Haas Automation Inc.

Ethernet
and
Hard Drive
Options

The Hard Drive and Ethernet option includes an on-board hard drive and network capabilities (Ethernet).

The on-board hard drive has the capacity to store a large number of files, therefore it is not necessary to remove a program in order to make room for another. The hard drive will store the files and load the programs to the control.

Non storage devices such as printers and keyboards cannot be connected to the CNC.

The Ethernet compatibility allows access to files on the company's network. Programs created in a CAD/CAM system can be loaded directly from the computer to the CNC control.

For Pallet Changers: If you are running the program from FNC, all program calls from the Pallet Scheduling Table will come from the external drive. A main program cannot be started from memory that allows calling subprograms in FNC.

2.0 ETHERNET OPTION INSTALLATION TERMS AND RESPONSIBILITIES

Each network and operating system is different from company to company. Haas Automation and its dealers will make certain that our equipment is capable of functioning up to the point of connection to the customer's network equipment. If there is a non-machine tool problem with making the connection, you will need a qualified IT service provider to assist you. This will be at the customer's expense.

When an Ethernet system is installed, we will verify that the proper software and hardware are present and functioning on your machine tool. We will confirm this using our computer equipment and cabling, not the customer's due to the differences and restrictions to access the customer's network. During the installation, the technician will assist your personnel in establishing a connection to your equipment. If additional trips are required, the customer will be billed.

The service technician will provide written confirmation that the network hardware is communicating successfully. This documentation will be in the form of screen images showing date, time, network path, and confirmation of successful file transfer from our host computer to the subject machine tool.

Haas Automation and its dealers are not responsible for debugging your network problems.
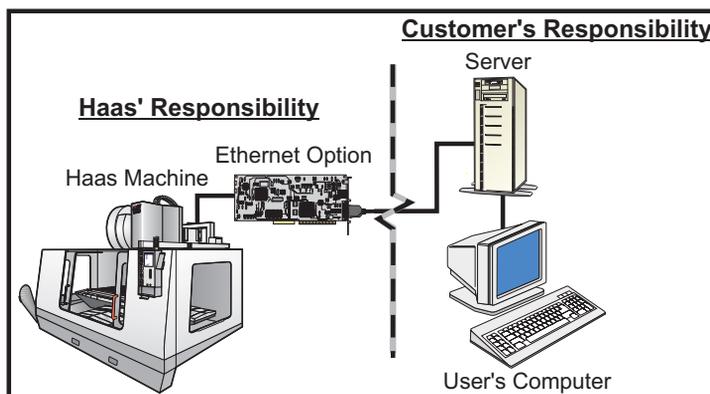
The Haas control incorporates a device manager which shows the available memory devices on the machine in a tabbed menu.

Enter the Device Manager by pressing "List Prog". Navigate the tabbed menu using the arrow keys to select the appropriate device tab and press Enter.

When browsing a list of programs within a device tab, use the up/down arrow keys to highlight programs and press Enter to add the highlighted program to the selection.

The following example shows the directory for the USB device. The selected program in memory is shown with an "A". The selected file will also show in the active program display.

Tabbed Menu Navigation
Cursor Arrows: Navigate Tabs
WRITE/ENTER: Select a Tab
CANCEL: Move Back One Tab Level

Program Selection
Cursor Arrows: Move Selection cursor
WRITE/ENTER: Add Program to Selection (A Check Mark is Placed)
SELECT PROG: Makes the Selected Program the Active Program ("**A**") or Selects Program for FNC
INSERT: Create New Folder in Current Directory (Type Folder Name, then Insert)
ALTER: Rename Folder or Program

Help Mode
Press **HELP/CALC** to Access the Pop-Up Help Menu. Navigate Using Cursor Arrow Keys. Choose Options for Selected Programs (Copy, Delete, Etc.)

Active Program   Highlighted Program   Active Tab

| MEMORY | FLOPPY | HARD DRIVE | USB DEVICE | NET SHARE |

CURRENT DIRECTORY: USB DEVICE\

↰ (USB DEVICE)

✓	O11133 (WORK ORDER 7)	1153	10-29-07	11:13:25
A	O12234 (WORK ORDER 11)	784	11-12-07	08:20:00
✓	FITTING			
	PROJECT 2	<DIR>		
	ALL			

File Size
Subdirectory
Date and Time

Selected Program

3 PROGRAMS 88% FREE (889260 KB)

✓ : FILES IN SELECTION
A : ACTIVE PROGRAM (O01254)

Use CURSOR keys to navigate listing and CANCEL to go back to devices. Press HELP for Help listing.

