

ProtoTRAK®

Offline Programming Manual

For CNC models:

- ProtoTRAK VM
- ProtoTRAK SM
- ProtoTRAK VL
- ProtoTRAK SL
- ProtoTRAK SMX
- ProtoTRAK SLX
- ProtoTRAK EMX
- ProtoTRAK ELX
- ProtoTRAK PMX
- ProtoTRAK TMX

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1.0 Introduction

The ProtoTRAK Offline Programming System allows you to write, edit, and inspect programs for your ProtoTRAK using most standard IBM compatible computers.

Programming with the Offline system is essentially the same as programming through the ProtoTRAK keyboard with a few differences. This manual will provide installation instructions for the offline and highlight the differences in programming between using the offline and the control pendant. The basic programming instruction is left to the programming, operating, and care manual you received with your ProtoTRAK CNC.

This manual is a part of the Offline Programming option ordered with part number PT4OL. The offline programming option includes:

- ProtoTRAK PT4OL CD (P/N 23823-2)
- Parallel (P/N 22648-2), or USB (P/N 23770) Hardware Keys
- Manual (P/N 23298)

In addition, you are entitled to a free copy of each of these programming manuals, download from website www.southwesternindustries.com

For our PT8OL offline software, which is free to the user and can be downloaded from our website, this manual also contains a few pages that pertain specifically to it. Please note that section 3.0 is not applicable to this software and hence no option key is necessary.

Virus Protection:

As a device, ProtoTRAK CNCs are not generally susceptible to viral infections. The part "programs" they run are non-executable text files. You can further assure protection by avoiding e-mail programs and web browser programs loaded onto the ProtoTRAK and by using a router with a firewall. An anti-virus program is not necessary since the virus risk is low, and is not recommended because the background tasks may cause damage by interfering with ProtoTRAK real-time operation.

Microsoft Updates:

Please note that the ProtoTRAK control is not designed to automatically download updates from Microsoft, or for that matter any 3rd party software. There is only a limited amount of free space on the compact flash card, and downloading files to it until it is full may result in the ProtoTRAK to stop working properly.

Also note, that administrators must exclude the ProtoTRAK from programs such as Windows Server Update Service, where the software will automatically try to download updates to the control.

2.0 Offline Computer Requirements

The ProtoTRAK Offline is designed to run on an IBM compatible PC, Pentium II or higher, CD-ROM drive, 256 MB RAM, 100MB free hard disk space, and Windows XP, Vista or Window 7.

3.0 Installing the ProtoTRAK Offline Programming System

The ProtoTRAK Offline system will be installed onto the hard disk of your computer. In order to save programs or use software options it will be necessary to install a hardware key in either the parallel (see Section 3.5) or USB (see Section 3.1) port.

ProtoTRAK Offline Versions

The ProtoTRAK Offline system comes with a CD that contains three different versions of the ProtoTRAK Control.

Use the file starting with "pt4ol" to install the software to program the ProtoTRAK VM, SM, VL and SL.

Use the file starting with "sxol" to install the software to program the ProtoTRAK SMX and SLX.

Use the file starting with "pmxol" to install the software to program the ProtoTRAK PMX.

The EMX/ELX and TMX are free downloads available from our website at any time. Because they are free, they do not require the options key discussed in the sections below. For any of the above mentioned software, please visit www.southwesternindustries.com

You may install all of them if you wish to program all control types.

3.1 Installing the USB Options Key & Driver



3.1.1 Installing the USB Hardware Key (Dongle)

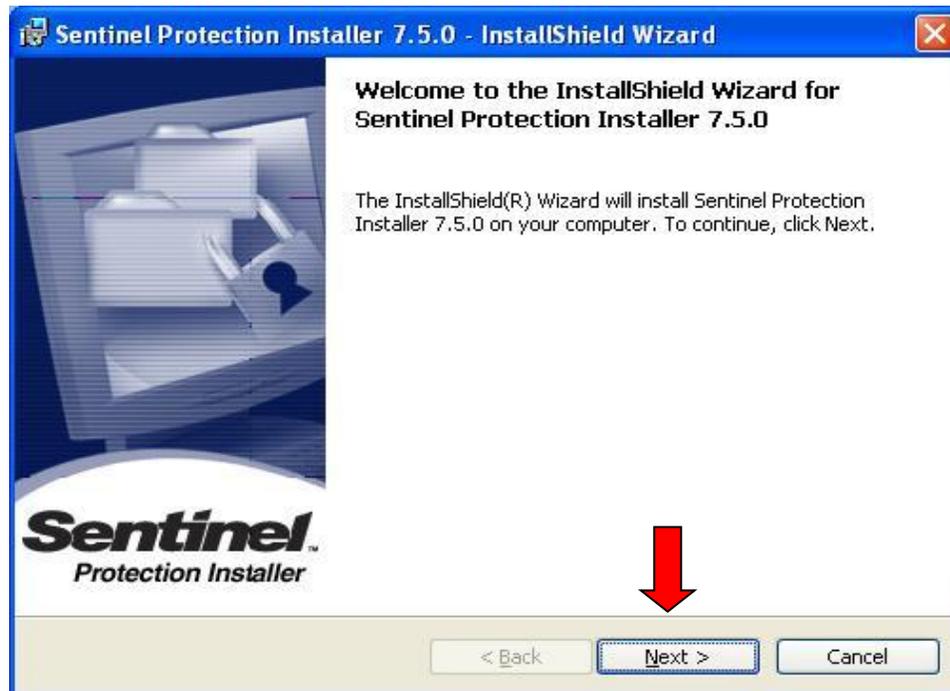
Note: The purpose of the Sentinel Drivers is for the USB dongle you'll have obtained for your offline. The drivers are a set of instructions for the computer on how to interpret the functionality of the dongle. The dongle itself serves as a key, enabling your offline to perform most if not all the functions that it's capable of. Without this, your offline will simply work as a demo and you'll be unable to save files and perform other functions. This dongle contains the options you've purchased, such as the DXF option.

***** Do not plug in the USB dongle beforehand. Failure to comply may mean having to go through the driver removal process, only to have to reinstall everything again. *****

To install the Sentinel Drivers you'll need to perform the following functions:

1. Insert CD (P/N 23823-2) into your CD drive.
2. Double Click My Computer, then the CD-ROM Drive, then on the Sentinel Protection Installer executable file. For a note about installing on Vista see section 3.1.2.

3. Click on Next, followed by Accept, Next, Complete, Install, Yes, and then Finish.





4. Click Start, then Shutdown and Restart.
5. Once computer has restarted, insert dongle into an open USB port.
6. A USB icon should appear near the time with a bubble floating above it reading "Safe Net USB UltraPRO/SuperPro". The "Found New Hardware" bubble will then follow. Once it disappears, the dongle should be fully installed.



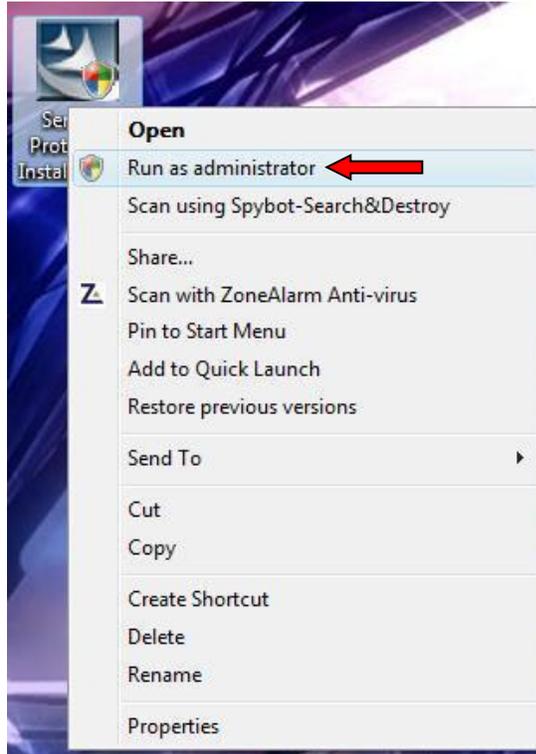
7. Launch the offline software of your choice then go into Program In/Out, Save, and verify if the Save File is in black.

