



# Embedded GENESIS

Automation Suite Toolkit



May 2007

## Embedded GENESIS v 9.01 Read Me

# Product Overview

Embedded GENESIS is the industry's first and most capable toolkit for assembling of OPC, SNMP, Web-enabled HMI and SCADA embedded applications of any footprint. Designed from the ground up on Microsoft Windows for Windows, developers can leverage what they know and what they have in their toolkit to mix and match components. With Embedded GENESIS you can deliver solutions with unparalleled performance and cost savings to your customers, while providing them an open standards solution that will "future proofs" their investment.

The GENESIS suite of process management and control applications can be deployed on:

- Embedded XP and Embedded NT
- Windows Mobile and Windows CE systems
- Windows Vista, XP Professional, and 2000.
- Windows Server 2003 and 2000.

From small to large systems Embedded GENESIS's highly configurable set of components allow you to package them into your particular embedded solution. You install only what you need, and then deliver a solution that is custom made for your application. With the ICONICS Embedded Series your application is right-sized, robust, secure, and standards based.

Embedded GENESIS makes it easy to connect to your data sources. Whether your organization's IT systems are monitored by SNMP, your plant floor infrastructure communicates over OPC, you have enterprise-wide business intelligence and operations support in large database solutions such as SAP and Oracle, or do real-time, intelligent data mining you will find that the GENESIS family of products can be both a data collector and a data provider with very little development effort required. The GENESIS HMI/SCADA software suite has been used by machine builders, automotive, pharmaceutical, oil/gas, water, energy/utilities and many other small, medium, and large organizations to provide the command, analysis, and control systems that make their operations run smoothly and add profitability to their bottom line.

With Embedded GENESIS v9 ICONICS adds many new features to bring to the Embedded series nearly all of the great features that were added to version 9 of GENESIS itself. Notable among the new features are: DataWorX32 Redundancy, OPC Tunneling, MonitorWorX, ScheduleWorX, and many, many more besides. Embedded GENESIS v9 also incorporates ICONICS powerful data-mining and data integration technologies which will let you connect to your Microsoft SQL Server, SAP, Oracle, plant historians, SNMP, and OPC data sources. Your customers can do real-time monitoring and reporting of their data, create visualization systems that make management of their enterprise easier and less error prone, and provide the means to perform "what-if" analyses and data modeling that will improve operation.

This Read Me document will tell you:

- What's in Embedded GENESIS
- How to install the different components.
- What hardware requirements your solutions might have
- Factors that will influence the size of an embedded solution
- What's new and different in Embedded GENESIS v9.01 from previous versions
- The licensing requirements for your solutions
- How to implement basic security
- Where to find more information.

When you are finished reading this document you should be able to determine what you need to include in your solution, and where to find the necessary information to support and enhance your selections. Create world class, and world changing industrial automation solutions with ICONICS Embedded GENESIS automation toolkit.

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# Requirements

The hardware requirements for your solution depend on the size and complexity of your Embedded GENESIS implementation. The more executables that you have in memory, the faster the CPU speed required. Unlike competitors, Embedded GENESIS v9 makes full use of dual core processors, and takes full advantage of hyper-threaded performance when your processor supports this feature. With complete access to the power in your processor ICONICS GENESIS allows you to unlock the full value in your hardware, and get more performance for less investment.

Appendix A lists all of the components that you can install from the Embedded GENESIS Automation Toolkit into your solution. Only a small number of components are considered to be base functionality and must be included in order to provide the necessary communications and data handling foundation. Those components are labeled "R" for required; optional components are labeled "O."

You can determine the disk storage space requirements by adding together the required and the optional components' installation size based on the table in Appendix A. Notice that the amount of space required can be decreased, often very substantially, by eliminating help and example files from your deployed solution. These files can be valuable on your development platform, so you might want to include these files when designing your embedded solution.

Required components are:

- Common Core Components
- GraphWorX32 Container
- Security Indicator Activex Help
- Login Activex Help

The base install requires 71.68 MB of space with no working components included.

As you add components your base space requirements will increase. To your calculated storage requirements you must also include the following disk space allocations:

- The size required for you're the stored screens you deploy; for Embedded GraphWorX, for example.
- Space for logged data, typically part of a database file; for Embedded TrendWorX.
- Space required for alarm event data; for Embedded AlarmWorX.
- A Temp file used for paging virtual memory.

Your virtual memory allocation should be at least twice and optimally three times as large as the amount of physical memory in your solution.

Before installing any product, please make sure you have the correct components installed to support your particular solution. Refer to Appendix A for a components list.

## Installation

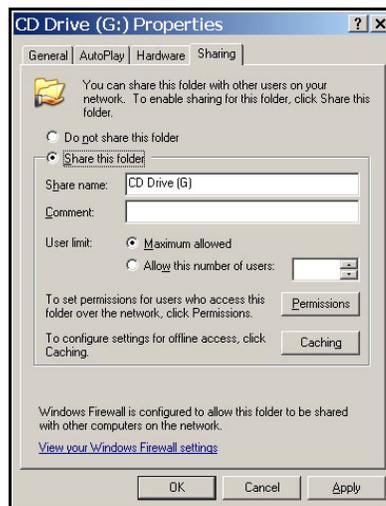
You can install Embedded GENESIS on your development platform, and when you are done with your development work you can use the same installer to deploy your solution's required components top the embedded device. In most instances your embedded device will not include the capability to install your solution from removable media. In the first section below you are given the instructions for performing a network installation to an embedded platform. This installation will also work for remote deployment of Embedded GENESIS to the development platform you will use.

### Network Installation

If the embedded PC to which you are installing an Embedded Product does not have a optical drive (CD-ROM or DVD-ROM), follow these directions:

1. Insert the Embedded GENESIS installation CD into the optical drive of a networked PC.
2. On your PC right open **My Computer** on your desktop.
3. Right click on the icon for your optical drive and select the **Properties** command.

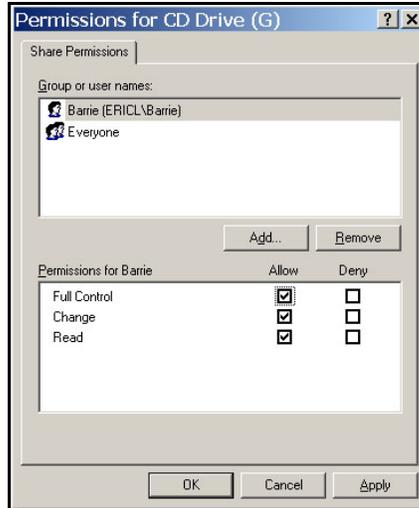
The Optical Drive Properties dialog box opens as shown below in Figure 1.