Navigating Directories
To enter a sub-directory, scroll to the sub-directory and press Enter.

To leave a sub-directory, go to the return arrow at top of the sub-directory and press Enter.

Create Directories
Create a new folder by entering a name and pressing Insert.

To create a new Sub-directory, go to the directory where the new sub-directory will be located, enter a name and press Insert. Sub-directories are displayed with their name followed by <DIR>.

Copying Files
Highlight a file and press Enter to select it. A check mark appears next to the file name.

Press F2, navigate to the destination directory with the arrow keys, press Enter.

Note that files copied from the control's memory to a device will have the extension ".NC" appended to the file name. To change the name, type the new name, then press F2. Navigate to the destination directory and press Enter.

Duplicating a File

Press List Prog to access the Device Manager. Select the memory tab. Cursor to the program you want to duplicate. Type a new program number (Onnnnn) and press F2. The highlighted program is duplicated with the new name, and it is made the active program. To duplicate a file to a different device, cursor to the program name and press F2 without entering a new file name. A popup menu lists destination devices. Select a device and press Enter to duplicate the file. You can also select multiple files (press Enter to place a check mark at each file name) and copy them all at once.

File Naming Convention

File names should be kept to a typical eight-dot-three format. For example: program1.txt. However, some CAD/CAM programs use ".NC" as a file type recognition, which is acceptable. File names can also be the same as the program number with no extension, but some PC applications may not recognize the file.

Files developed in the control will be named with the letter "O" followed by 5 digits. For example, O12345.

Renaming

To change the name of a file in USB or the Hard Drive, highlight the file, type a new name and press "Alter".

Deleting

To delete a program file from a device, highlight the file and press Erase Prog. You can select multiple files to delete by selecting them (press Enter to add a file to the selection and place a check mark next to it. Deselect by pressing Enter again), then press Erase Prog to delete all selected files.

On-Screen Help

On-Screen help is available by pressing "HELP/CALC". Select functions from the popup menu and press "Enter" to execute, or use the hot key listed. To exit the Help screen, press the "Cancel" button to return to the device manager.

3.1 FILE NUMERIC CONTROL (FNC)

A program can be run from its place on the network or from a storage device (USB memory device, floppy disk, hard drive). To run a program from such a location, go to the Device Manager screen (Press List Prog), highlight a program on the selected device and press "Select Prog".The program will be displayed in the active program pane, and an "FNC" next to the program name in List Prog indicates that it is the currently active FNC program. Sub-programs can be called using an M98, provided that the subprogram is in the same directory as the main program. Additionally, the subprogram must be named using the Haas naming convention with case sensitivity, e.g. O12345.nc.

> **CAUTION:** The program can be modified remotely, and the change will take affect the next time the program is run. Subprograms may be changed while the CNC program is running.

Program editing is not allowed in FNC. The program is displayed and can be browsed through, but not edited. Editing can be done from a networked computer or by loading the program into memory.

To run a program in FNC:

1. Press List Prog, then navigate to the tabbed menu for the appropriate device (USB, hard drive, Net Share).

2. Cursor down to the desired program and press Select Prog. The program will appear in the Active Program pane and can be run directly from the memory device.

To Exit FNC, highlight the program again and press Select Prog, or select a program in CNC memory.

    1)   Press List/Prog, press the down or up arrow to select a program from memory.

    2)   Press Write/Enter.

Subprograms must be in the form of Oxxxxx.nc where "xxxxx" is the program number. The subprograms must be located in the same directory as the main program from the selected device as the source file. Once FNC is engaged, all subprograms will be accessed from the external source, not from memory (9000 programs are a special case, and are accessed from memory).

Example. The program TEST.NC calls two subprograms, with M98 P71 and M98 P22 from the hard drive in directory CURPRG. Therefore, 3 files will be in the directory "CURPRG"

HARD:\CURPRG

TEST.NC
O00071.nc
O00022.nc

3.3 GENERAL INTERFACE OVERVIEW

The network interface is located in Settings. All setup information is supplied here.