3.1.2 Installing Sentinel drivers on Windows Vista

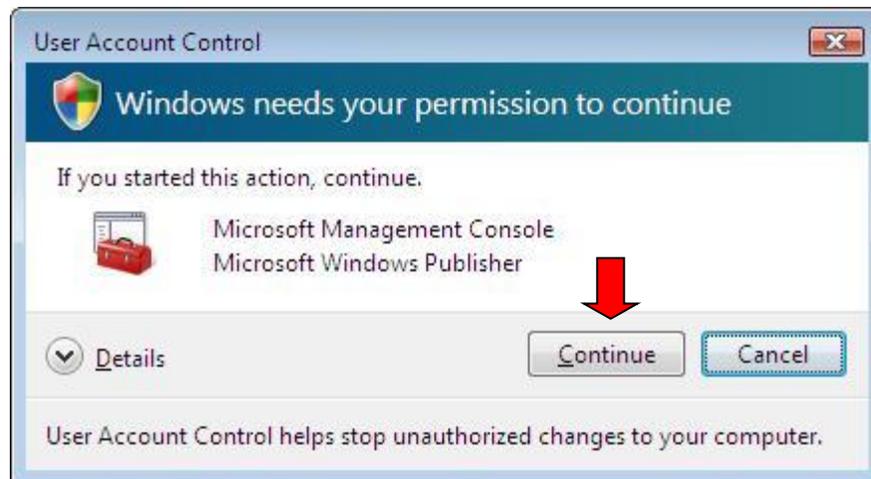
Note: There are two methods to do this. One is to use the "Run As Administrator" function, and the other is to temporarily disable the User Access Control (UAC).

Run As Administrator

1. Right click on the Sentinel Protection Installer and click on Run as Administrator.



2. Click "Continue" on the prompt.



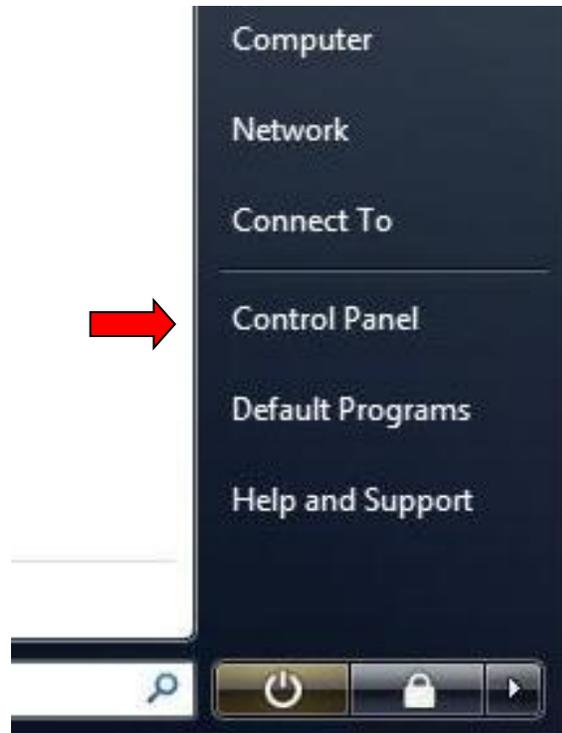
3. Follow the instructions in section 3.1.1 starting with Step 2 to proceed with the rest of the installation.

3.1.3 Disabling the UAC on Windows Vista

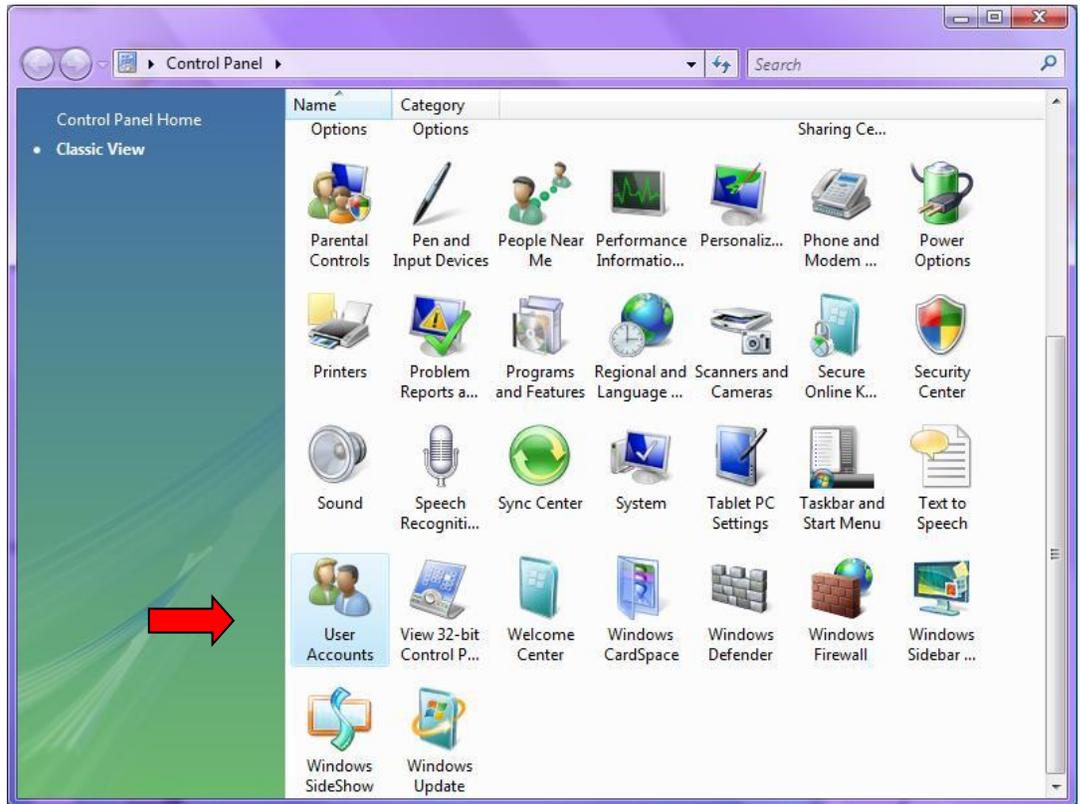
Note: This is only for the purposes of installing the Sentinel Drivers.

To turn the UAC back on, follow the directions again and check the box instead of unchecking it.

1. Press the Windows Start key on your keyboard and click Control Panel.



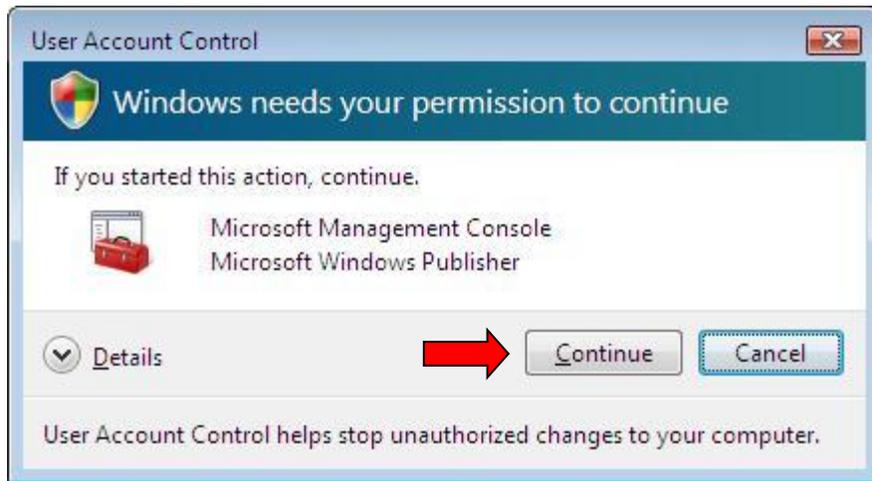
2. Locate User Accounts and Double Click it.



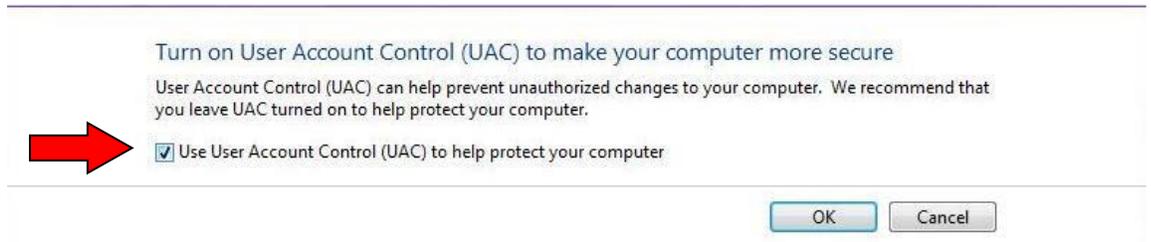
3. Click on the Turn User Account Control on or off link.