**Figure 1.** Sharing an optical drive, shown here for Windows Server 2003.

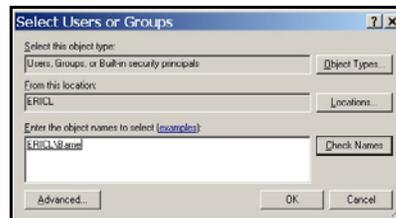
4. Click on the **Sharing** tab, then enter the **Share name** in the text box, click on the **User limit** required, and then click on the **Permissions** button.

The Permissions dialog box appears as shown below in Figure 2.



**Figure 2.** The Permissions dialog box is where you modify a share's access rights.

5. Click the **Add** button and then enter the user and/or group you wish to have access to the installation media in the Select Users or Groups shown in Figure 3.



**Figure 3.** The Select Users or Group dialog box is where you add specific users and groups.

6. Click **OK** to return to the Permissions dialog box, then click on a user or group to select it.
7. Click on the **Permissions** check box(es) you wish to allow for this user's access on a share

*Usually when access to a share fails it is because the person setting the access to the share has forgotten to explicitly set the access rights in Step 7.*

8. Complete the sharing procedure by clicking on the OK button, which returns you to your desktop.

If you have successfully shared the optical drive you will see an icon that looks similar to the one shown in Figure 4 below. This icon varies on different versions of the Windows operating system.



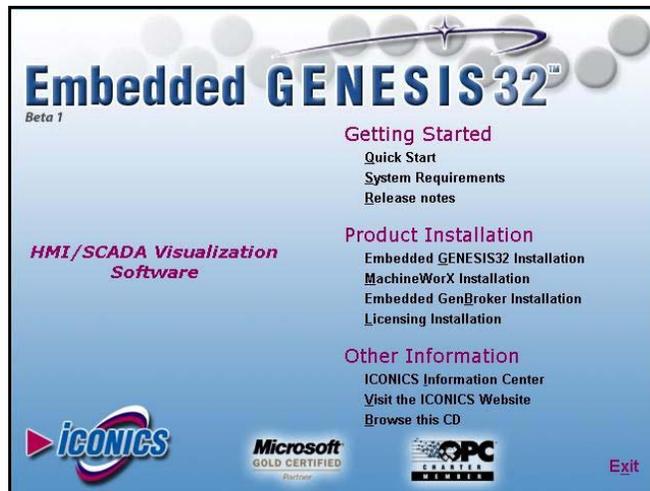
**Figure 4.** A shared optical disk icon.

Once you have shared the optical disk you can perform a network installation of Embedded GENESIS as follows:

1. From the embedded device browse the network and locate the shared drive containing the installation CD.
2. **Open** the Embedded GENESIS v9.01 folder, and launch the following executable:

**[Shared CD Folder]\Software\EmbeddedGENESIS\Disk1\Setup.exe**

The Embedded GENESIS Installation splash screen appears as shown in Figure 5.



**Figure 5.** The first Embedded GENESIS installation screen contains links to specific installers, documentation, release notes, and the ICONICS Information Center and website.

**Note:** Install either Embedded GENESIS or MachineWorX, and not both. MachineWorX disables certain commands in GraphWorX and will conflict with your Embedded GENESIS installation. Also, since both the Embedded GENESIS and MachineWorX installers install GenBroker that installation is normally not required. An installation of GenBroker as a standalone product is supported. Should you install GenBroker either before or after Embedded GENESIS or MachineWorX it will not alter GenBroker's functionality.

3. To install MachineWorX v9.01, launch the following executable:

**[Shared CD Folder]\Software\MachineWorX\Disk1\Setup.exe**

MachineWorX is a version of GraphWorX that has several features disabled. Your solution will require license validation, so proceed to Step 4.

4. To install GENESIS Licensing, launch the following executable:

**[Shared CD Folder]\Software\Genlic32\Disk1\Setup.exe**

**Note:** Without a valid license your ICONICS Embedded GENESIS solution will only operate in runtime mode for a 2-hour trial period, and only for simulated data. ICONICS supplies a number of simulators to use for your testing. There is no limitation on the design environment used to develop and configure your solutions. When a license is detected these limitations are removed, and your solution is allowed the access that your license specifies.

5. To install Embedded GenBroker v9.01, launch the following executable:

**[Shared CD Folder]\Software\EmbeddedGenBroker\Disk1\Setup.exe**

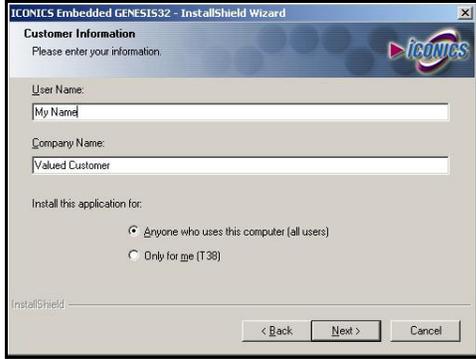
GenBroker provides real-time secure communications using OPC direct channel, direct channel over either DCOM, TCP/IP, or SOAP/XML, or indirect channel via a mediator node.

6. Select the components you need in Step 3, 4, or 5 and complete the installation.

## **Local Installation**

To install Embedded GENESIS on a development platform, or on an embedded system with optical drive support, do the following:

1. Insert the Embedded GENESIS product CD into the optical drive; AutoRun starts and the splash screen shown in Figure 4 will appear.
2. Click on the version of GENESIS you desire, either **MachineWorX** or **Embedded GENESIS**
3. A Welcome dialog box appears, click **Next** to proceed.



**Figure 6** The first integrated installer Select Features screen.

- 4. In the Customer Information dialog box (Figure 6, above) enter the registration information; enter your name in the User Name text box, the Company Name; select a radio button for who can use the product on this system, then press the **Next** button.

