TB167 (Rev5) - Updating DOS based controls to Linux based

Overview

This document contains instructions on how to update a DOS based control to a Linux based control. If you get in over your head, Centroid provides a SSHD with the software pre-installed for $425. For an additional $150, we will convert your CNC7 configuration files and install them on the new SSHD.

Important Notes:

There are a couple of things to determine before upgrading a system. The first thing you need to do is contact Centroid Tech Support with your key-a number and control serial number so we can assist you in determining what is needed to upgrade your system.

Motion Card PIC Chip Requirements	
PIC Type	***Compatible PLC's***
IO2PIC	DC3IO/DC3IOB, PLCIO2, & RTK3
CPU711 PIC (Standard)	Servo3IO, RTK2, PLC 15/15, M15DRV1, PLC 3/3 (w/ or w/o Koyo), RTK1, & small PLC

Motion Card Hex file Requirements	
Motion Card Type	***Hex file***
CPU7P5/ CPU7P3 w/ 2105 DSP	CNC7.Hex
CPU7P5/CPU7P3 w/ 2101 DSP	CNC8.Hex
CPU9	CNC9.Hex
CPU10	DC - CNC8.Hex / AC - CNC9.Hex
CPU10B	DC - CNC8.Hex / AC - CNC9.Hex

Motion Card Software Compatibilities	
Motion Card Type	***Software***
CPU7P5 (ISA)	All CNC7 and CNC10 up to 2.36
CPU7P3 (PC 104 Industrial MB)	All software versions
CPU9 (ISA)	Up to 2.38
CPU10	CNC10 1.00 and up to current
CPU10B	CNC10 1.51 and up to current
MPU11	CNC11 3.00

Linux Hardware Requirements

* 1GHz Processor (2GHz recommended)

* 512 MB RAM (1Gb recommended)

* 2GB High speed Flash card (and IDE flash card reader or SATA flash card reader - dependent on motherboard) (4Gb recommended)

Before Updating:

Before updating the DOS based control, you should make a backup of the configuration files, a report from the control, a copy of the PLC directory, and, if applicable, a backup of the G-Code or Intercon files.

Backing up config files, making a report, and a copying PLC directory:

1. From the main menu of CNC7 press **F7 - Utility.**
2. Press **F3 - Backup.**
3. Press **F1 - Config.**
4. Insert a blank floppy and follow the directions displayed on the screen.
5. Once the backup is done, press **ESC** once to go back to the Utility menu.
Note: DOS based controls compress files to a .CFP extension, so you will need a copy of FUNPACK.EXE, which can be found in the CNC7 directory of the DOS control.
6. Press **F7 - Report**
7. It will ask you to insert a disk. Just leave the disk in from the backup config and press **ENTER** to continue.
8. Press **ESC** until you are back at the main menu.
9. Press **CTRL + ALT + X** at the same time to exit out of CNC7 and onto the DOS prompt.
10. Type **copy c:\PLC*.* a:** and press **ENTER**.(there is a space between *.* and a:)
11. Label this disk CNC7 Backup config and Report Files and the control serial number.

Backing up G-Code and Interon files:

1. From the main menu of CNC7 press **F7 - Utility.**
2. Press **F3 - Backup**.
3. For G-Code press **F2 - CNC** (CNC files), **F2 - All** (to select all files), then **F10 - Accept.**
4. For Intercon press **F3 - ICN** (Intercon files), **F2 - All** (to select all files), then **F10 - Accept.**

Note: DOS based controls compress files to a .CFP extension, so you will need a copy of FUNPACK.EXE.

Obtaining a copy of FUNPACK.EXE:

1. From the main screen press **Ctrl + Alt + X** all at the same time to exit to DOS.
2. From the CNC7 directory type **copy funpack.exe a:** and press **ENTER**(there should be a space between copy and funpack and .exe and a:). This will copy funpack.exe to the a: drive.

Making your Config files CNC10 ready:

1. Copy the cfg_arc.cfp file from the CNC7 Config Files disk and the funpack.exe to a folder on your office computer or laptop.
2. Open a DOS prompt or command prompt window on your PC and go to the directory containing the 2 files. (ex. type **cd temp**)
3. Type **funpack cfg_arc.cfp** and press **ENTER**. This will uncompress your config files.
4. Copy the uncompressed config files to the CNC7 Report Files disk. Overwrite the existing files on the

disk.
5. You should have the following files:

Mill	Lathe
CNC7.CFG	CNC7.CFG
CNC7.PRM	CNC7.PRM
CNC7.OL	CNC7.TTL
CNC7.TL	CNC7.TCH
CNC7.WCS	CNC7.WCS
CNC7.HOM	CNC7.HOM
CNC7XMSG.TXT	CNC7XMSG.TXT
CNC7*.TAB	CNC7*.TAB
CNC7.M*	CNC7.M*
CNC7.PLC	CNC7.PLC
****CPU.SRC	****CPU.SRC
PLCMSG.TXT	PLCMSG.TXT
PC.PLC	PC.PLC
****PC.SRC	****PC.SRC

6. You may or may not have a PC.PLC file. If your system shipped with 8.20 or newer, you will have a CNC7.PLC and a PC.PLC PLC program setup (8.20 release date 06/05/2003). The easiest way to tell is to look at the report files. If you see a PC.PLC file you have a dual PLC program setup. If you don't see one, you are running a single PLC program setup.
7. Compare the CNC7.PLC and the PC.PLC files with the .PLC files in the PLC directory. If they match, we will recompile the .SRC files in order to get the .SYM files which will help with troubleshooting. You can delete all of the other useless files. If you wanted to, you can also copy the .sym files if you don't want to recompile the .src files. Depending on your system, you may not have all of the files that are listed in the table above. For example if the control isn't an ATC, you won't have the plcmsg.txt or cnc7.tch files. You won't have the cnc7*.tab files if the control doesn't use laser tables.