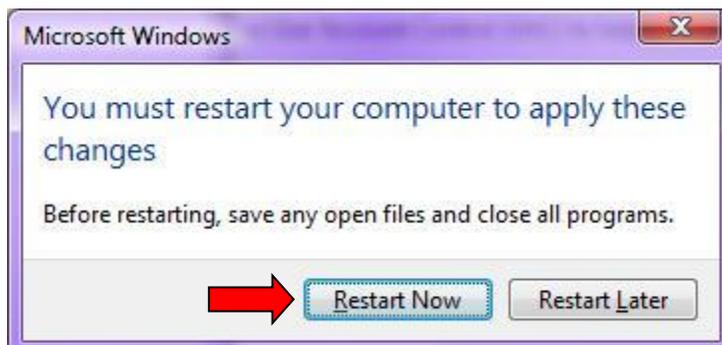
4. Click "Continue" on the User Account Control Prompt.



5. Uncheck "Use User Account Control (UAC) to help protect your computer" then click "OK".



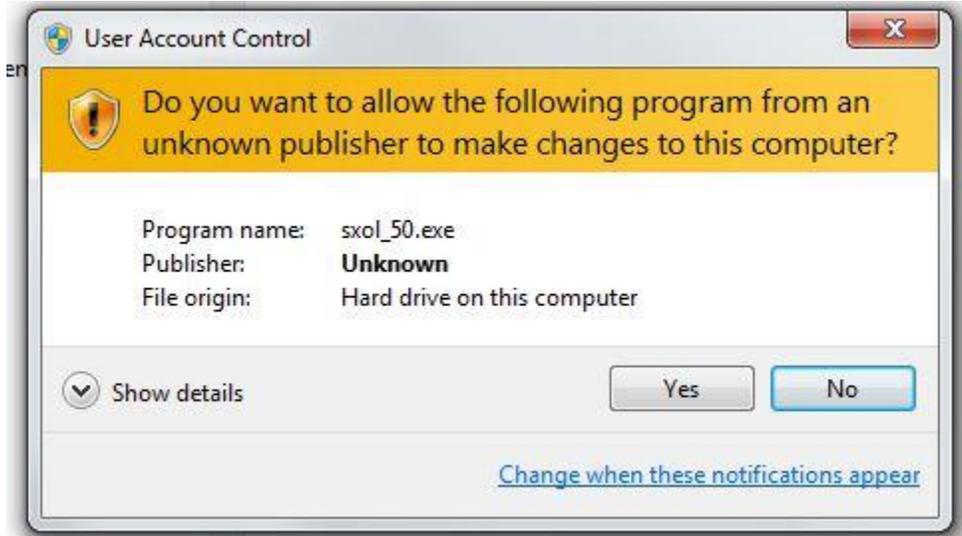
6. Click "Restart Now".



7. Follow the instructions for Sentinel Driver Installation under section 3.1.1.

3.2 Installing the ProtoTRAK software on Windows 7 & earlier.

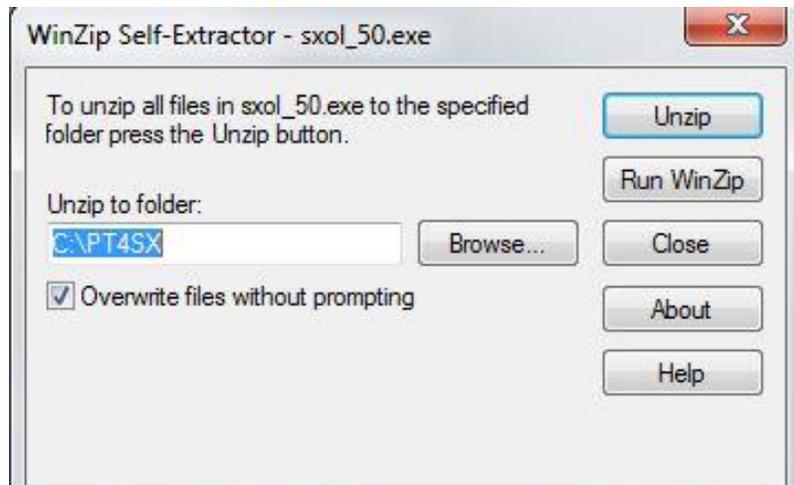
1. Double-click the offline file of your choice to begin installation. They will all have a similar installation method.



2. For Win7 you may see a prompt like this. For installing on Vista, see section 3.1.2. Click the **YES** Button



3. Click the **OK** Button if prompted.



4. Click the **Unzip** Button to extract the files to the default location.

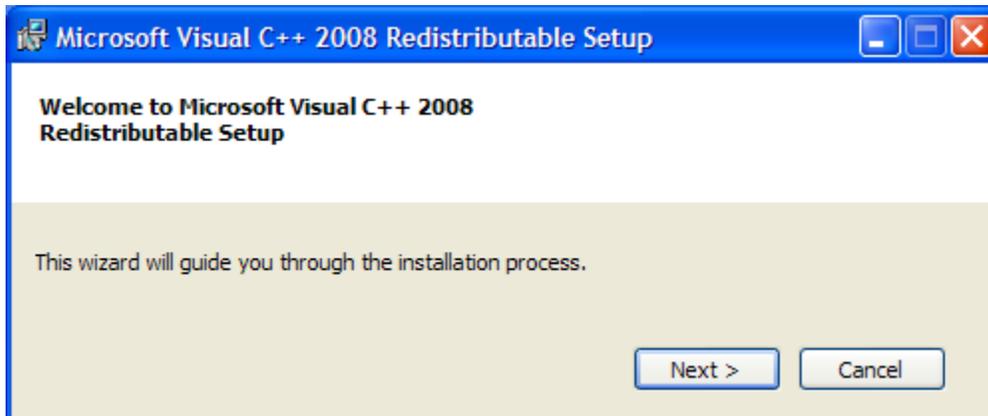


5. Click the **OK** Button.
6. Close the open windows.

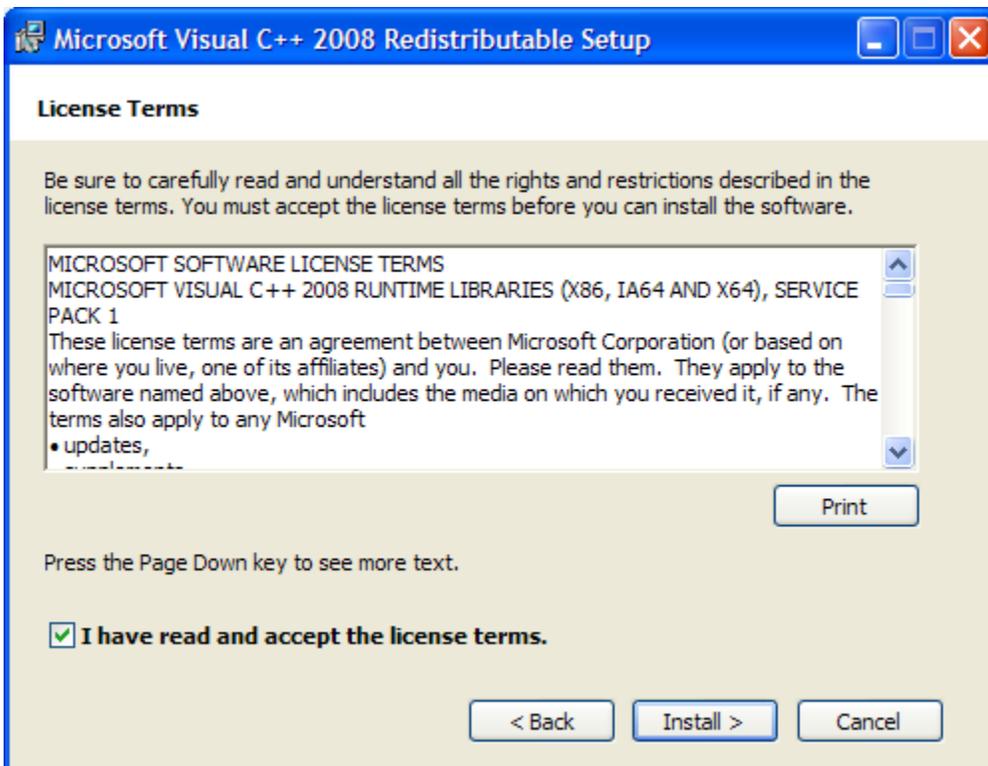
3.3 Installing the Microsoft® Visual C++ 2008 Library

Some of the software options, such as the Parasolid converter or Verify option, will require some extra files from Microsoft's library in order to function properly. Please follow the steps below in order to install these before using these options.