The complete GENESIS32 installer with a Select Features screen appears as shown in Figure 7 below



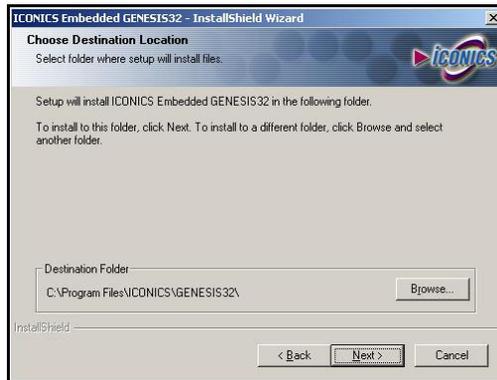
**Figure 7** The first integrated installer Select Features screen.

**Note:** Install either Embedded GENESIS or MachineWorX, and not both. MachineWorX disables certain commands in GraphWorX and will conflict with your Embedded GENESIS installation. Also, since both the Embedded GENESIS and MachineWorX installers install GenBroker that installation is normally not required. An installation of GenBroker as a standalone product is supported. Should you install GenBroker either before or after Embedded GENESIS or MachineWorX it will not alter GenBroker's functionality.

- 5. Select the components you need to complete the installation; then click **Next**.

**Note:** WebHMI and AlarmWorX32 Multimedia products must be installed separately.

6. On the Choose Destination Location screen shown below in Figure 8 either accept the default installation path (%systemroot%\Program Files\ICONICS\ICONICS GENESIS) or provide a path of your choosing, then click the **Next** button.
7. A start installation dialog box will appear, click **Next** and the installer will copy and expand all the appropriate files.
8. When the InstallShield Wizard Complete dialog box appears, click **Finish** to complete the installer.



**Figure 8.** The Choose Destination Location step.

## Modifying and Uninstalling Embedded GENESIS

If you find that you need to add or remove components in your solution you can return to the Installer's Select Features dialog box shown in Figure 6 to modify your installation.

To modify your installation, do the following:

1. Launch the installer from the CD-ROM using AutoRun to get to the splash screen (Figure 4).
2. Or, browse the CD-ROM and double click on the AUTORUN.EXE file.
3. Click on components to select them and add them to your installation.
4. Or, click on components to deselect them and remove them from your installation.

Complete the installation as described in the previous section.

To fully remove ICONICS Embedded GENESIS you should use the "Add/Remove Applications" from the Control Panel Settings to uninstall the applications. Since applications are registered into the Registry, Add/Remove will take care of uninstalling components of ICONICS GENESIS products for you.

If you uninstall some common components that are used by GraphWorX32 or TrendWorX32, you may be required to register those components again or simply reinstall the product.

**Caution!** Do not delete the files and directories manually, since the Registry entries will remain and you may encounter difficulties should you try to reinstall or use other ICONICS products at a later date. Use the Add/Remove Programs Control Panel.

## Components

Embedded GENESIS offers you complete access to GENESIS32's Visualization Human Machine Interface (HMI) rapid development environment (RDE) software. The software you create complies with multiple industry standards such as the OPC Foundations process control communication protocols to create Supervisory Control and Data Acquisition or SCADA products with capabilities for the most demanding industrial applications. Table 1 shown below summarizes the main components of Embedded GENESIS, summarizes their purpose, and gives you a link to each component's documentation.

The following general resources may be of value in getting to know ICONICS GENESIS quickly:

- You will find an overview of the GENESIS Suite in the [Embedded GENESIS Product Brief](#).
- To enable Embedded GENESIS you will need to comply licensing requirements, and install the license services. The Software Licensing Quick Start walks you through the steps needed for compliance, as well as all necessary activation steps.
- The GENESIS security model is explained in the GENESIS32 security system online documentation.
- For data access to SAP, refer to [SAP BAPI Connector Whitepaper](#)

GENESIS Security Server uses a default Security File that grants Maximum Rights to every one. If you do not configure security to deny access, everyone will have full rights when you deploy your application. Although universal access makes testing and configuration of your Embedded GENESIS solutions easier, you should remember to set the security you desire once your application allows it.

If you are a user of previous versions of ICONICS GENESIS or Embedded GENESIS the following resources will succinctly tell you what's new, as well as how to upgrade your installation. These resources may be found at:

- To read about new features in Embedded GENESIS, go to [Embedded GENESIS V9 What's New](#).
- Numerous user requests for changes, bugs removed, and new features have been added to version 9. The [GENESIS V9 Resolved Issues](#) documents these changes.
- For instructions on upgrading existing installations of Embedded GENESIS please refer to [Upgrading to V9](#).

There's a lot in Embedded GENESIS version 9.01 that is new, as the previous release of Embedded GENESIS was version 7. A listing of new features in Embedded GENESIS v9.01 may be found in Appendix B. One of the important new feature is that Normal Users have greatly expanded capabilities to perform various operations. In order to modify the actions of different tools in the GENESIS automation suite a user must have appropriate privileges. Appendix C summaries the different access rights user groups have to make changes noted.

**Table 1.** A summary of the applications in the Embedded GENESIS Automation Suite.

Product	Description	Resource
GraphWorX32	OPC Visualization and HMI product with extensive symbol library	
TrendWorX32	OPC HDA based Real-time trending and data historian	
AlarmWorX32	OPC Alarm summary viewing, logging and reporting	<a href="#">AlarmWorX32 Product Bulletin</a>
ProjectWorX32	Easily manage, collaborate and deploy GENESIS projects	
DataWorX32	OPC Data Bridging, OPC Aggregation, OPC Tunneling, and OPC Redundancy	<a href="#">DataWorX32 Product Bulletin</a>
ScriptWorX32	Centralized Periodic and Event Scripting with Multi-threading VBA 6.4	
TraceWorX32	Audit trail and debugging XML-based Utility	
VCRWorX32	Graphical and Visualization Playback of Historical alarms and data	<a href="#">VCRWorX32 Product Bulletin</a>
Unified Data Manager	Centralized Expressions, Groups, Triggers, Recipes, Alarm Filters, and	

	more	
ScriptWorX2006	New, enhanced Centralized Periodic and Event Scripting with Multi-threading VBA 6.4	
SNMP Connector	New, monitoring of Network Infrastructure, SNMP data and SNMP traps	<a href="#">SNMP Quick Start and Introduction</a>
MonitorWorX	New, GENESIS (and BizViz) system monitoring and diagnostic tool)	<a href="#">MonitorWorX Quick Start</a>
Security Server	Prevents unauthorized users from using GENESIS. GENESIS will not work if is not found or has been deleted from the computer.	

