



Application Note #4427

Using Galil software on 32-bit Microsoft Vista Operating Systems

Introduction

Galil software now supports the new 32-bit Microsoft Vista operating system. This application note will cover the salient details regarding installation, operation and other variations from using Galil software in Windows XP.

The major change in Windows, with regard to Galil software, is the addition of a security mechanism called “User Account Control”, or UAC. This security functionality is pervasive to the entire operation of Vista: from installation of drivers, to the editing and organization of the windows registry, to access and write privileges of files. The purpose of UAC is to provide a high level of security and to ensure that only certain applications are allowed to operate with administrator privileges. Any application attempting to launch with administrator privileges will invoke a warning from the operating system. There are times when Galil software should be run in administrator mode, and times when it need not be. For example, **one function of the Galil software that should be run in administrator mode is windows registry edits.** Instances are outlined below.

Instructions for disabling UAC, if desired, are also below.

Ethernet Controllers: the Windows firewall has been changed in Vista in a manner which effects Ethernet based communications on Galil controllers. These details are covered in the Ethernet section below.

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Software Outline

The following is a list of the software addressed in this application note and the Vista compatible versions.

Software Module	Description	Version
glwdmpci.sys	Galil PCI driver (Bundled in installers)	7.0.37.0
SmartTerm	Galil Terminal	6.1.7
DMCWin32	Programmer's Toolkit for C/C++, etc	7
VS2005 .NET	.NET API Framework 2	2.0.0.2
VS2003 .NET	.NET API Framework 1.1 (Limited, see below)	1.2.1
Setup32	Setup Application for Galil parameters	4.7
Ver. 7 Drivers	Stand-alone drivers	-
WSDK32	Windows Servo Design Kit	5.22
DMCOCX32	Active X Toolkit	4.0
CadToDmc	DXF to DMC converter	5.01
Ecam32	Electronic Cam setup utility	3.0.0
HPGLTODMC	HPGL to DMC file translator	2.04

Installation (generally applicable to installs)

When installing a software module "setup.exe", Vista will automatically attempt to elevate the UAC level to administrator (Figure 1). This is correct behavior for installer files. **The setup file must be run as administrator to correctly install.**

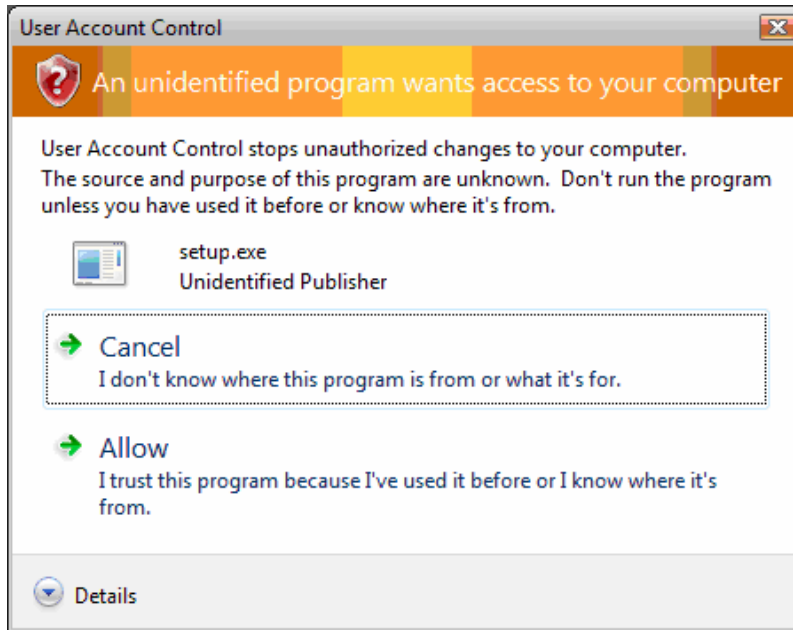


Figure 1. Choose Allow when prompted to install a Galil module.

Follow the Galil installation instructions and be aware of the following dialog.



Figure 2. This dialog describes a rare but benign error that should be ignored if encountered.

The Galil installer will progress until it begins to install communication drivers. A Windows security dialog (Figure 3) will inform the user that the driver's publisher is unverified. Click "Install this driver software anyway" to continue.