The following illustration shows the network set-up screen. Your network administrator can provide you with the necessary information to complete the necessary fields and establish communication between your machine and network.

```
┌────────┬─────────┬─────┬──────────────┬────────┬─────────────┬────────────────┐
│GENERAL │ PROGRAM │ I/O │ CONTROL PANEL│ SYSTEM │ MAINTENANCE │ POWER SETTINGS │
└────────┴─────────┴─────┴──────────────┴────────┴─────────────┴────────────────┘

   NETWORK

      900  CNC NETWORK NAME                              XXXXXX
      901  OBTAIN ADDRESS AUTOMATICALLY                     ON
      902  IP ADDRESS                                   ********
      903  SUBNET MASK                                  ********
      904  DEFAULT GATEWAY                              ********
      905  DNS SERVER
      906  DOMAIN / WORKGROUP NAME                       XXXXXX
      907  REMOTE SERVER NAME                           XXXXXXX
      908  REMOTE SHARE PATH                            XXXXXXX
      909  USER NAME                                    XXXXXXX
      910  PASSWORD                                     ********
      911  ACCESS TO CNC SHARE                             XXXX
      912  FLOPPY ENABLED                                    ON
      913  HARD DRIVE ENABLED                                ON
      914  USB DEVICE ENABLED                                ON
      915  NET SHARE ENABLED                                 ON


      PRESS UP AND DOWN CURSOR TO MOVE BETWEEN SETTINGS
      F4 TO REFRESH SETTINGS, PRESS WRITE/ENTER TO CHANGE
```

Path

To navigate through the shared folders from the selected server, highlight the "Remote Share Path" option and press Write.

Select a network path using the arrow keys and press Write/Enter.

Warning:

There is a folder located on the hard drive called "AD-MIN"; Do Not remove or erase. The folder contains two files which can be used by service or a network administrator for troubleshooting.

NOTE: Modifying these files will have no change to the CNC; they are for viewing only.

ADMIN Folder – This file keeps the current CNC settings and a network configuration file, which has the current assignments for the network card. The information contained in the ADMIN folder will be useful when using a DHCP network.

To set up network communications, the CNC control's settings, in the list below, need the specific values for the user's network entered. Press F1 once all the settings have been updated for your control and network system, this will initiate the network. Press F4 to refresh updated settings.

Note: Special characters such as the underscore (_) and carat (^) are available through the popup help menu while entering data. Press Help/Calc, then cursor arrow down to "Special Symbols" and select the character from the list. Character appear on input line.

TCP/IP Settings

(900) CNC NETWORK NAME – The name of the control on the network.

(901) OBTAIN ADDRESS AUTOMATICALLY – Retrieves TCP/IP address and subnet mask from DHCP server on a network (Requires DHCP server). When DHCP is on, TCP/IP, SUBNET MASK and GATEWAY entries are no longer required and have "***" entered.

(902) IP ADDRESS – Used on a network with static TCP/IP addresses (DHCP off). The network administrator will assign an address (example 192.168.1.1).

NOTE: The address format for Subnet Mask, Gateway and DNS is XXX.XXX.XXX.XXX (example 255.255.255.255) do not end the address with a period. The max address is 255.255.255.255; no negative numbers.

(903) SUBNET MASK – Used on a network with static TCP/IP addresses. The network administrator will assign a mask value.

(904) DEFAULT GATEWAY – Used to gain access through routers. The network administrator will assign an address.

(905) DNS SERVER – The Domain Name Server or Domain Host Control Protocol IP address on the network.

(906) DOMAIN/WORKGROUP NAME – Tells the network which workgroup or domain the CNC control belongs to.

(907) REMOTE SERVER NAME – The name of the computer where the share folder (PATH) resides.

(908) REMOTE SHARE PATH – The name of the shared network folder. After a host name is selected, pressing the Write button on the path will list the shared resources available. To override and rename the path, enter the new and press the WRITE button.

> **NOTE:** Do not use spaces in the PATH field.

(909) USER NAME – This is the name used to logon to the server or domain (using a user domain account).   **User Names are case sensitive.**

(910) PASSWORD – This is the password used to logon to the server. **Passwords are case sensitive.**

(911) ACCESS TO CNC SHARE – Used for the CNC hard drive read/write privileges. OFF stops the hard drive from being networked. READ allows read-only access to the hard drive. FULL allows read/write access to the drive from the network.

(912) FLOPPY ENABLED – This turns access to the USB floppy drive off/on. When set to OFF, the USB floppy drive will not be accessible.

(913) HARD DRIVE ENABLED – Turns access to the hard drive off/on. When set to OFF the hard drive will not be accessible.