The GENESIS suite (and our BizViz Suite) support a wide variety open communication standards and protocols, including:

- **OPC:** Data Access (DA), Alarm and Event (A/E), Historical Data Access (HDA), Tunneling with third party client/server Open Communications. With ToolWorX you can create OPC clients and servers.
- **SNMP** network device management.
- **Database connectivity** to Microsoft SQL 2005, 2000, MSDE, SQL Express, MySQL, Oracle and other databases: using XML and ADO ODBC, OLEDBI
- **HTTP Browser Data Access** through WebHMI.
- **Language support** with VBScript and JavaScript. The support for Microsoft Visual Basic for Applications (VBA) is part of GENESIS, but disabled in MachineWorX. Create custom tasks VB, C and C++.
- **GenBroker communications** using DCOM, TCP/IP and SOAP XML protocols.
- **OLE Automation** technology.
- **SAP** BAPI and SAP NetWeaver
- **IFix and Wonderware conversion** tools

ICONICS patented ActiveX Toolkits allow you to rapidly create OPC enabled Active X components. With integrated project management and debugging tools you can manage(download, upload, run, stop and debug) your application remotely from a development station. Communications over the above protocols allow TraceWorX32 and MonitorWorX provide integrated analysis and troubleshooting of your solutions.

To get a sense for how all of the different applications in the GENESIS32 suite relate to one another, refer to Figure 9 where GENESIS32's architecture is shown.

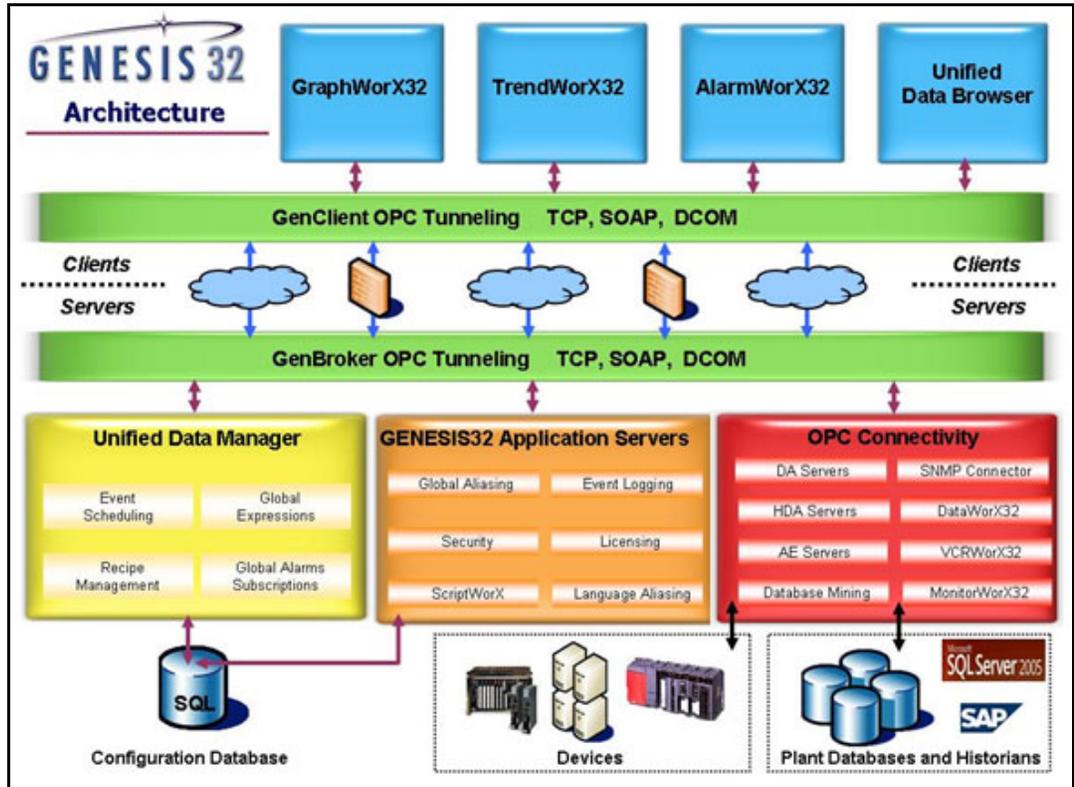


Figure 9. ICONICS GENESIS32 v9.01 architecture.

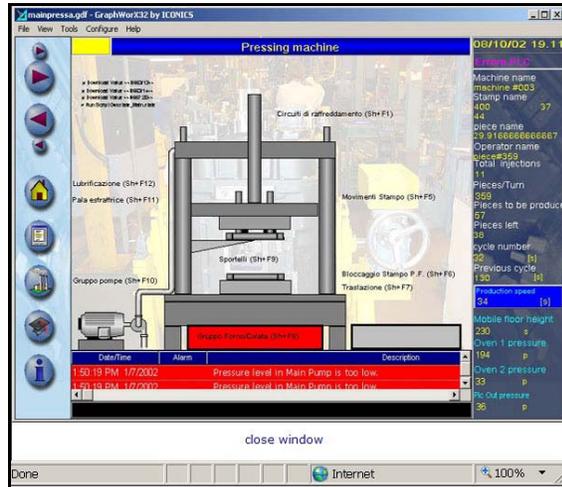
## MachineWorX

MachineWorX is designed for machine builders and OEMs serving all industries. Machine builders and OEMs integrate MachineWorX into their product solutions to provide superior monitoring, control, alarming and real-time trending functionality. MachineWorX provides tools for building solutions tailored to the needs of machine builders, OEMs and integrators, enabling visualization, HMI, diagnostics and control of the overall machine operation. Fully integrated with industry standards such as OPC. An example of MachineWorX's monitoring a pressing machine is shown in Figure 10 below.

The benefits of using MachineWorX are:

- **Superior visualization** of systems on embedded devices. MachineWorX is based on GENESIS32 and provides rapid development and deployment into your product solutions using state-of-the-art fifth-generation HMI/SCADA and control software applications

- **Right-size** your solution. MachineWorX is designed to run on systems as small as a flash drive for the most rugged environments, diskless systems where cost and security concerns are paramount, and systems from small to large.
- **Open solutions.** Built on open standards, MachineWorX preserves your investment by allowing true hardware independence. Your embedded device running on Embedded NT or Embedded XP can grow and develop over time, taking advantage of technology advancements and allowing significant cost savings by avoiding vendor “lock-in.”