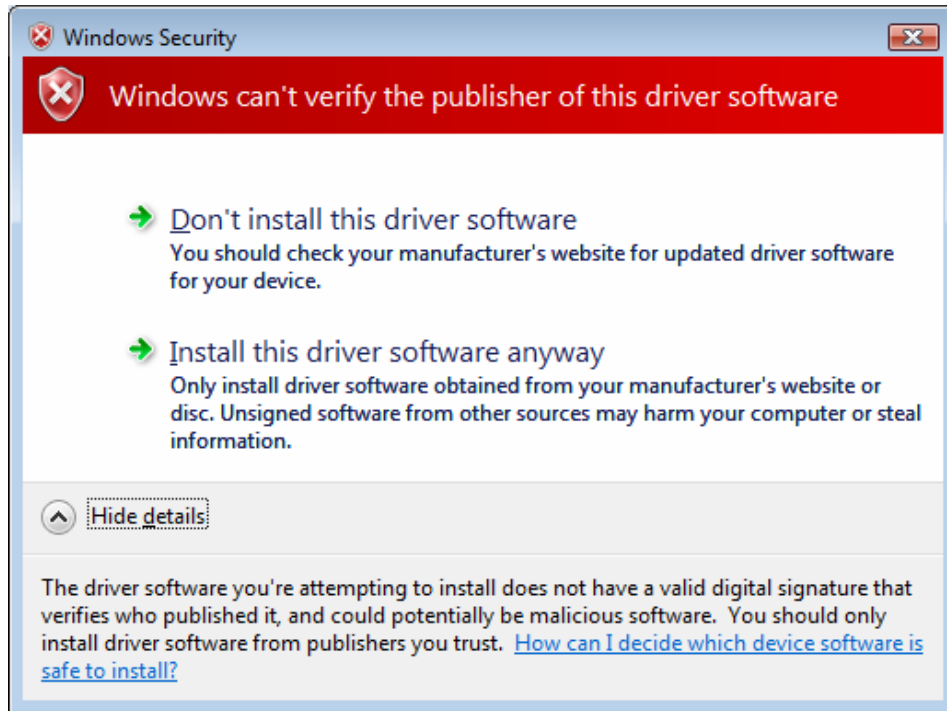


Figure 3. Click “Install this driver software anyway” to install Galil drivers.

The rest of the install process should proceed normally. Restart the PC after installation when prompted.

A note on UAC and Registry Virtualization

When running Galil applications under Vista, there are two pertinent options for UAC: standard user mode or administrator mode. During most usage, the various applications can be run in standard mode. Running as administrator will allow the applications to run identical to the Windows XP experience.

One function of the Galil software that should be run in administrator mode is windows registry edits. Whenever a controller is added to the windows registry, or when registry characteristics are updated (baud rate, description, etc) the given software should be run in administrator mode. This will allow the Windows registry to be referenced correctly. When launching an application in administrator mode, the user will be prompted with a UAC warning (Figure 1). Plug and play devices (PCI and USB) will install in the windows registry automatically without the need to elevate an application to administrator (other than during initial driver install, Figure 3).

Unexpected but non-harmful registry duplications can occur if the registry is edited from an application that does not have administrator privileges. This is a result of Vista’s

Registry Virtualization, which causes reads and writes to HKEY_LOCAL_MACHINE to be redirected to HKEY_CURRENT_USER. See appendix for further details.

To run an application in administrator mode one time, right click its icon and choose “Run as administrator” (Figure 4, left). This should be done whenever an Ethernet or Serial controller is registered or any controller’s registry parameters are changed. To run an application in administrator mode at all times, navigate to the executable file in C:\Program Files\Galil\ and open its properties by right clicking its icon and choosing properties. Under the Compatibility tab check the “Run this program as an administrator” checkbox (Figure 4, right).