1. On the CD, find the file called `vcredist_x86.exe`, and double click on it (Alternatively, you can also download the latest version directly from the Microsoft® website). You should get a window like the one below. If you do not, please see step 4.



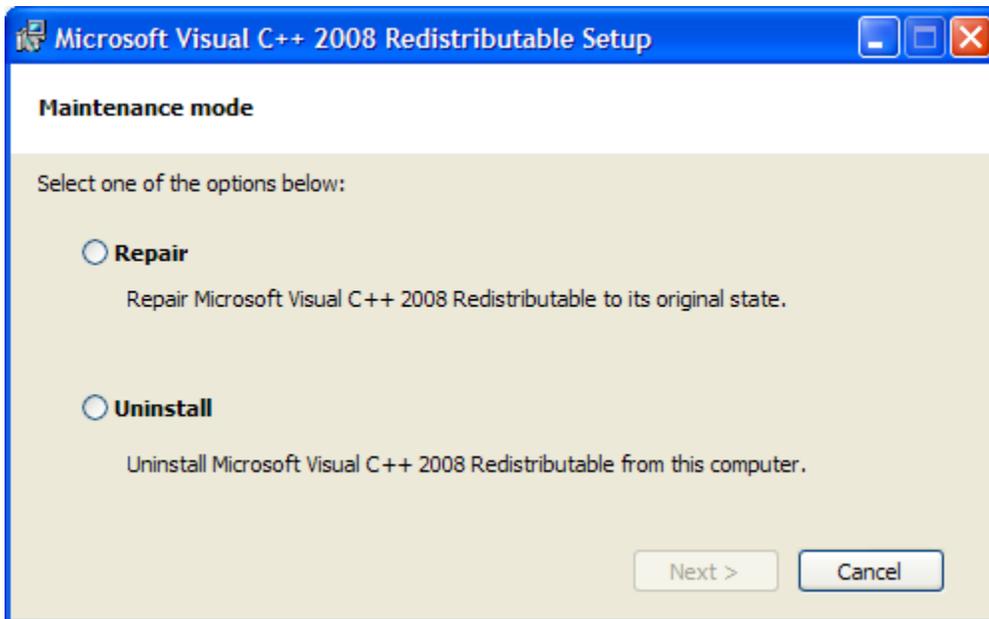
2. Check the box that says "I have read and accept the license terms", and then click on the Install button. This should copy all the necessary files onto your system.



3. Once the files have finished copying, click on the Finish button.

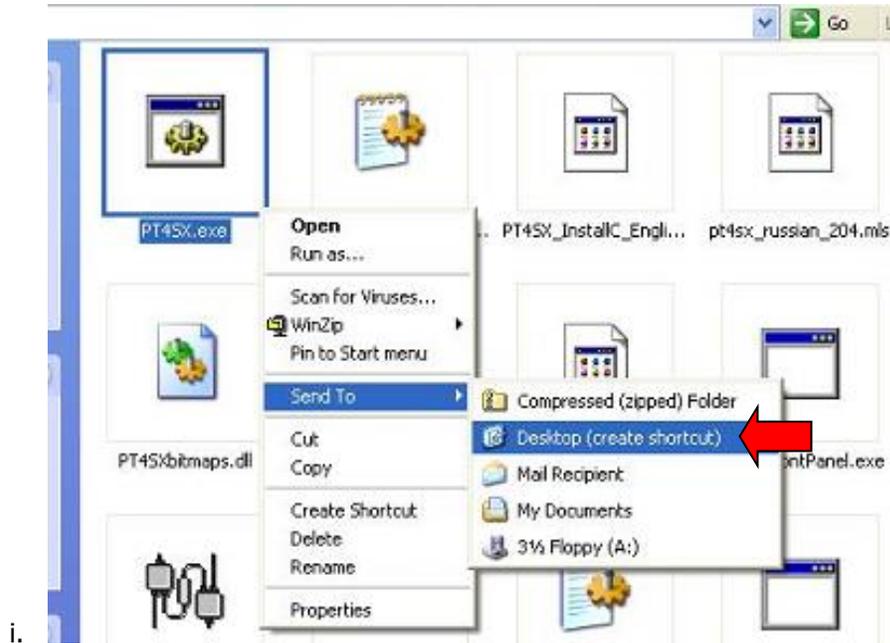


4. If your computer already has a version of the Microsoft Visual C++ distribution installed, you may see a window such as the one below. If this is the case, simply click on the Cancel button, and proceed to run the ProtoTRAK offline software.



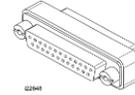
3.4 Creating Offline Shortcut.

1. Double Click on My Computer, then the C:\ drive, followed by the folder where the software was installed.



2. Right Click on the EXE that launches our software:
SMX/SLX offline=PT4SX.exe
PMX and TMX offline=Cadcamloader.exe
SM/SL/VM/VL offline=PT4.exe
EMX / ELX offline = PT6OL-UserInterface.exe
3. Move your mouse over Send To then click Desktop (Create Shortcut). The purpose for this is so that you'll have the shortcut icon on your desktop for ease of access so that you'll be able to run your offline from there rather than having to access the installation folder every time.
4. Close the Folder.

3.5 Using the Parallel Options Key



3.5.1 Installing on Windows XP

Note: Unless you have a problem, you will not need to install the hardware key drivers on the PT40L CD. If you do, follow the instructions for installing the Sentinel Drivers.

1. Insert the hardware key (aka dongle) that came with your offline kit into the printer port of your computer. If you have a printer cable already using this port, the hardware key should be plugged into the computer and the printer cable then plugged into the hardware key.
2. Follow the instructions in section 3.1.1.

3.6 Checking the Hardware Key Installation

You can assure that the hardware key has been installed properly by starting the ProtoTRAK Offline program and going to the Program In/Out Mode. If the SAVE key is grayed out, the hardware key is not being recognized.

Be sure to double-check the physical installation of the key. If you did not already load the sentinel drivers found on the CD, do so now. Refer previous sections above for instructions on how to install the key.

If you still have problems, contact the Southwestern Industries Service Department at (800) 367-3165.

3.7 Software Options

There are a number of optional converters available with your ProtoTRAK Offline system. The converters that convert past ProtoTRAK and TRAK CNC systems to work in the V, SX and S series CNC's are provided at no charge. Other converters are available, generally at a price, and it is our intention to add to the library of converters over time.

To check to see which converters are available and active with your offline software, go to the Set Up Mode, Service Codes, Software, Code 318. All available converters are listed. The ones in black are currently activated, the grayed out ones are not activated.

See the Programming and Operation manual for your ProtoTRAK CNC for more information about converters.

4.0 Programming with ProtoTRAK Offline

Once you launched the offline software of your choice you will see a screen that looks similar Figure 4.0 below. Note – the PMX and TMX software will look a little different.

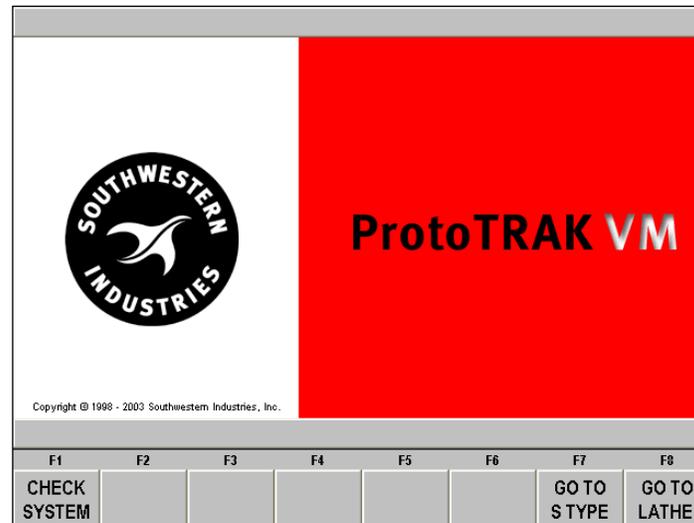


Figure 4.0
The first Offline Screen.

Each Offline kit contains the program to run all of the current ProtoTRAK controls. On Figure 4.0 above, the screen says "ProtoTRAK VM" which is the CNC used on TRAK V series milling machines. You can change the system by using the softkeys in the F7 and F8 positions. For example, if you wanted to program (or look at) the ProtoTRAK VL CNC for TRAK V Series Lathes, you would select the softkey "Go To Lathe". Once the system is switched to a lathe CNC, the F8 softkey will say "Go To Mill".

The softkey selections may be made either with your computer's mouse or using the function (F) keys on the keyboard. For the Offline, the F1 softkey "Check System" may be ignored.