Making your G-code and Intercon files CNC10 ready:

1. Copy the cnc_arc.cfp, icn_arc.cfp files to the folder on your office computer or laptop that has funpack.exe in it.
2. Open a DOS prompt or command prompt window on your PC and go to the directory containing the 3 files. (ex. type **cd temp**)
3. Type **funpack cnc_arc.cfp** and press **ENTER**. This will uncompress your G-code files. Without closing the command prompt window, go into the folder with your g-code files. Select all the .cnc files and archive them using a compression software such as Winzip with the file name cnc_arc.zip (check the box that deletes the files after achiving).
4. Go back to the command prompt and type **funpack icn_arc.cfp** and press **ENTER** to uncompress the Intercon files. Note: lathe control intercon backup will be icnl_arc.cfp.
5. Close the DOS window and go back into the folder that now has your .icn files. Then do the same for the .icn or .lth files and name the zip file icn_arc.zip for mill or icnl_arc.zip for lathe files.
6. Copy both zip files to your USB stick.

Installation of CNC10 SSHD:

Once you have backed up all of your files, you are ready to install the new Linux flashcard. If you purchased a new SSHD from Centroid with Linux pre-installed, install it in your control now. If you are going to install Linux yourself, you will need to download the bootable Linux install CD from the Centroid Dealer web site. Then follow the instructions on the readme file to load your HDD with Linux and CNC10 software.

1. Install SSHD with Linux and CNC10 software.

2. Boot-up control and press **Alt + F6** to bring up a command prompt window.

3. If system is on an old style M400, M40 style with CRT or an M15 you may need to issue a "**setdisplaylow**" for the screen resolution (PCM-8152 Aaeon MB do not need the resolution set low).

4. Insert the disk with the uncompressed config backup and report files from DOS system and type **install-config --mill** (for a mill control) or **install-config --lathe** (for a lathe control). If a floppy drive is not available on the Linux setup, use the same install-config --mill command but specify the path of your USB stick. So for example type **install-config --mill /cncroot/a/backup** (where backup is the folder where the CNC7 files are). You will need to power cycle the system so that it can move the CNC10 files to the required cnc10m files. Another option, as long as you are not running CNC10 v2.73rxx, is to simply copy the CNC7 files to the CNC10 or CNC10T directory (ex. **cp /cncroot/a/backup/* .** (press **ENTER**)) and run the **7to10** command. This will rename all CNC7*.* files to CNC10*.* files.

Note: Before re-compiling ANY PLC program, always verify the CNC7.PLC and PC.PLC programs were compiled from the source files in the report. If they weren't, simply rename the files to CNC10 and copy to the CNC10 directory. Do not compile the .src files if they don't match.

5. If your Linux system is running 2.70 you will need to do a couple extra steps.
   a- Delete the cncm.unl.xml for mill or cnct.unl.xml for lathe (ex. **\rm cncm.unl.xml** and press **ENTER**).
   b- Rename the cnc10(m).prm (or cnc10(t).prm for lathe) to cnc7.prm (ex. **mv cnc10m.prm cnc7.prm** and press **ENTER**).

6. For systems only using the CPU PLC program, you will need to delete the pc.plc file and the xplc.sym file, (ex. **rm pc.plc**) if they exist. The way to avoid having default PLC programs on the new Linux SSHD is to select "none" for PLC programs when creating the new Linux FC. The CPU PLC program will need to be compiled so the correct plc.sym file can be created. (ex. **plccomp m400.src cnc10.plc**) If the PC PLC program exists, you will need to compile it too (ex. **xplccomp M400pc.src pc.plc**). For more information on compiling PLC programs refer to TB173.

7. Type **exit** to close command prompt. Press **F10 - Shutdown** and **F2 - Power off** to shutdown the control. Power up the control and verify the settings are correct.

8. Now plug in your USB with the cnc_arc.zip and icn_arc.zip (or lth_arc.zip for lathes) files on it and press **F7 - Utilities** from the main screen. Then press **F4 - Restore**, **F2 - CNC** and once finished press **F3 - ICN** to restore the G-code and Intercon files.

9. The editor size will need to be changed to fit the screen size of the control. This is usefull for smaller displays. Refer to TB189

Note: Updating system with software later than 7.50 that have laser tables will need to have the laser tables turned off and pitch and backlash checked. The reason is that prior to 7.50 laser tables were single direction and after 7.50 they are bi-directional, so they are incompatiable.

Document History

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