**Figure 10.** A MachineWorX solution showing a pressing machine, something that might run on Embedded NT or Embedded XP.

MachineWorX is a slimmed down version of GENESIS32 and Embedded GENESIS. In order to fit on smaller platforms MachineWorX has the following features of GENESIS32 v 9.0 have been disabled:

- Visual Basic for Applications (VBA). Note that you can still run VBScript and Jscript but the scripting editor in GENESIS is disabled.
- Layers.
- Configuration for Windows CE.
- Translators.
- Publishing Wizard.
- Save As Previous Version

Keep in mind that the new features described in Appendix B relating to the features above won't be available to you on a Machine Works system. The small footprint offers the benefit of fitting on very small embedded systems.

## Licensing

ICONICS uses a tag count system in order to provide its customers with a cost effective solution that has a low barrier to entry. While other HMI and SCADA industrial automation products have a global license pool which limits your ability to

smart small and grow your systems in a logical way, the ICONICS tag count system polls to see which OPC tags are active and in use. Tags are considered active when systems are in runtime mode.

The system does NOT count "Configured or Calculated" tags based on prior installations or activity in its licensing calculations. Since the tag database is defined in the specified OPC servers, ICONICS tag system aggregates these tag references for use authenticating the modules of GENESIS that are running. Your tag count starts only at runtime freeing you up to develop the best embedded solution you can in your development phase.

The following points summarize the Tag Count Architecture:

- Only active, scanned OPC tags are counted
- Any tags used in multiple modules is counted only once by the system
- Expression and calculation results are not part of the tag count.
- Local variables are not counted as tags.

Other HMI/SCADA vendors count all the tags defined in a Tag Database including local variables, expressions and derivatives of real PLC Tags. ICONICS' unique tag count system has saved customers 20-30%, since customers are not required to purchase more tags than they need. In any project experience shows about 20% of the tags are based on calculations and expressions; while a minimum of 10% are local variables and place holders. Further, if multiple instances of tags and the intersection of tag count is considered for various modules, the savings often reach as high as 40%. Database values or access of information via VBA or VB Scripting from other software packages are not normally considered for licensing in this industry

Embedded GENESIS comes with a Softkey utility which enables users to run their Embedded GENESIS in Demo mode for two hours without a registered license. There is no restriction placed on development. Users can also activate a temporary license for thirty days (one time only), which enables all options. You have to get the appropriate license in order to you're your solution work after the temporary authorization is expired. Hardware Keys are available on request for an extra Charge.

Contact ICONICS Orders Department for your License queries.

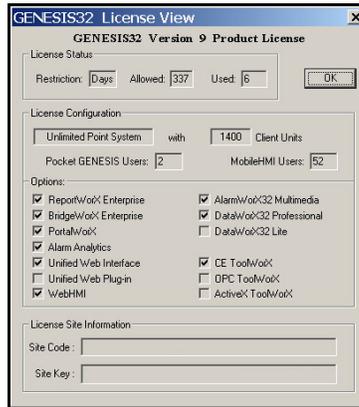
**Caution!** Once the license is authorized, do not delete the files under ICONICS/SOFTLIC directory.

You can use the License Monitor Utility to determine the actual tag usage and availability of total tags. To view the License Monitor Utility, do the following:

1. Select Start, All Program, ICONICS Software Licensing, and License Utility.

The License Utility opens on your system.

2. Select Actions, and View Licenses to open the License View dialog box shown in Figure 11 below.



**Figure 11.** The License View dialog box shows the status of your current licensing.

You can use the ICONICS License Utility to do any of the following actions:

- Register for new licenses
- Authorize a new license or update an existing one.
- Transfer a license from one system to another.
- Kill and remove a license on a system.
- As well as view licenses as was shown above.

# Appendix A.

Individual Components in Embedded GENESIS v9.01 are listed below. Please note that this list is subject to change over time, and should be used for general guidance only.

ICONICS Application	Application Component	Application Subcomponent	Required or Optional	Size (MB)
VBA64 req				
	Common Core Components		R	38.59
	Common Core Components Help		O	9.54
GraphworX32			R, O	
	GraphWorX32 Container		R	4.07
	GraphWorX32 Container Help		O	6.62
	GaugeActiveX		O	0.91
	GaugeActiveX Help		O	0.16
	VesselActiveX		O	0.91
	VesselactiveX Help		O	0.11
	Numeric ActiveX		O	0.86
	Numeric ActiveX Help		O	0.13
	Switch ActiveX		O	0.88
	Switch ActiveX Help		O	0.12
	GraphWorX32 Viewer ActiveX		O	0.85
	GraphWorX32 Viewer ActiveX Help		O	0.08
	Slider ActiveX		O	0.90
	Slider ActiveX Help		O	0.15

	Symbols		0	104.34
	Symbol Library		0	0.37
	Symbol Library Help		0	0.64
	Timer ActiveX		0	0.05
	Timer ActiveX Help		0	0.08
	Translators		0	2.31
	GraphWorX32 Examples		0	21.39
TrendWorX32			0	21.52
	TrendWorX32 Container		0	0.55
	TrendWorX32 Help		0	1.39
	TrendWorX32 Viewer ActiveX		0	1.01
	TrendWorX32 Viewer Help		0	1.65
	TrendWorX32 Persistent Trending		0	0.64
	Persistent Trending Help		0	0.30
	TrendWorX32 SQL Server		0	6.96
	TrendWorX32 SQL Server Help		0	4.20
	TrendWorX32 Reporting		0	1.86
	TrendWorX32 Reporting Help		0	0.46
	TrendWorX32 Examples		0	1.53
AlarmWorX32			0	145.35
	AlarmWorX32 Container		0	2.76
	AlarmWorX32 Help		0	1.10
	AlarmWorX32 Viewer		0	2.64
	AlarmWorX32 Viewer Help		0	3.01