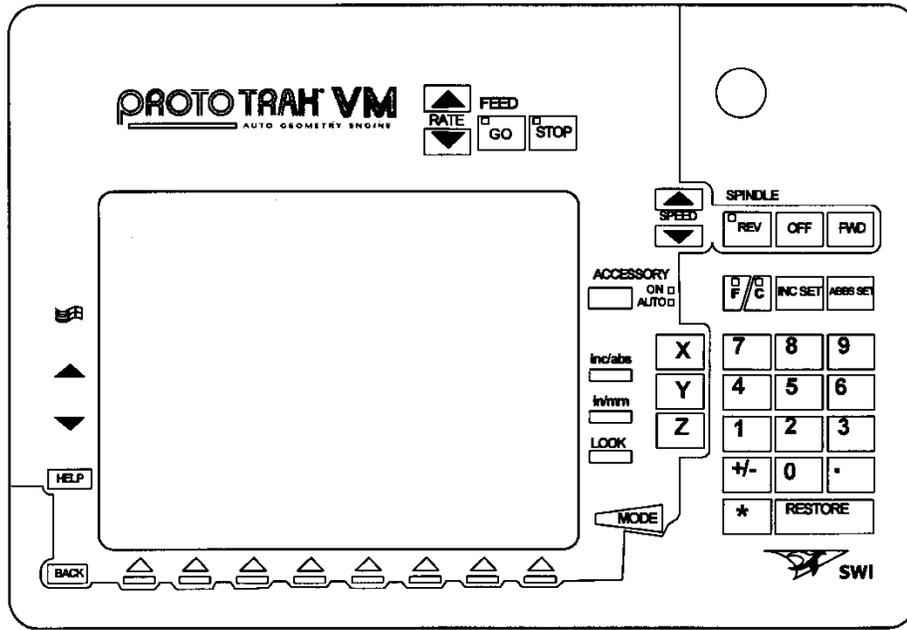
To begin programming, press alt+M to get to the Select Mode screen of the ProtoTRAK. Using the offline is almost identical to using the ProtoTRAK CNC at your machine tool.

The next sections will give you the keyboard equivalents for the hard keys on the ProtoTRAK CNC display.

To quit the ProtoTRAK Offline application press the PAUSE BREAK key on your computer keyboard. Be sure to save programs and tools before quitting. If the ProtoTRAK does not respond to the PAUSE BREAK key press, it could be that you inadvertently deselected the ProtoTRAK window. Simply mouse click anywhere within the ProtoTRAK screen and press PAUSE BREAK again.

To minimize the ProtoTRAK screen so you can see the Windows desktop, press Alt + W, then F1. To get the ProtoTRAK screen back, press Alt + B.

4.1 ProtoTRAK VM Keyboard Equivalents

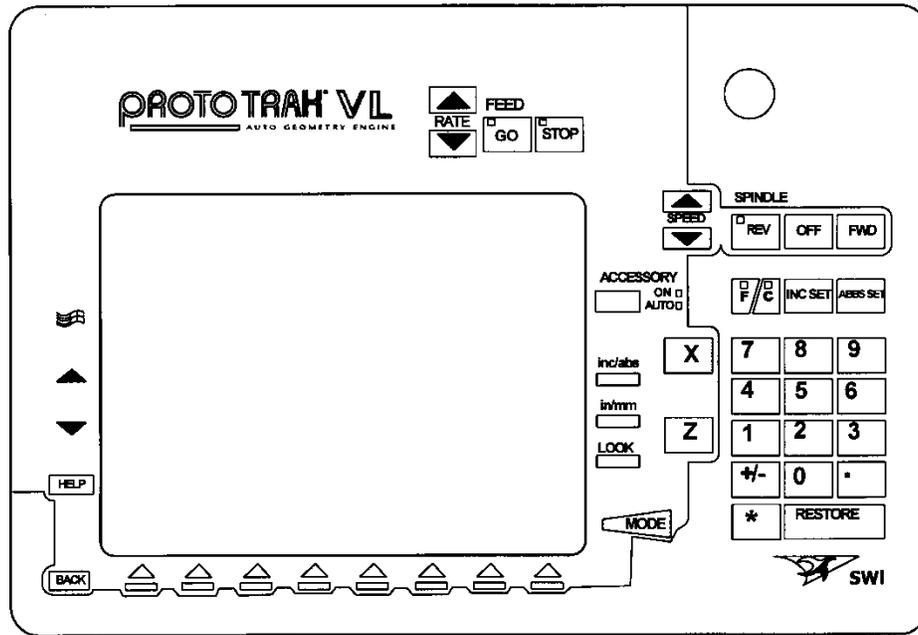


ProtoTRAK VM Key	Keyboard Equivalent
GO	Alt + G
STOP	Alt + S
REV	Alt + R
OFF	Alt + O
FWD	Alt + F
ACCESSORY	Alt + C
F / C	Alt + Z
INC SET	Alt + I
ABS SET	Alt + A or Enter
X	X
MODE	Alt + M or ESC key
Y	Y
Z	Z

ProtoTRAK VM Key	Keyboard Equivalent
Numbers 0 - 9	Numbers 0 - 9
+/-	+ and -, default is positive
INC/ABS	Alt + [
IN/MM	Alt +]
LOOK	Alt + L
RESTORE	Use back/clear key
SYS	Alt + W
▲	Alt + up arrow
▼	Alt + down arrow
HELP	Alt + H
BACK	Alt + B
RESTORE IN AGE	Alt + Backspace

Note: AGE refers to the Auto Geometry Engine in irregular pocket & profile events.

4.2 ProtoTRAK VL Keyboard Equivalents

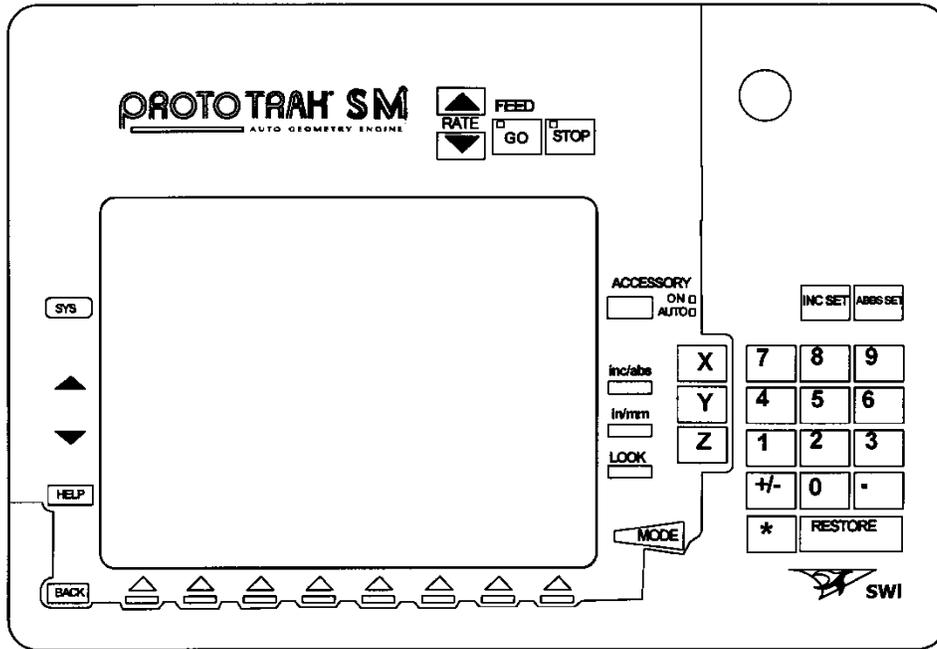


100711

ProtoTRAK VL Key	Keyboard Equivalent
GO	Alt + G
STOP	Alt + S
REV	Alt + R
OFF	Alt + O
FWD	Alt + F
ACCESSORY	Alt + C
F / C	Alt + Z
INC SET	Alt + I
ABS SET	Alt + A or Enter
MODE	Alt + M or ESC key
X	X
Z	Z
Numbers 0 - 9	Numbers 0 - 9
+/-	+ and -, default is positive

ProtoTRAK VL Key	Keyboard Equivalent
INC/ABS	Alt + [
IN/MM	Alt +]
LOOK	Alt + L
RESTORE	Use back/clear key
SYS	Alt + W
▲	Alt + up arrow
▼	Alt + down arrow
HELP	Alt + H
BACK	Alt + B

