

<b>Trotter Controls, Inc.</b>	<b>Process Specification</b>		NUMBER PS-0007	REVISION <b>A</b>
	<b>REPORT ORDER</b>			
TITLE <b>AdeptWindows &amp; NFS Mount Procedure</b> AWC File Backup Procedure	BY <b>V. Trotter</b>	CHK'D <b>GG</b>	MODEL	
	DATE <b>06/14/06</b>		SERIAL	
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## Summary

This report provides details on steps interface a PC to an Adept AWC060 controller. Items included in the report are detailed below.

- How to connect a PC to the controller using AdeptWindows
- How to mount the PC drive so this it can be accessed from the PC
- How to backup files on PRO6 series workcells

## Adept Windows & Controller Information

### Controller ID information

Software V+: 13.1 Edit K2 (this was upgraded from 13.0 7-11E0)

### Adept Windows & AWC Configuration Data

The PC must have TCP/IP protocol installed.

**Table 1 - PC network settings for AdeptWindows access.**

<b>Windows XP PC TCP/IP Address</b> Manually configured: Address: 172.16.200.1 Subnet Mask: 255.255.0.0
--

**Table 2 - Adept default IP address settings.**

<b>Adept AWC 060 TCP/IP Address</b> Address: 172.16.137.176 (default address) Subnet Mask: 255.255.0.0
--

### Setting NVRAM switches

- To boot using Adept Windows running of a PC as the primary interface, the switches in NVRAM must be set to use the Adept Windows interface on bootup. Note that the normal monitor will be blank once this is set. The switches are set using the CONFIG\_C utility located in the C:\UTIL directory. The procedure for setting the switches is outlined in the appendix.
- To boot using the VGB (existing keyboard & monitor), the switch in NVRAM must be set to use the VGB or serial interface or the mechanical dip switches must be set as shown above. The procedure for setting the switches is outlined in the appendix.

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In the event that Adept Windows cannot connect, a dip switch inside the left hand AWC060 controller can be set to override the NVRAM switches and allow operation from the VGB board. The switch settings are detailed in the appendix.

## Launching Adept Window / PC interface

To connect the PC to the controller, follow the steps outlined below:

- Configure the NVRAM switches for AdeptWindows interface via Ethernet. See the procedure detailed in the Appendix (Setting switches in NVRAM for PC / AdeptWindows interface via ethernet).
- Configure your PC TC/IP settings as shown in Table 1 - PC network settings for AdeptWindows access.
- Connect an Ethernet **crossover** cable to the PC Ethernet port and the Ethernet port on the leftmost AWCII processor in the VME chassis.
- Turn the Adept Controller off and restart it.
- After the Adept controller has had time to boot (2 minutes or so), launch AdeptWindows from the PC.
- Select **connect via Ethernet** to connect to the Adept controller. See Adept's AdeptWindows documentation for more details.
- Following the instructions in the following sections for drive mounting and file access

When finished with PC AdeptWindows access, configure the NVRAM switches for VGB/serial interface per the procedure outlined in the Appendix (Setting switches in NVRAM for VGB / Monitor interface) to allow operation from the VGB and monitor on the workcell.

## NFS Mount & Application Launch

To mount the PC's hard drive as an NFS drive on the Adept, the following lines must be typed in at the V+ monitor prompt once Adept Windows has been launched and is connected to the controller:

```
fset_tcp_/node_'aserver'_/address_172_16_200_1 [enter]
fset_nfs_/mount_'xc'_/node_'aserver'_/path_'C:\' [enter]
```

Some controllers will required the following commands:

```
fset_tcp_/node_'server1'_/address_172_16_200_1 [enter]
fset_nfs_/mount_'xc'_/node_'server1'_/path_'C:\' [enter]
```

*(note that \_ represents a space in the syntax shown, don't use underscore when you type the above commands)*

Type NET, then [enter] to see the available drive mounts and network status.

To launch the Cherry application from Adept Windows, do the following:

```
CD\ ;changes to the root directory
CD D:\CHERRY ;makes CHERRY the current directory
```

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LOAD LMOW ;loads AIM  
COM LMOW ;executes AIM and the application software

This will load AIM and the Cherry application. Now the file manager can then be used to back up system files to the PC. Note that the mounted PC hard drive is accessed by typing in XC into the NFS drive specification box in the file manager.