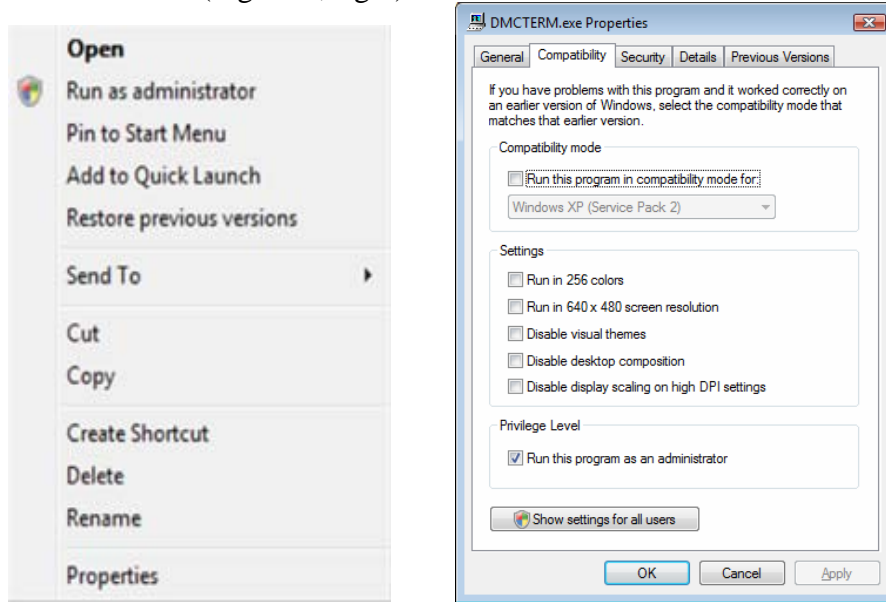


Figure 4. Two methods for running an executable as an administrator.

Another feature of UAC is that it does not allow non-administrator applications to write to C:\Program Files. For example, the terminal logging function in WSDK attempts to create a log in C:\Program Files\Galil\WSDK\. With WSDK run as administrator, the data is written as expected (Figure 5). If run without administrator privileges, Windows will capture and prevent the write without indicating this blockage to the user.

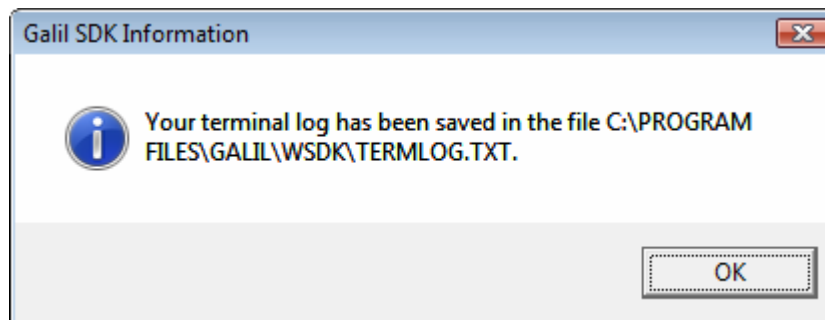


Figure 5. WSDK dialog reporting log written. Only when WSDK is run as administrator is this message valid.

Deactivating UAC

In order to de-activate UAC and have all applications run as administrator without warning, open a run dialog by typing the windows key and “r” simultaneously. Type “msconfig” and click “OK” (Figure 6).

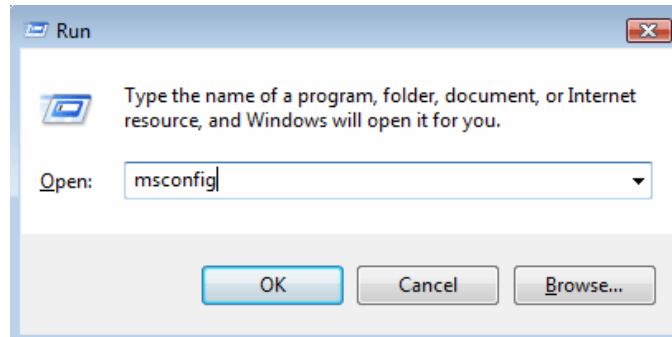


Figure 6. Run dialog to open Microsoft Configuration.

In the tools tab of the msconfig utility choose “Disable UAC” and click “OK” (Figure 7).