4.3 ProtoTRAK SM Keyboard Equivalents



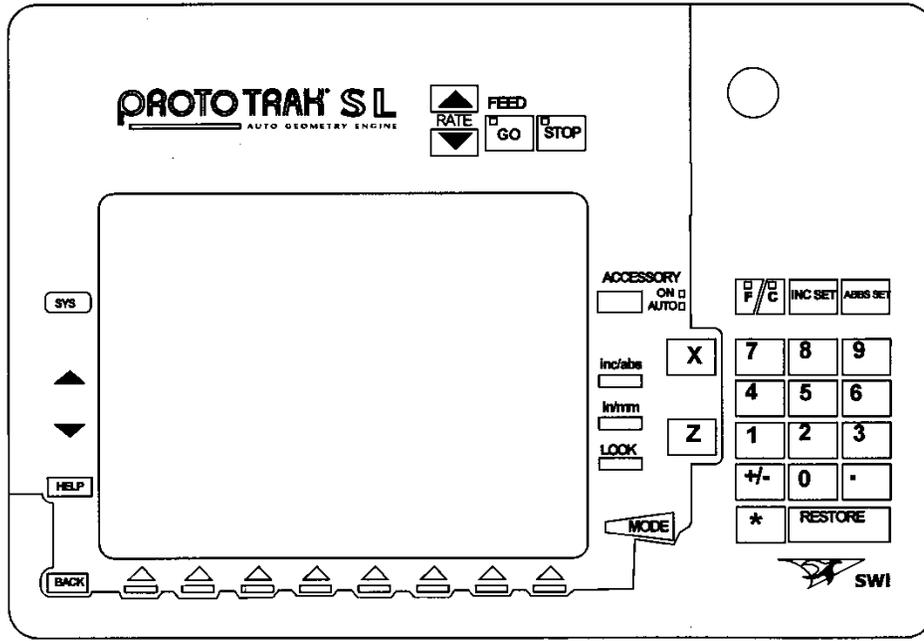
i00741

ProtoTRAK SM Key	Keyboard Equivalent
GO	Alt + G
STOP	Alt + S
ACCESSORY	Alt + C
F / C	Alt + Z
INC SET	Alt + I
ABS SET	Alt + A or Enter
X	X
Y	Y
Z	Z
MODE	Alt + M or ESC key

ProtoTRAK SM Key	Keyboard Equivalent
Numbers 0 - 9	Numbers 0 - 9
+/-	+ and -, default is positive
INC/ABS	Alt + [
IN/MM	Alt +]
LOOK	Alt + L
RESTORE	Use back/clear key
SYS	Alt + W
▲	Alt + up arrow
▼	Alt + down arrow
HELP	Alt + H
BACK	Alt + B
RESTORE IN AGE	Alt + Backspace

Note: AGE refers to the Auto Geometry Engine in irregular pocket & profile events.

4.4 ProtoTRAK SL Keyboard Equivalents

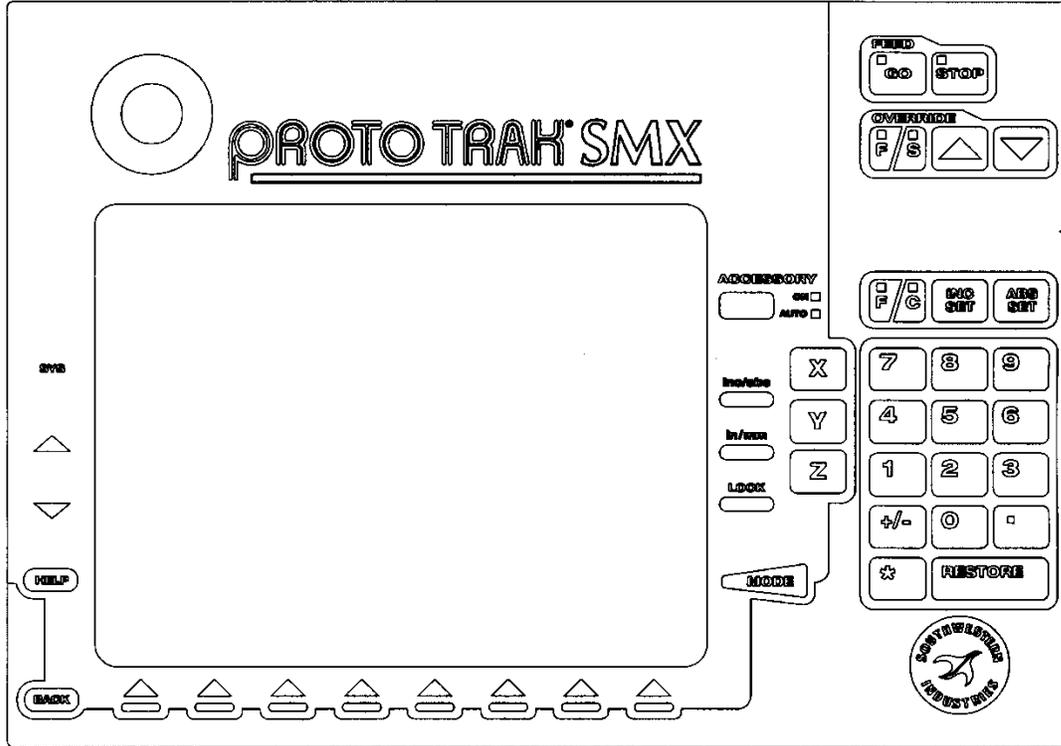


i00709

ProtoTRAK SL Key	Keyboard Equivalent
GO	Alt + G
STOP	Alt + S
ACCESSORY	Alt + C
F / C	Alt + Z
INC SET	Alt + I
ABS SET	Alt + A or Enter
X	X
Z	Z
MODE	Alt + M or ESC key
Numbers 0 - 9	Numbers 0 - 9
+/-	+ and -, default is positive

ProtoTRAK SL Key	Keyboard Equivalent
INC/ABS	Alt + [
IN/MM	Alt +]
LOOK	Alt + L
RESTORE	Use back/clear key
SYS	Alt + W
▲	Alt + up arrow
▼	Alt + down arrow
HELP	Alt + H
BACK	Alt + B

4.5 ProtoTRAK SMX Keyboard Equivalents



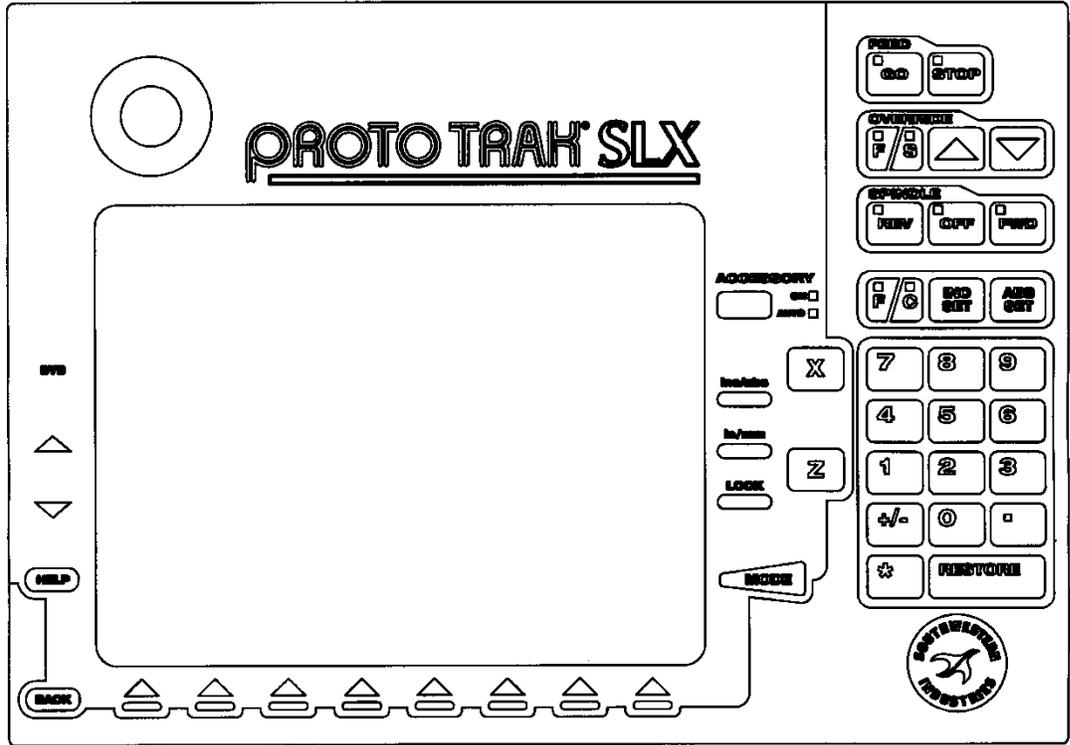
I24003

ProtoTRAK SMX Key	Keyboard Equivalent
GO	Alt + G/G
STOP	Alt + S/S
REV	Alt + R
OFF	Alt + O
FWD	Alt + F
ACCESSORY	Alt + C
F / C	Alt + Z
INC SET	Alt + I
ABS SET	Alt + A or Enter
X	X
Y	Y
Z	Z
Numbers 0 - 9	Numbers 0 - 9
+	+ default:positive
-	- default:positive

ProtoTRAK SMX Key	Keyboard Equivalent
INC/ABS	Alt + [
IN/MM	Alt +]
LOOK	Alt + L
RESTORE	Use back/clear key
SYS	Alt + W
▲	Alt + up arrow
▼	Alt + down arrow
HELP	Alt + H
BACK	Alt + B
MODE	Alt + M or ESC key
RESTORE IN AGE	Alt + Backspace
Advanced Features w/ Verify	
▲	U, Speed up the tools feed rate
▼	D, Slow down the tools feed rate
GO	G
STOP	S

Note: AGE refers to the Auto Geometry Engine in irregular pocket & profile events.