	AlarmWorX32 Report ActiveX		O	119.11
	AlarmWorX32 Report ActiveX Help		O	1.64
	AlarmWorX32 Logger		O	4.34
	AlarmWorX32 Logger Help		O	2.68
	AlarmWorX32 Server		O	4.46
	AlarmWorX32 Server Help		O	4.46
	AlarmWorX32 Indicator ActiveX 5.7		O	1.24
	AlarmWorX32 Indicator ActiveX Help		O	0.43
	AlarmWorX32 Examples 1.14		O	1.13
	AlarmOLE.dll		O	0.33
DataWorX32			O	8.66
	DataWorX32 Program Files		O	4.68
	DataWorX32 Help		O	2.92
	DataWorX32 Examples		O	0.75
	OPC Tunneler 0.33		O	0.33
ScriptWorX2006			O	8.63
	ScriptWorX2006 Program Files		O	3.00
	ScriptWorX2006 Help		O	1.37
	ScriptWorX2006 Examples		O	4.28
ScriptWorX32			O	2.75
	ScriptWorX32 Program Files		O	1.47
	ScriptWorX32 Examples		O	0.84
	ScriptWorX32 Help		O	0.44
Recipe Management			O	3.30

	Recipe Management Program Files		O	2.50
	Recipe Management Help		O	0.80
Data Mining			O	4.99
	Data Mining ActiveX Program Files		O	3.13
	Data Mining ActiveX Help		O	1.87
ProjectWorX2006			O	61.80
	ProjectWorX32 Program Files		O	58.27
	ProjectWorX32 Help		O	2.62
	ProjectWorX32 Examples		O	0.91
ScreenManager			O	2.04
	ScreenManager Program Files		O	0.93
	ScreenManager Help		O	0.77
	ScreenManager Templates		O	0.34
VCRWorX32			O	12.88
	VCRWorX32 Program Files		O	8.87
	VCRWorX32 Help		O	1.75
	VCRWorX32 Examples		O	2.27
GEN32Demo			O	263.01
Iconics Tools			R,O	86.27
	GenBroker		O	7.69
		Program Files	O	0.52
		GenBroker Help	O	3.14
		SOAP XML Support	O	1.59
		SOAP XML Help	O	1.19

	ICONICS Security		R, O	6.59
		Program Files	O	0.52
		Security Help	O	5.49
		Security Indicator Activex	O	0.32
		Security Indicator Activex Help	R	1.47
		Login Activex	O	0.08
		Login Activex Help	R	5.40
		Biometric Support	O	0.17
		Security Example	O	0.04
	GENESIS32 Tray		O	2.32
		Program Files	O	0.64
		Security Help	O	1.68
	Global Aliasing		O	6.73
		Global Aliasing Server	O	3.23
		Global Aliasing Help	O	3.50
	Language Aliasing		O	7.94
		Language Aliasing Server	O	4.52
		Help	O	3.42
	Keypad		O	0.12
	License Monitor		O	1.83
		Program Files	O	0.27
		Help	O	1.50
		GenRegMon ActiveX	O	0.07
	Unified Data Manager		O	13.57

		Program Files	O	9.13
		Help	O	4.45
	OPC DataSpy		O	3.68
		Program Files	O	1.84
		Help	O	1.84
	ICONICS OPC Simulator		O	2.80
		Program Files	O	1.48
		Help	O	1.32
	TraceWorX		O	3.93
		Program Files	O	2.75
		TraceWorX Help	O	1.19
	SNMP		O	10.33
		Program Files	O	7.41
		Help	O	2.93
	DB OPC Server		O	13.20
		DB OPC Server Program Files	O	8.15
		DB OPC Server Help	O	2.91
		DB OPC Manipulator ActiveX	O	0.49
		DB OPC Manipulator ActiveX Help	O	1.67
	Web Publisher		O	1.09
		Program Files	O	0.70
		Help	O	0.39
	GenStatistics		O	1.32

		Program Files	O	0.59
		Help	O	0.73
	MSDE_Manager		O	2.69
		Program Files	O	2.62
		Help	O	0.07
	Secure Desktop		O	0.51
		Program Files	O	0.32
		Help	O	0.20

# Appendix B.

**New features in GENESIS v9.01** are listed in the table below. Note that MachineWorX disables VBA (you can run scripts), layers, translators and other features that while available in Embedded GENESIS won't be available in MachineWorX. Features such as redundancy and failover are unlikely to be used in embedded applications, but are included here for completeness.

Feature Set	New Features
GENESIS32 v.9.01	(General Features)
<i>Installation</i>	<p><b>Registry settings eliminated.</b> Many Registry settings (in particular, HKEY_LOCAL_MACHINE) were removed.</p> <p><b>WebHMI Configuration.</b> A Unified settings file in place of Registry settings provides better support for WebHMI.</p> <p>OEM Support. The Unified OEM Information file is text-based and easy to edit.</p>
<i>Security</i>	<p><b>Enhanced User Rights.</b> Normal "users" have rights to configure and run GENESIS. The need for users to be Power Users was removed.</p>
<i>Data Mining</i>	<p><b>New Data Mining Grid control.</b> XP look and feel, with a new Add Query Wizard (Basic and Advanced Mode). Provides language alias support, an automation interface to dynamically load configuration files, control the grid operation, and format cell color. The Grid control supports Word Wrap in cells and Smart Alias.</p> <p><b>SAP BAPI (Business Application Programming Interface) provider.</b></p> <p><b>MS SQL Server 2005 provider.</b></p> <p><b>Configurator options</b> for stored procedures, view SQL, and Test Query function.</p>
MonitorWorX	<p><b>Centralized system monitoring and diagnostics.</b> Provides a central diagnostics area and integrates with tools such as ScriptWorX2006.</p> <p><b>GenTray replacement,</b> requires Power User privileges to modify Services.</p>
<i>Operation control</i>	<p><b>Start and Stop services and applications.</b></p> <p><b>Redundancy monitor.</b> Integrates with DataWorX32 Professional and provides</p>