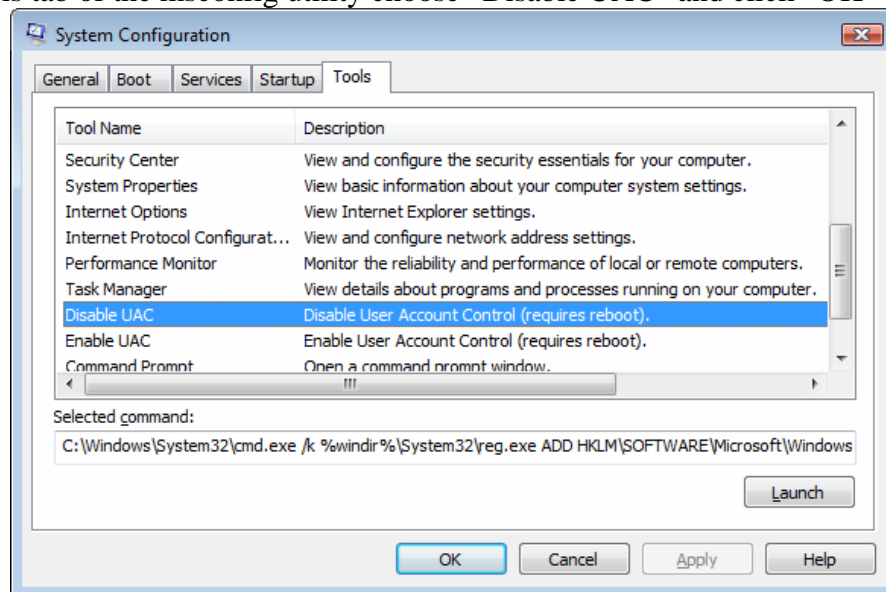


Figure 7. Dialog to disable the Vista UAC.

Restart the PC. Programs should now auto-elevate to administrator at all times without querying the user.

Disabling Vista Firewall for Ethernet Controllers

To use Ethernet communications with Galil controllers, the Vista firewall must be disabled.

In the Vista Taskbar, double click the Windows Security Icon (Figure 8).

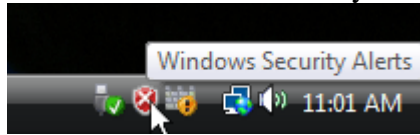


Figure 8. Windows Security Icon

In the left hand pane, click “Windows Firewall” and then “Turn Windows Firewall On or Off”. Choose the off radio button and click “Apply” (Figure 9).