4.6 ProtoTRAK SLX Keyboard Equivalents



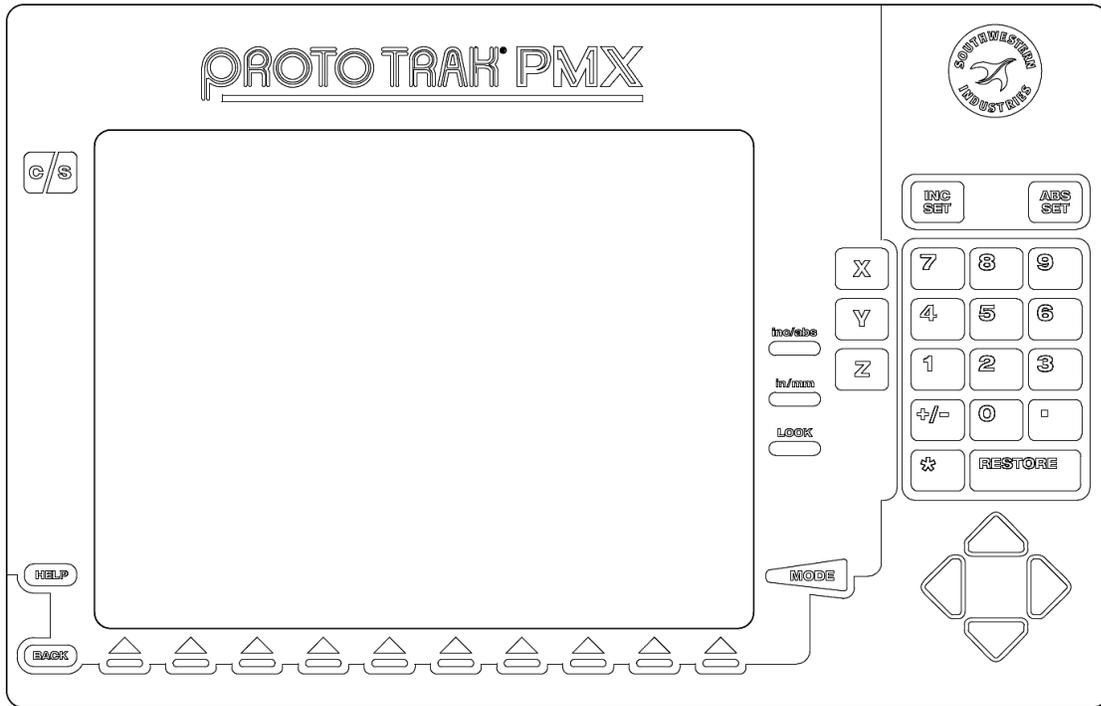
i24004

ProtoTRAK SLX Key	Keyboard Equivalent
GO	Alt + G/G
STOP	Alt + S/S
REV	Alt + R
OFF	Alt + O
FWD	Alt + F
ACCESSORY	Alt + C
F / C	Alt + Z
INC SET	Alt + I
ABS SET	Alt + A or Enter
X	X
Z	Z
Numbers 0 - 9	Numbers 0 - 9
+/-	+ and -, default is positive
INC/ABS	Alt + [

ProtoTRAK SLX Key	Keyboard Equivalent
INC/ABS	Alt + [
IN/MM	Alt +]
LOOK	Alt + L
RESTORE	Use back/clear key
SYS	Alt + W
▲	Alt + up arrow
▼	Alt + down arrow
HELP	Alt + H
BACK	Alt + B
MODE	Alt + M or ESC key

Advanced Features w/ Verify	
▲	U, Speed up the tools feed rate
▼	D, Slow down the tools feed rate
GO	G
STOP	S

4.7 ProtoTRAK PMX Keyboard Equivalents

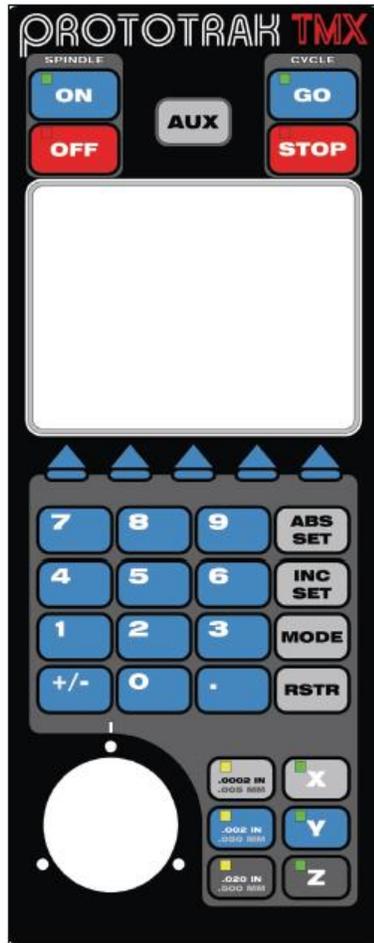


ProtoTRAK PMX Key	Keyboard Equivalent
GO	Alt + G
STOP	Alt + S
INC SET	Alt + I
ABS SET	Alt + A or Enter
X	X
Y	Y
Z	Z
Numbers 0 - 9	Numbers 0 - 9
+/-	+ and -, default is positive
INC/ABS	Alt + [
INCH / MM	Alt +]

ProtoTRAK PMX Key	Keyboard Equivalent
LOOK	Alt + L
RESTORE	Use back/clear key
SYS	Alt + W
▲	Up arrow
▼	Down arrow
◀	Left arrow
▶	Right arrow
HELP	Alt + H
BACK	Alt + B
MODE	Alt + M or ESC key
RESTORE IN AGE	Alt + Backspace

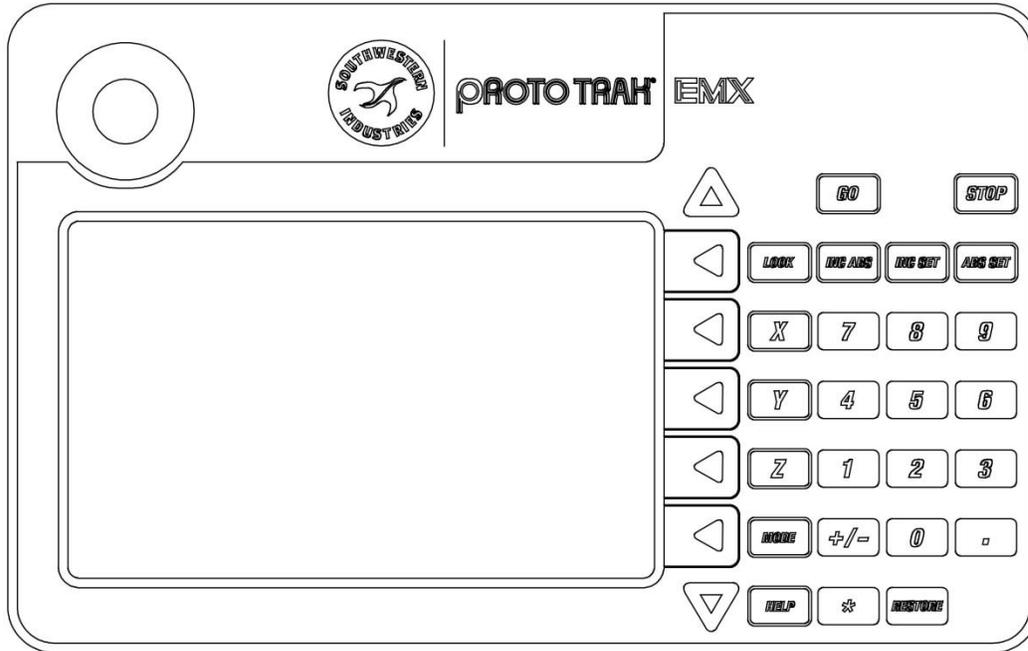
Note: AGE refers to the Auto Geometry Engine in irregular pocket & profile events.