## File Backup

All system files were backed up for the system. In practice, the only files that need to be backed up are the files located in D:\CODELIB on the AWC controller. These files contain the setup data for the various products to be processed by the machine.

## Full System Backup

All the files on the system as well as the V+ OS and robot data were backed up and are provided on the included CD.

The following directories are located on the included CD:

Directory	Subdirectory	Description
AWC060 Drives Backup		
	Drive_D	V+ Operating system, AIM installation backup, Auto.V2, \CodeLib\ (active recipes), \VT_UTIL\ (special utilities for tuning SCARA), \Cherry\ (actual application comprised of AIM and control sequences used to control workcell)
V+ OS & Robot Configuration		Used to re-install V+ and robot data if the hard drive or controller was damaged
Misc Documents		Miscellaneous documents related to this project
Service Report		Contains this file

Note that the following directories were created on the customer supplied ThinkPad laptop:

C:\Adept => Has files related to AdeptWindows, etc. This allows the PC to communicate with the AWC controller.

C:\Adept\_Laser\_Backup => The Drive\_D files provided on the CD.

The full system backup is not required on a periodic basis. To back the system up fully, personnel should be trained in the use of AdeptWindows and the file manager included with AIM. The provided CD has the data required to recover from a catastrophic failure so this should not normally be necessary.

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## Periodic Backup

The information located in the D:\CODELIB should be backed up periodically. Note the following holds true:

D:\ => Contains V+ system

D:\ => Contains the application software and the working CODELIB (library of recipes)

We recommend the D:\CODELIB library be backed up to a floppy drive periodically since this contains all the setup data for the products being processed on the machine.

To backup the machine, follow the steps outlined in the sections below:

### Save the current recipe

The system used the working copy of the product recipe during runtime. Any edits are not saved to the hard drive or the recipe retrieval system unless the following steps are followed after the edits are completed. The recipe data should be saved before you do a full shutdown or retrieve another product setup to avoid loss of any edits made since the last time the data was saved.

- Open the Master Control Panel Menu.
- Observe the name of the current recipe that is loaded.
- Make sure that the robot is stopped. Press the STOP button on the Master Control Panel if necessary.
- Go to **UTILITIES** tab at the top of the screen.
- Click on **SAVE ALL DBS** (data bases)
- Also the following must be done to ensure all is saved when making changes in the file (program).
- Go to **SETUP** tab at the top of the screen.
- Click on **SETUP CODE**
- **\*\* Double click the correct program. \*\*** It is important the correct program is selected otherwise all the information is rewritten into a wrong file. This selects the file that the recipe that is currently active will be saved to.
- Click on the **SAVE** button. This saves the current recipe data to the target recipe selected in the previous step
- To finish click on the **DONE** button

### Backup D:\CODELIB to the C:\ drive (if present) or PC harddrive

#### Left Hand Side of File Manager Menu

- Click on **UTILITIES** tab at the top of the AIM menu .
- Click on **FILE MANAGER**.
- Click on the **Select LEFT** button.