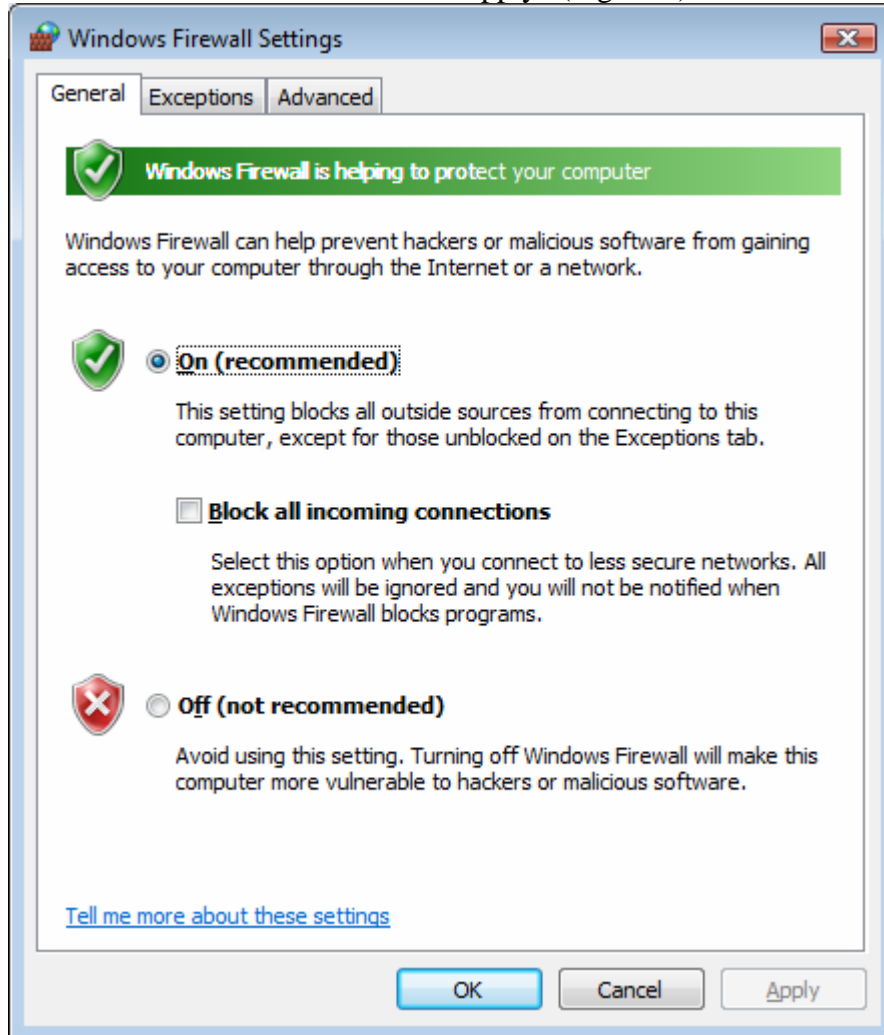


Figure 9. Windows Firewall configuration screen

Once the Vista Firewall is disabled, Ethernet communications can operate.

Other Ethernet Considerations

Upon clicking “Find Ethernet Controllers” the “Select an Ethernet Controller” dialog opens behind the application window. This is due to Vista placing the focus back on the application window, obscuring the open dialog. To bring the window back to the front, click its tab in the task bar.

MS Telnet and MS Hyperterm have been removed from the standard Vista installation.

Program-Specific Details:

CADtoDMC: When running CADtoDMC without administrator privileges, DXF files should be stored in a writable location, such as “Documents”. For the sample DXF files in C:\Program Files\Galil\CADtoDMC\DXF\ the conversion file will not be written and no errors will be generated. When running in administrator mode, this issue is not relevant.

VS2003 .NET: Microsoft has elected not to support Visual Studio 2003 and 2002 on Vista, so development with this API is unsupported. If the .NET framework 1.1 is installed, binaries should still function.

VS2005 .NET: Upon installation, a warning may be generated reporting that dexplore.exe can not be located. This only prevents the readme file in the installer from displaying – it does not affect normal usage.

Note: Applications compiled on a Vista machine are also subject to the UAC. The following dialog box can be expected when running Visual Studio binaries.

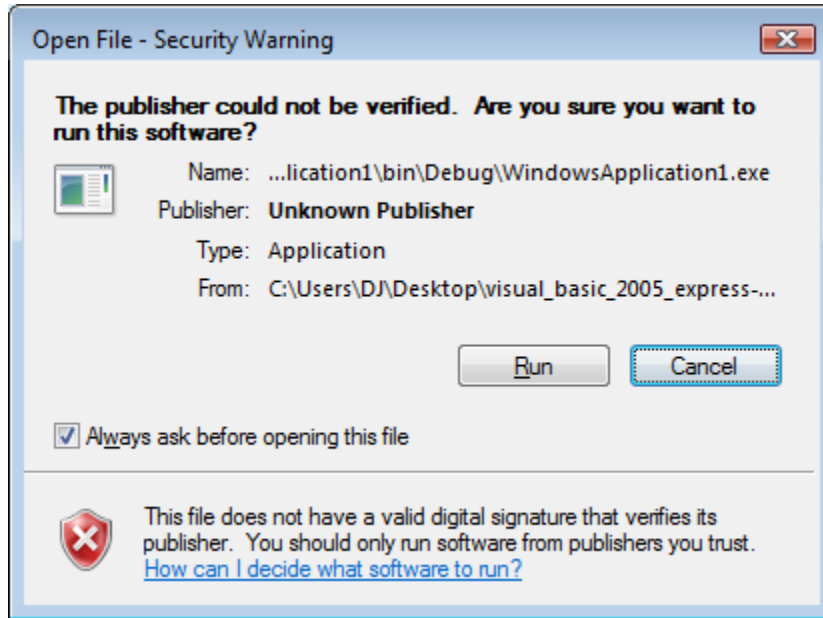


Figure 10. Warning upon running compiled Visual Studio Application.