(914) USB DEVICE ENABLED – Turns access to the USB port off/on. When set to OFF the USB port will not be accessible.

(915) NET SHARE ENABLED – Turns access to the server drive off/on. When set to OFF access to the sever from the CNC control is not possible.

> **NOTE:** Turning off both "NET SHARE" and "ALLOW HD" will disable the network card communication.

Troubleshooting
The most common errors are caused by incorrect username or password, attempting to access a directory unavailable to the current username, or the password has expired.

The messages "DISK NOT IN DRIVE" or "DEVICE NOT MOUNTED" means that the USB key or USB floppy drive is not inserted into the CNC.

Authentication Problems
If a "SERVER NOT FOUND" message appears on the CNC one of the following message files will also appear in the NET SHARE directory.

Server Permission Denied- The server is unable to authenticate the user name/password entered in the settings.

Directory Permission Denied- The user name/password are restricted from accessing the specified directory.

Microsoft Windows 2000 and 2003

At times server settings will not allow access to the mill, or from the mill to the server. To remedy this, disable two of the security options.

To access these options go to the Control Panel screen, select Administration Tools, then Domain Security Policy (Windows 2000 - Local Security Policy). Select Local Policies, then Security Options. This will open a list of options. Double click the option titled, "Microsoft Network Server: Digitally Sign Communications (Always)" then click the "Disabled" button.

Do the same for the option titled, "Microsoft Network Server: Digitally Sign Communications (If Client Agrees)". Windows 2000 calls this option, "Microsoft Network Server: Digitally Sign Communications (When Possible)"

Notes on Group Policies

Policies are applied first from the local machine policy level of the computer. After that, any GPOs are applied at the site level, and then at the domain level. If the server is nested in several OUs, GPOs existing at the highest level OU are applied first. The process of applying GPOs continues down the OU hierarchy. The final GPO to be applied is at the child OU level containing the server object. The order of precedence for processing Group Policy extends from the highest OU (farthest from the user or computer account) to the lowest OU (that actually contains the user or computer account).

Group policy processing (windows server 2003) in the order of precedence:
1. Local security policy
2. Site policy
3. Domain policy
4. Parent OU policy
5. Child OU policy

The GPO application order must be set for group policy levels with multiple GPOs. If multiple policies specify the same option, the last one applied will take precedence.

A Group Policy with no override option prevents other GPOs from overriding it.

Microsoft Windows Vista and Windows 7

These versions of Windows must be configured to authenticate correctly with the Haas control. To adjust this configuration:

1. Click "Start".

2. Type "secpol.msc" in the search box and press Enter. Click continue at the warning message.

3. In the Local "Security Policy Console" window, highlight "Local Policies".

4. Double click "Security Options".

5. Double click on "Network Security: LAN Manager Authentication Level Policy".

6. Change this setting's value from the default to "NTLMv2 Session Security If Negotiated", then click OK.

7. Close the console window and reboot the computer.

4.1 HARDWARE/SOFTWARE REQUIREMENTS

Processor board 32-3092K or later is required for 1 megabyte or less systems.
Processor board 32-3016K or later is required for 16 megabyte systems.

Mill software 13.06 or later, Lathe software 6.06 or later.

The hard drive option cannot be installed on machines with monochrome CRT displays.

Configure as shown in the diagrams in the section entitled Hard Drive Option.

Compatible Operating Systems:

Windows 2000 Pro	Windows 2000 Server	Windows NT Server
Windows NT 4.0 Workstation	Windows 95 / 98	Windows XP
Windows Vista	Windows 7	

INSTALLATION

Use a grounding strap when handling electronic components.

1. Shut off power to the machine then open the electrical cabinet.

2. Remove the cover of the processor board stack in the upper left corner of the cabinet.

3. Remove the Mocon board from on top, as well as the video board just beneath it.

4. Remove cable 33-0850 and PC connector card, from RS-232 Port #1. **Office Machines**- Remove cable 33-2844B and PC connector card from RS-232 Port #1.

5. Replace the Mocon board so that it is positioned just above the processor board.

6. Install the new video card above the Mocon board. See the diagram in the Ethernet Cable Connections section.

7. Replace the processor board stack cover.

8. Close the electrical cabinet and power on the machine.

10" LCD ENET/HD/USB Wiring   (* RS-232 Port #2 is not used on Office machines)

15" LCD ENET/HD/USB Wiring