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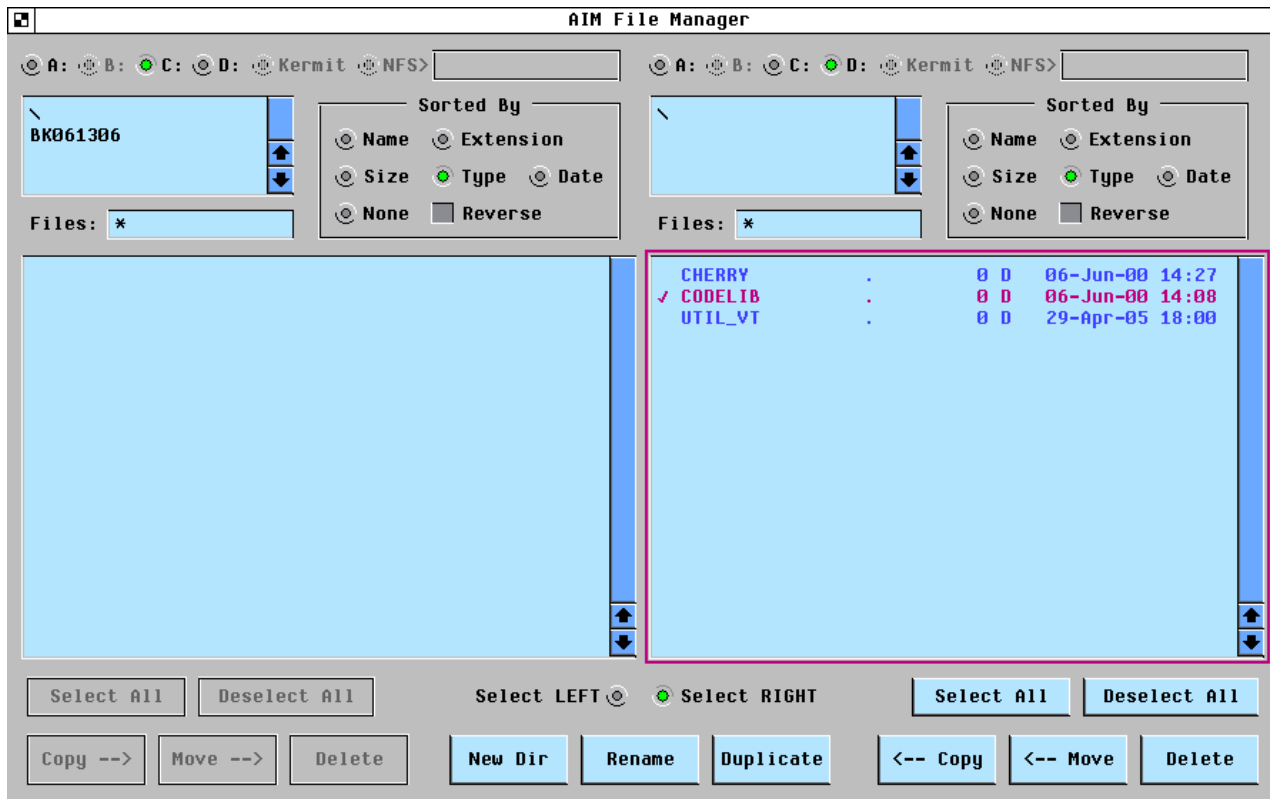
- Select the **C:** (C drive) at the top of the left page. If no files are showing, click on the ( \ ) back slash to see all files. *Note, to back up on a PC via Adept Windows, select the **NFS** icon in the upper left hand menu and type in **XC** to access the PC hard drive. If the NFS icon is not present, this means that the mount was not successfully mounted (type NET at V+ prompt to see available mounts).*
- Click on **NEW DIR** at the bottom of the page. This creates a new directory on the C:\ drive.
- Click on the box showing insert file name. (**BK followed by date code**) For example BK061406 is the directory name for a backup made on June 14, 2006.
- Click on the **NEW DIR** (File just made) double click or hit F3 to open the newly created directory. It's contents should be blank

#### **Right Hand Side of File Manager Menu**

- Click on the **Select RIGHT** button.
- Click on the **D:** (D drive) at the top of the right page.
- Double click back slash ( \ )
- Select **CODELIB**
- Select **COPY**. This copies the D:\ CODELIB directory selected on the right hand side of the file manager menu to the newly created backup directory on the C:\ drive

The menu should look similar to the figure below before the files are copied.

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## Backup D:\CODELIB to the floppy A:\ or B:\ drive