DMCSetup: The DMC Setup utility will always be run in administrator mode. Furthermore, after running Setup for the first time, the user may be shown a “Program Compatibility Assistant” dialog remarking that the software may not be installed properly (Figure 11). This message can be disregarded.

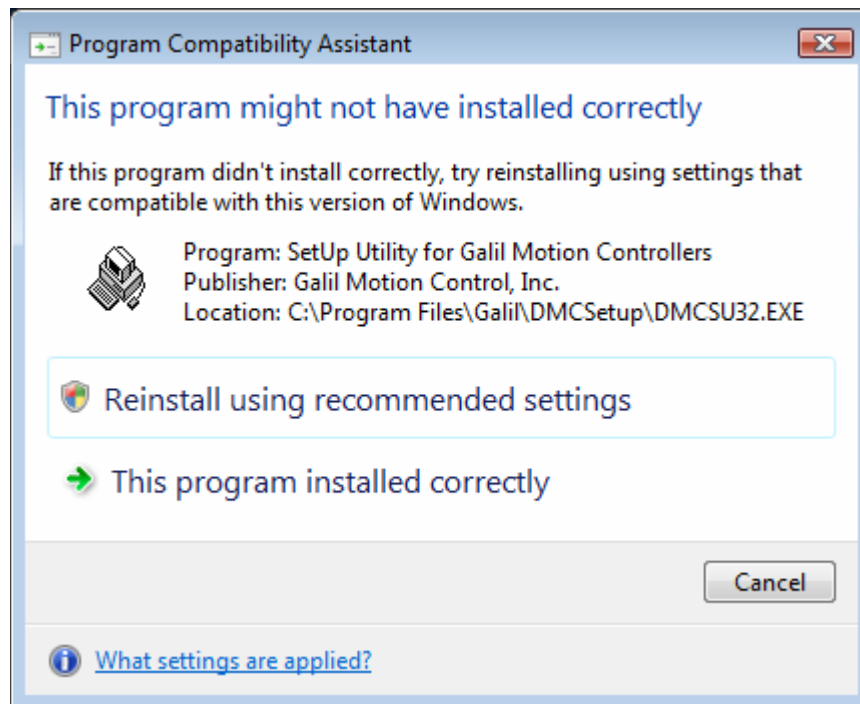


Figure 11. Possible Error Dialog seen after running DMCSetup for the first time.

WSDK: When using the log function in the terminal mode, the application should be run as an administrator. This is so that the application may write to its log file in C:\Program Files\Galil\WSDK\. Without administrator privileges, the log will not be saved.

Appendix – Removing Duplicate Registry Copies

If a program such as SmartTerm is opened without administrator privileges and the registry is then edited, duplicate copies of registry keys can be created. When added from an application run in administrator mode, registry keys are written to:
HKEY_LOCAL_MACHINE\SOFTWARE\Galil\

When created from an application run in standard-user mode, registry keys are created in 4 places:

HKEY_CLASSES_ROOT\VirtualStore\MACHINE\SOFTWARE\Galil\

HKEY_CURRENT_USER\Software\Classes\VirtualStore\MACHINE\SOFTWARE\Galil

HKEY_USERS\S-1-5-21-2179211232-81806863-2703696246-1000\Software\Classes\VirtualStore\MACHINE\SOFTWARE\Galil\

HKEY_USERS\S-1-5-21-2179211232-81806863-2703696246-1000_Classes\VirtualStore\MACHINE\SOFTWARE\Galil\

Note: The path key “S-1-5-21-2179211232-81806863-2703696246-1000” in the last two above is variable, and will vary on different machines.

If controllers are added to the registry in standard-user mode and undesired registry behavior is experienced, deleting just the controllers in “HKEY_CLASSES_ROOT\VirtualStore\MACHINE\SOFTWARE\Galil\” is sufficient to remove the improperly added keys. The controllers can then be re-added to the registry through an application run in administrator mode.

Galil does not currently support 64-bit Vista nor ISA-based cards on MS Vista 32.

Galil Software on www.galilmc.com

<http://www.galilmc.com/support/download.html>