simultaneously over the same cable (driver versions must match)
- Link Wizard automatically identifies CPU and configures your settings



Part Number	Price	Description
PC-DL-PLUS	<--->	***Direct***LOGIC PLUS Driver Object for National Instruments Lookout Software. Allows for connection from Lookout to the ***Direct***LOGIC line of PLCs

Lookout*Direct* System Requirements

One of the nice things about Lookout***Direct*** software is that it can easily run on industrial PCs or inexpensive, off-the-shelf PCs. The software comes on CD-ROM so your development system PC will need a CD-ROM drive. Run-time systems do not require a CD-ROM drive, but if they don't have one they will need a network connection to load the run-time engine and application.

System requirements

- Windows 98/2000, XP-compatible (2000 or XP Pro recommended) (Does not support Windows Vista.)

Minimum:
Pentium/Celeron 233 Mhz
32MB RAM

Recommended:
Pentium/Celeron 333 Mhz
64 MB RAM or greater

- 50 MB available hard drive disk space
- CD-ROM drive
- Color monitor, with at least 640x480 resolution
- USB port

Ordering the software

Development package — includes one Development Environment license, one Run-time Engine license, one key that supports development or runtime, and all drivers.

Run-time package — includes one run-time engine license, one run-time key, and all drivers.

You need to purchase one Development Package for each PC used for application development.

If the PC used in your run-time application is not your development PC, you also need to purchase a Runtime Package for the HMI PC.

Hardware key — The hardware key must be connected to a USB port for the software to run.

Defining the software pieces

Development environment — is used to develop and debug the control application program (like ***Direct***SOFT in the case of PLCs). You can use the Development Software on one PC to create many different projects which can run on many Runtime Engines.

Run-time engine — is like the firmware in the CPU of a PLC. This software will run the application for your process.

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PC-LKD-DEV	<--->	Lookout***Direct*** Development package
PC-LKD-RTE	<--->	Lookout***Direct*** Runtime package
PC-LKD-DEVUPG (See description below)	<--->	Lookout***Direct*** Development package upgrade
PC-LKD-RTEUPG (See description below)	<--->	Lookout***Direct*** Runtime package upgrade
PC-DL-PLUS	<--->	***Direct***LOGIC Plus Driver Object for National Instruments Lookout Software. Allows for connection from Lookout to the ***Direct***LOGIC line of PLCs

PC-LKD-DEVUPG — LookoutDirect Version 4.5 Development Package upgrade. Upgrade development package for any LookoutDirect 3.8.x to Version 4.51 or higher. Includes software on CD-ROM and manual.

PC-LKD-RTEUPG — LookoutDirect Version 4.5 Runtime Package upgrade. Upgrade runtime package for any LookoutDirect 3.8.x to Version 4.5 or higher. Includes software on CD-ROM and manual.