### Left Hand Side of File Manager Menu

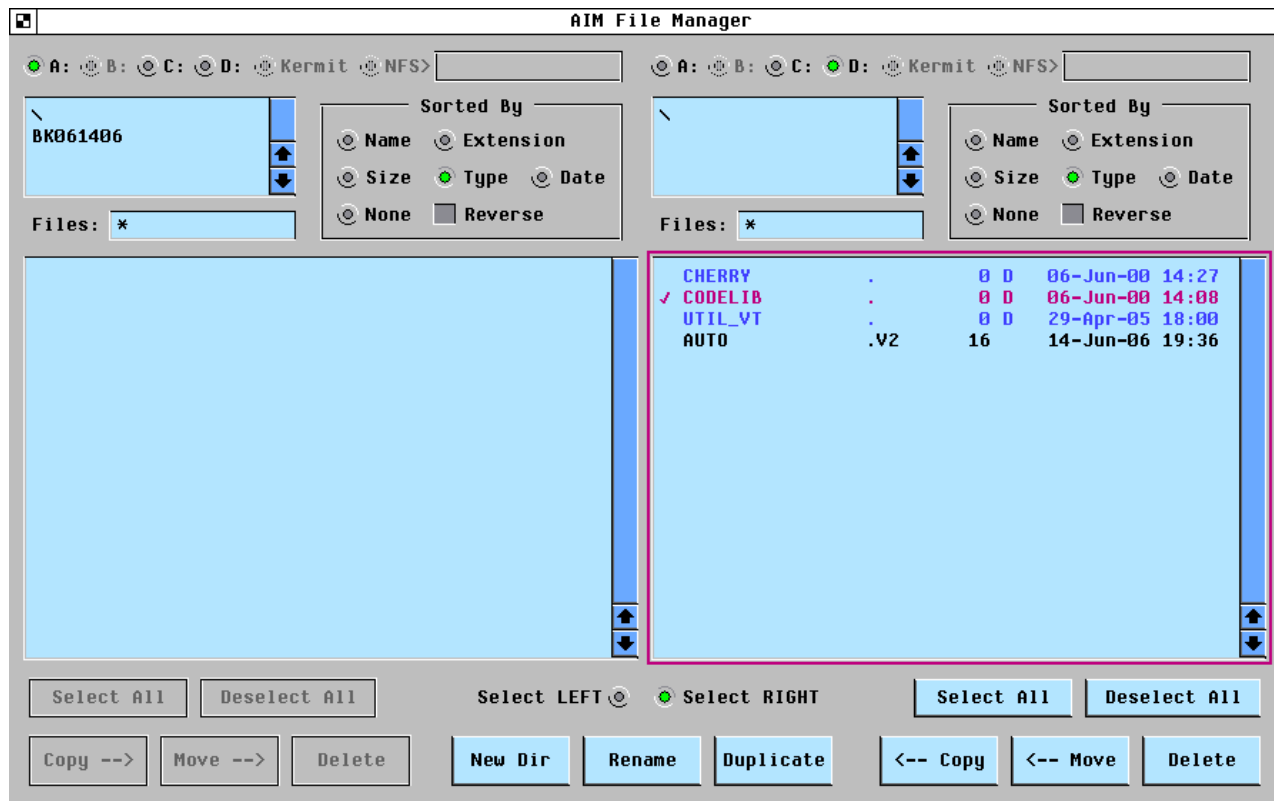
- Open the control enclosure and place a formatted 3.5" diskette in the floppy drive of the AWC enclosure. Take care to avoid high voltages.
- Click on **UTILITIES** tab at the top of the AIM menu .
- Click on **FILE MANAGER**.
- Click on the **Select LEFT** button.
- Select the **A:** (floppy drive) at the top of the left page. If no files are showing, click on the ( \ ) back slash to see all files.
- Click on **NEW DIR** at the bottom of the page. This creates a new directory on the disk.
- Click on the box showing insert file name. (**BK followed by date code**) For example BK061406 is the directory name for a backup made on June 14, 2006.
- Click on the **NEW DIR** (File just made) double click or hit F3 to open the newly created directory. It's contents should be blank.

### Right Hand Side of File Manager Menu

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- Click on the **Select RIGHT** button.
- Click on the **D:** (D drive) at the top of the right page.
- Double click back slash ( \ )
- Select **CODELIB**
- Select **COPY**. This copies the D:\ CODELIB directory selected on the right hand side of the file manager menu to the newly created backup directory on the A:\ drive

The menu should look similar to the figure below before the files are copied.



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## Appendix

### Setting switches in NVRAM for PC / AdeptWindows interface via ethernet

The controller configuration settings are contained in the non-volatile ram for the controller. Before the controller can be accessed via AdeptWindows and a PC, the NVRAM switch corresponding to AdeptWindows operation must be set (the NVRAM settings can be overridden via dip switches on the AWC board).

We will briefly present the steps required to set the NVRAM switches. Consult the Adept supplied documentation for more details on this procedure.