	notification of failed server.
<i>Systems Status</i>	<p><b>Information provider.</b> Provides application runtime and version information, as well as redundancy statistics. Provides software installation information for all GENESIS components.</p> <p><b>License detection.</b> Provides duplicate license detection.</p> <p><b>OPC Server status.</b> Notifies you of available OPC servers, and provides visual status of all connections: OPC, license, and runtime.</p>
Unified Data Manager	<b>UDM centralizes configuration and storage</b> for: global expressions, groups, recipes, value sets, event triggers, alarm subscriptions, and alarm filters
<i>Global Expressions</i>	<b>Put expressions in data tags;</b> parameters are supported; READ and WRITE expressions can be specified; expressions within expressions are evaluated.
<i>Group Types</i>	<b>Define groups to READ/WRITE tags</b> and write group values synchronously to an OPC Server(s) that you specify. Groups can have parameters assigned to them.
<i>Recipes</i>	<b>Recipes can be READ/WRITE tags,</b> and recipe parameters are now supported.
<i>Value sets</i>	<b>Value sets can be READ/WRITE tags,</b> and value set parameters are supported.
<i>Central Event Triggers</i>	<b>Global management of event triggers.</b> You can access remote triggers over the network. These features are backwards compatible with triggers created in previous versions of ICONICS GENESIS.
<i>Alarms</i>	<b>Global management of alarm subscriptions and filters.</b> You can make define local and global subscriptions and filters.
ScriptWorX2006	<b>ScriptWorX2006 now runs as an service,</b> with a new threading model, data tag support, access to triggers, integration with MonitorWorX and VBA, and stores its configuration in a standard database file. Inside GENESIS' integrated environment you can now write, edit, and debug scripts.
<i>Script Threading Model</i>	<b>Full multi-threaded.</b> A thread can share components by scripts and VBA variables by scripts. Scripts can execute at intervals or when a global variable changes. Scripts are queued in designated thread queues.

	Threads can be synchronized with Global Variables and other native sync objects.
<i>Script Recovery</i>	<b>New watchdogs and auto-recovery</b> utilities provide greater fault tolerance for your applications by detecting and auto-restarting dead threads if your script has a keep alive function programmed into it.
<i>OPC Data Tag Support</i>	<b>Send values (variables) as OPC data tags.</b> You can also send the following thread status as OPC data tags: Queue length, Number of executions, Watchdog remaining time, among others.  <b>Built-in OPC READ/WRITE functions</b>
<i>Triggers</i>	<b>Triggers are exposed to scripts.</b>
<i>ScriptWorX2006 integration</i>	<b>Scripts can now use MonitorWorX</b> to monitor: application status, thread details and the thread console, and global variable information. Script integrate with the new Universal Data Manager, and can be triggered by Universal Triggers.
GraphWorX32	<b>MonitorWorX integration.</b>  <b>New Pick Actions and Smart Symbols</b> for the Recipe Grid and Recipe Tree Control.  <b>Enhanced Search and Replace</b> functionality to include local alias definitions
<i>Interface features</i>	<b>"XP" look and feel</b> , high-color icons, and a new startup splash screen. Customize tool tips that can be programmatically controlled. You can set the display position.  Improved automation interface.
<i>Programming features</i>	<b>Support for Globally defined Expressions</b> , Groups, Recipes, and ValueSets defined in the Unified Data Manager  <b>Increased object count</b> to be greater than 65,000.  <b>Templates have been enhanced.</b> Users can preserve information in the display after applying a template. Startup theme support for templates. Save templates with or without VBA  <b>Enhanced runtime control.</b> Call any menu item through a pick action at runtime also available as a Pick Action.

	<p><b>More alias options.</b> Use a language alias in tag values.</p> <p><b>New Automation Interface</b> distinguishes between symbols and layers or templates. All pick action properties exposed in interface.</p>
<i>Security features</i>	<b>Run under normal (restricted) user account.</b>
DataWorX32	<b>Note:</b> DataWorX32 Redundant for high availability alarm and historical data requires an additional license.
<i>OPC Tunneling</i>	<p><b>Now in Standard Edition OPC Tunneling.</b> Bridge an OPC client to OPC servers.</p> <p><b>New Protocol Support:</b> OPC Data Access (DA) v3.0, OPC Alarm and Events (AE) v1.1, OPC Historical Data Access (HDA) v1.2, TCP/IP, and SOAP/XML can tunnel.</p> <p><b>Enhanced security.</b> OPC Tunneling is more secure than MS DCOM, provides secure connections and domain authentication.</p> <p><b>Auto-discovery</b> of remote OPC DA, AE, and HDA Servers.</p> <p><b>Firewall friendly,</b> can transit through NATs.</p>
<i>Fault Tolerance</i>	<p><b>Redundant server support.</b> Two node failover support for OPC DA Servers including: AlarmWorX32 A/E Servers, TrendWorX32 HDA Servers, AlarmWorX32 Alarm Loggers, and TrendWorX32 Trend Loggers.</p> <p><b>Store and forward technology</b> ensures that AlarmWorX32 and TrendWorX32 Logger data stores are up to date.</p>
AlarmWorX32	<b>Custom command server support.</b>
<i>Interface</i>	<p><b>“XP” look and feel,</b> color icons.</p> <p><b>Unified Data Browser support.</b></p> <p><b>Programmatic control</b> over scroll bars, headers, and pop-up menu items.</p>
<i>Programming Features</i>	<p><b>Unified Data Manager support</b> for global alarm filters and subscriptions.</p> <p><b>Enhanced database options:</b> support for both MS SQL Server 2005 and MySQL configuration and logger databases.</p> <p><b>Improved data handling.</b> Convert the alarm event categories (field) to strings. Date and time can be separate fields. Relative pathing supported for working</p>

	<p>directory. Wildcard hinting support.</p> <p><b>Automation options</b> for global event acknowledgement for only events or only global alarms. A new method provides Viewer mode. Apply global filter at runtime. The RemoveSelectedRow (INum As Long) automation method can perform a Viewer redraw operation or invoke a Viewer.</p>
<i>Security</i>	<p><b>Run under normal (restricted) user account.</b></p> <p><b>Alarm acknowledgement</b> can disable Checking Security Permissions alert. Option to disable beeps when an alarm is filtered.</p> <p><b>Unified Data Browser language support.</b></p>
<i>Fault Tolerance</i>	<p><b>Redundant server support.</b> For AlarmWorX32 AE servers within AlarmWorX32 Viewer. (See "Fault Tolerance" in the DataWorX section above)</p> <p><b>Store and forward technology.</b></p>
<i>AlarmWorX32 Report</i>	<p><b>Expression based columns</b></p> <p><b>Improved animate/deanimate</b> features.</p>
<i>AlarmWorX32 Logger</i>	<p><b>Redundancy support</b>, see Store and Forward above.</p> <p><b>MS SQL Server 2005</b> alarm logger support.</p>
<i>TrendWorX32</i>	<p><b>MonitorWorX integration</b>, report key runtime information.</p> <p><b>New database support.</b> Log data to MS SQL Server 2005 or MySQL.</p>
<i>Interface</i>	<p>XP look and feel for the Configurator and the Report module.</p>
<i>Data Handling</i>	<p><b>Data logging interval control</b> on a user or group basis.</p> <p><b>OPC DA refresh</b> is user configurable.</p> <p><b>Trend Logger configuration</b> is separate from the HAD server function. The logger can be modified without affecting the TrendWorX32 HDA Replay function.</p>
<i>Redundancy</i>	<p><b>Store and forward</b> two node data logging to support failover.</p>
<i>SNMP</i>	