4.8 ProtoTRAK TMX Keyboard Equivalents



ProtoTRAK TMX Key	Keyboard Equivalent
GO	Alt + G/G
STOP	Alt + S/S
Numbers 0 - 9	Numbers 0 - 9
+	+ default:positive
-	- default:positive
ABS SET	Alt + A or Enter
INC SET	Alt + I
MODE	Alt + M or ESC key
RESTORE (RSTR)	Use backspace key
X	X
Y	Y
Z	Z

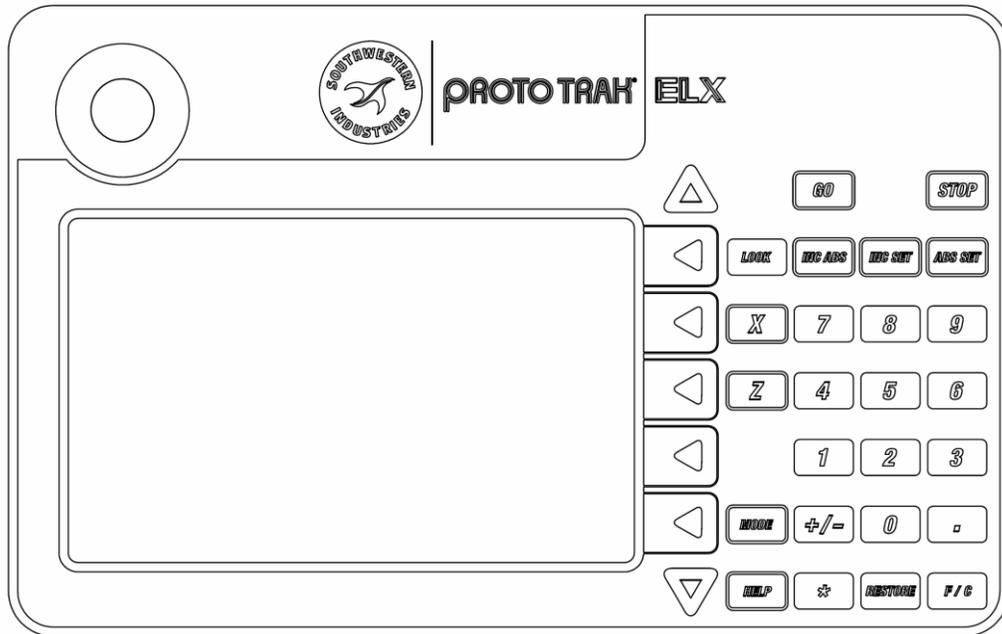
4.9 ProtoTRAK EMX / ELX Keyboard Equivalents



i01276

ProtoTRAK ELX Key	Keyboard Equivalent
GO	Alt + G
STOP	Alt + S
5 Menu Softkeys	F1 – F5
INC SET	Alt + I
ABS SET	Alt + A or Enter
MODE	Alt + M or ESC key
X	X
Z	Z

ProtoTRAK EMX / ELX Key	Keyboard Equivalent
Numbers 0 - 9	Numbers 0 - 9
+/-	+ and -, default is positive
INC/ABS	Alt + [
IN/MM	Alt +]
LOOK	Alt + L
RESTORE	Alt + Backspace
▲	Alt + up arrow
▼	Alt + down arrow
HELP	Alt + H
BACK	Alt + B



i26005-3

5.0 Turning On/Off SLX and SMX Options

For programs that are written on the ProtoTRAK Offline system to work on the CNC, there must be feature agreement between the two. Some feature dissimilarity will simply be ignored. For example, if spindle speeds are present in the program but not an active feature of the ProtoTRAK, the input for spindle speed will simply be ignored. Other differences will stop the program from running. For example, a program that calls for an irregular island event will not work on a ProtoTRAK model that lacks this feature.

The ProtoTRAK offline for the SMX and SLX comes with the control software options loaded. It is easy to turn these features on or off in order to produce a program that is suitable for the machine.

1. From the Select Mode screen, press alt+W.
2. Select the softkey labeled: Options On/Off.
3. Use the Data Forward and Data Back softkeys and the On/Off toggle softkey to select and configure the options as needed.

6.0 Setting Screen Resolutions

Resizing the ProtoTRAK Offline in order to fill the screen is accomplished through the properties function of your Windows® Operating System.

6.1 Windows XP/7 and Vista

- Windows XP allows you to associate the screen setting to the application so that it automatically resizes itself when the application is launched and then resizes when the application is closed.

- To do this, first, place an icon on your desktop for the Offline programming system. You may want to create different shortcuts on your desktop to call up the different versions. For the VM, SM, VL and SL version of offline, the file that starts the program is "\\PT4\PT4.exe". For the SMX and SLX, the file that starts the program is "\\Pt4sx\PT4SX.exe".
- Place the cursor on the desktop icon, then right click.
- Select Properties. In the "Run" field, change to "maximize". Then click on the compatibility tab. Under the Display Settings, select "Run in 640 x 480 Resolution".

The 640 x 480 resolution is now associated with the ProtoTRAK Offline.

7.0 Opening / Saving Programs using the EMX / ELX offline software

The EMX / ELX offline software saves and retrieves files from the two different folders within the location where the offline software was copied to.¹ So, for example, if the offline software was copied to a PT6OFFLINE folder within the C drive, the location of the stored MX2 files would be "C:\PT6OFFLINE\Programs".

When you wish to transfer these files to your ProtoTRAK EMX or ELX control, you will first need to copy them onto a USB thumbdrive.² From there, you can take the thumb drive over to your ProtoTRAK EMX / ELX and run a service code 341 to transfer all the files into the ProtoTRAK's internal storage.

If you purchased the USB MEMORY option along with your ProtoTRAK EMX / ELX, the offline software is included within the thumb drive. The default storage directory is ready to use with your ProtoTRAK EMX / ELX control.

1. The "Programs" folder contains the mill part programs while the lathe part programs are stored in "Lathe Programs" folder.
2. The easiest way to do this is to copy over the desired folder to the root directory of the USB thumbdrive.

8.0 Opening / Saving Programs using the TMX offline software

The TMX offline software looks at the first available removable drive to open and save programs from, just like the actual machine. On that removable drive, there should be a folder called "2OP PROGRAMS", where all the part programs will be located. So, for example, if your USB flash drive was recognized as drive E on your PC, then the location of your programs would be E:\2OP PROGRAMS.

Please note that the TMX software only recognizes two kinds of files. Files with the .PT4 file extension, with only a numerical name less than 8 digits, and gcode files with the .GCD file extension. Once the programs are saved to the flash drive, it is ready to take over to the ProtoTRAK 2OP machine and once it is plugged in, the TMX control will be able to open them directly from the flash drive.

Southwestern Industries, Inc

TRAK Warranty Policy

Warranty

TRAK products are warranted to the original purchaser to be free from defects in workmanship and materials for the following periods:

Product	Warranty Period	
	Materials	Factory Labor
New TRAK/ProtoTRAK	1 Year	1 Year
Any EXCHANGE Unit	90 Days	90 Days

The warranty period starts on the date of the invoice to the original purchaser from Southwestern Industries, Inc. (SWI) or their authorized distributor.

If a product, subsystem or component under warranty fails, it will be repaired or exchanged at our option for a properly functioning unit in similar or better condition. Such repairs or exchanges will be made FOB Factory/Los Angeles or the location of our nearest factory representative or authorized distributor.

Disclaimers of Warranties

- This warranty is expressly in lieu of any other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligations or liability on the part of SWI (or any producing entity, if different).
- Warranty repairs/exchanges do not cover incidental costs such as installation, labor, freight, etc.
- SWI is not responsible for consequential damages from use or misuse of any of its products.
- TRAK products are precision mechanical/electromechanical/electronic systems and must be given the reasonable care that these types of products require.
- Accidental damage, beyond the control of SWI, is not covered by the warranty. Thus, the warranty does not apply if a product has been abused, dropped, hit or disassembled.
- Improper installation by or at the direction of the customer in such a way that the product consequently fails, is considered to be beyond the control of the manufacturer and outside the scope of the warranty.

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