To set the NVRAM switches for AdeptWindows PC access, follow the steps outlined below:

- Startup the system normally.
- Once the system is fully loaded, shutdown AIM by selection **Special=>System Shutdown** from the top Adept menu.
- Once AIM is fully shut down, select **Adept=>Monitor** to see the adept V+ window.
- Type **STATUS** then **[enter]** to show the status of all real time tasks.
- If any tasks are active, abort them by typing **ABORT #** then **[enter]**. Note that **#** is the number of the task that is active.
- Type **ZERO** then **[enter]** to clear all memory.
- Type **LOAD D:\UTIL\CONFIG\_C** then **[enter]** to load the controller configuration utility.
- Type **EX 1 A.CONFIG\_C** then **[enter]** to execute the program just loaded in task 1.
- Select option 4 at the menu to access the NVRAM settings.
- Select option 4 to set the NVRAM switches
- Set the switches when prompted as follows:

Switch	New Setting	Description
Auto Start	Disabled	Disables the autostart function. The machine will not automatically launch the application when started
User Interface	Via Adept Windows/Ethernet (option 5)	Sets the user interface to the PC instead of the VGB board and monitor on the machine

- Do not change any other settings
- Write the data to the NVRAM when prompted.
- Exit all menus to the V+ prompt
- Restart the machine for the changes to take effect.
- Launch AdeptWindows on your PC once the controller has had time to boot to access the controller via Ethernet and AdeptWindows.

### Setting switches in NVRAM for VGB / Monitor interface

The controller configuration settings are contained in the non-volatile ram for the controller. Before the controller can be accessed via the VGB and monitor on the workcell, the NVRAM switch corresponding to

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VGB/Serial port interface must be set (the NVRAM settings can be overridden via dip switches on the AWC board).

We will briefly present the steps required to set the NVRAM switches. Consult the Adept supplied documentation for more details on this procedure.

To set the NVRAM switches for AdeptWindows PC access, follow the steps outlined below:

- Startup the system normally.
- Once the system is fully loaded (if applicable), shutdown AIM by selection **Special=>System Shutdown** from the top Adept menu.
- Once AIM is fully shut down, select **Adept=>Monitor** to see the adept V+ window.
- Type **STATUS** then **[enter]** to show the status of all real time tasks.
- If any tasks are active, abort them by typing **ABORT #** then **[enter]**. Note that **#** is the number of the task that is active.
- Type **ZERO** then **[enter]** to clear all memory.
- Type **LOAD D:\UTIL\CONFIG\_C** then **[enter]** to load the controller configuration utility.
- Type **EX 1 A.CONFIG\_C** then **[enter]** to execute the program just loaded in task 1.
- Select option 4 at the menu to access the NVRAM settings.
- Select option 4 to set the NVRAM switches
- Set the switches when prompted as follows:

Switch	New Setting	Description
Auto Start	Enabled	Enables the autostart function. The machine will automatically launch the control application when started
User Interface	Via VGB or serial	Sets the user interface to the VGB board and monitor on the machine

- Do not change any other settings
- Write the data to the NVRAM when prompted.
- Exit all menus to the V+ prompt
- Restart the machine for the changes to take effect.

### **AWC dip switch settings to override NVRAM settings**

There is a four position dip switch on the AWC board near the uppermost VME backplane connector. These switches can be used to override settings in NVRAM.

To force VGB monitor access, set the dip switches on the leftmost AWC controller as follows. Note that setting of the dip switches is typically not required and is shown here in case there are problems with the AdeptWindows / Ethernet interface.

**Table 3 - AWC dip switch settings for VGB access.**

SW4	SW3	SW2	SW1	Description
ON	ON	ON	OFF	This AWC is CPU#1, User interface via VGB or serial port.

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**Table 4 - Normal AWC dip switch settings for CPU#1.**

SW4	SW3	SW2	SW1	Description
<b>ON</b>	<b>ON</b>	<b>ON</b>	<b>ON</b>	<b>Normal setting. Defines this AWC as CPU#1. All settings controlled by NVRAM</b>

Other commonly used dip switch settings are shown below for your reference. Note that the items in bold are the normal settings for the controller.

**Table 5 – Condensed functionality of dip switches on AWC controller to override NVRAM settings.**

SW4	SW3	SW2	SW1	Description
<b>ON</b>	<b>ON</b>	<b>ON</b>	<b>ON</b>	<b>Normal setting. Defines this AWC as CPU#1. All settings controlled by NVRAM</b>
ON	ON	ON	OFF	This AWC is CPU#1, User interface via VGB or serial port.
ON	OFF	ON	ON	This AWC is CPU#1, no autoboot, user interface via Ethernet AdeptWindows (Use IP address in NVRAM).
ON	OFF	ON	OFF	This AWC is CPU#1, no autoboot, user interface via Ethernet AdeptWindows (Use default IP address).