<p><i>Connectivity</i></p>	<p><b>Full integration</b> in GENESIS, communicate with SNMP managed devices.</p> <p><b>Auto Discovery</b> of devices; auto-detection of device types with recognizable icons.</p> <p><b>MIB support</b>, import device MIB files.</p> <p><b>Enhanced browsing</b>, view available objects' OIDs for readable names and properties.</p> <p><b>SNMP Trap support</b>, receive and handle traps; supports GenEvent event messages based on SNMP traps.</p>
<p><i>SNMP Agent</i></p>	<p><b>System monitor and diagnostic</b> SNMP support.</p> <p><b>Application monitoring</b> for GENESIS components, runtime and version information provided to SNMP.</p> <p><b>Redundancy monitoring</b> with DataWorX32 Professional, notification of failed servers and redundancy statistics.</p> <p><b>OPC Server Availability</b> is part of SNMP messaging.</p> <p><b>Installation information exposed</b>, versioning of all GENESIS components.</p>
<p>ProjectWorX32</p>	<p><b>ScriptWorX Configurator integration.</b></p> <p><b>SNMP Configurator integration.</b></p> <p>Unified Data Manager <b>Configurator integration.</b></p>
<p>GenBroker</p>	<p><b>Security added</b> to TCP/IP and SOAP/XML communications</p> <p><b>Domain authentication.</b></p>

# Appendix C.

## User privileges required to run or modify GENESIS.

Component	Sub-Component	Min. Privilege Required:	Comments
Install/Uninstall	GENESIS, Licensing, MMX, DataWorX32 or WebHMI	Administrator	
WebHMI	Downloading CAB files	Administrator	
AlarmWorX32	Container, Server, and Server Configurator	Normal User	
AlarmWorX32	Logger	Normal User <sup>1</sup>	Please see Note 1
AlarmWorX32	Logger Configurator	Normal User <sup>2</sup>	Please see Note 2
AlarmWorX32	Indicator ActiveX, Report ActiveX, and Viewer ActiveX	Normal User	
AlarmWorX32 MMX	Configurator	Normal User <sup>3</sup>	Please see Note 3
AlarmWorX32 MMX	FAX Agent, Mail Agent, Marquee Agent, Messaging Agent PA Agent Phone Agent PopUp Agent, Skype Agent, Sound Agent, Video/Snapshot Agent, Server	Normal User	
AlarmWorX32 MMX	Pager Agent	Normal User <sup>3</sup>	Please see Note 3
Data Mining	Server Configurator, Server Runtime, Grid ActiveX, and Control Manipulator ActiveX	Normal User	
DataWorX32	Configurator	Normal User <sup>4</sup>	Please see Note 4

DataWorX32	Runtime	Normal User	
Expressions	Expression Editor	Normal User	
GenBroker	Configurator and Runtime	Normal User	
GraphWorX32	Container, Viewer ActiveX, and Symbol Library	Normal User	
GenTray		Normal User <sup>6</sup>	Please see Note 6
Global Aliasing	Configurator and Server	Normal User	
Language Aliasing	Configurator and Server	Normal User	
License Monitor		Normal User	
MonitorWorX		Normal User <sup>6</sup>	Please see Note 6
MSDE Manager		Power User	
OPC Simulator		Power User	
ProjectWorX32		Power User <sup>5</sup>	Please see Note 5
Screen Manager		Normal User	
ScriptWorX2006 and ScriptWorX32	Configurator and Runtime	Normal User	
Secure Desktop		Normal User	
Security	Configurator, Indicator ActiveX, Login ActiveX, and Login Application	Normal User	
SNMP	Configurator and Runtime	Normal User	
TrendWorX32	Container, Background, HDA Server, OLEDB Provider, Persistent Viewer, and ActiveX	Normal User	
TrendWorX32	Logger	Normal User <sup>1</sup>	Please see Note 1
TrendWorX32	Logger Configurator	Normal User <sup>2</sup>	Please see Note 2

TrendWorX32	Report	Normal User <sup>6</sup>	Please see Note 6
Unified Data Mgr	Configurator and Runtime	Normal User	
VCRWorX32	Configurator and Control Panel Server	Normal User	
WebHMI	Web Publishing and Operation	Normal User	

**Note 1:** The AlarmWorX32 Logger and the TrendWorX32 Logger will run under normal (restricted) user account. One exception can occur if the Logger is started before the user has properly set up the database (ODBC) connections. In this case the Logger may try to set up the connection. To do this successfully, the logger must have Power User or Administrator privilege. If the Logger doesn't have these privileges, the Logger will see:

```
Error
The configuration process failed
Retry Cancel
```

To avoid this potential issue, the database (ODBC) connections should be setup (using the Logger Configurator) before running AlarmWorX32 Logger or the TrendWorX32 Logger.

**Note 2:** Most of the AlarmWorX32 Logger Configurator's and TrendWorX32 Logger Configurator's functions will run under normal (restricted) user account. There exception is the "Create New Configuration" function requires a Power User or higher to create the connection to the logger's database. Normal user see an error similar to the following:

```
TrendWorX32 Logger Configurator
Can't start datalogging (node "local").
Error in Creating Global Settings
OK
```

**Note 3:** The AlarmWorX32 MMX Application (Configurator, Server, and all the Agents) can run under a normal (restricted) user account with the exception of the Pager Agent Configuration. Configuring the Pager Agent requires Power User or higher privileges. Once the Pager agent is configured, the agent can run under a normal user account.

**Note 4:** DataWorX32 (Configurator, Runtime, and OPC Tunneling) runs under a normal (restricted) user account with the exception of OPC Tunnels. To set up an OPC Tunnel (a connection to a remote OPC Server that looks and acts like a local OPC Server) requires Power User or Administrator Privileges. Once the OPC Tunnels are set up (configured), they can operate under normal (restricted) user accounts.

**Note 5:** ProjectWorX32 requires Power User or Administrator Privileges to operate.

**Note 6:** GenTray and MonitorWorX require Power User privileges to set up Services.

## Contact Us

Your comments and suggestions on the operation of this software are welcome. Please address them to:

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