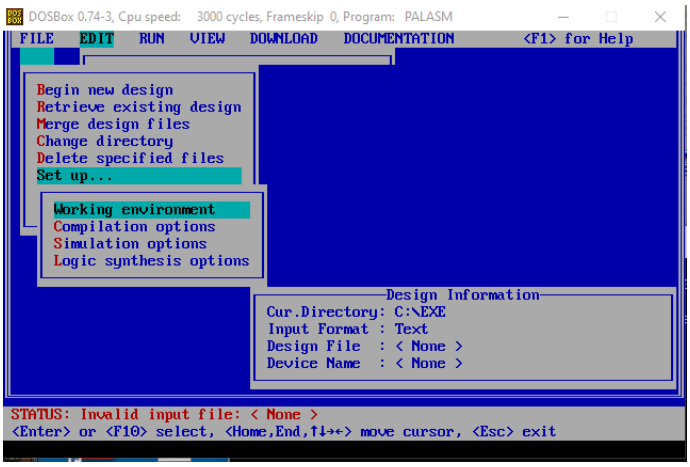
PALAsm



Contents

Purpose

This document describes how to get PALAsm working on a modern Windows PC. Why? Why would you want to use an obsolete tool that requires an obsolete operating system to design chips that are no longer supported?

Because! Because I've got a bunch of the old PAL16L8 and PAL16R4 chips and I want to use them.

Installing DOSBox

I had (years ago) used an Oracle VM with Windows XP installed to run PALAsm but this is a royal pain in the butt – especially trying to get the licensing key for Windows XP installed. I found that it is much easier to run this under DOSBox.

You can download it from the following link: DOSBox Support Website

In case it is no longer supported I have a copy here: Alpha Engineering Labs Backup

Mounting Drives

You can use the following to mount folders as drives inside of DOSBox:

```
mount c c:\Z80\
```

This will create a mount point named 'c:' that is attached to your host operating file system at 'c:\Z80\'

Managing Installs from Multiple Floppy Disks

Some installs (like PALAsm's install.exe) require you to 'change' the floppy mount point 'while' the app is running – ex: now swap in disk 2…

The following link shows how this is supposed to work: https://dosbox-x.com/wiki/Guide%3AManaging-image-files-in-DOSBox%E2%80%90X#_mounting_diskette_images but I couldn't get it to work. F12+CTRL+D didn't appear to do anything.

Getting PALAsm

You can download the floppy disk images here: PLD World Support Site

In case this site is no longer available, you can get a backup copy here: Alpha Engineering Labs Backup

Note that you only need disks 1-3.

You can get the documentation for it here (refer to chapter 9 for help on the tools):
https://bitsavers.computerhistory.org/components/amd/programmable_logic/1992_AMD_PALASM_4_User_s_Manual_Vol.2_release_1.5_Reference_Guide_Chapters_7-11_199205.pdf

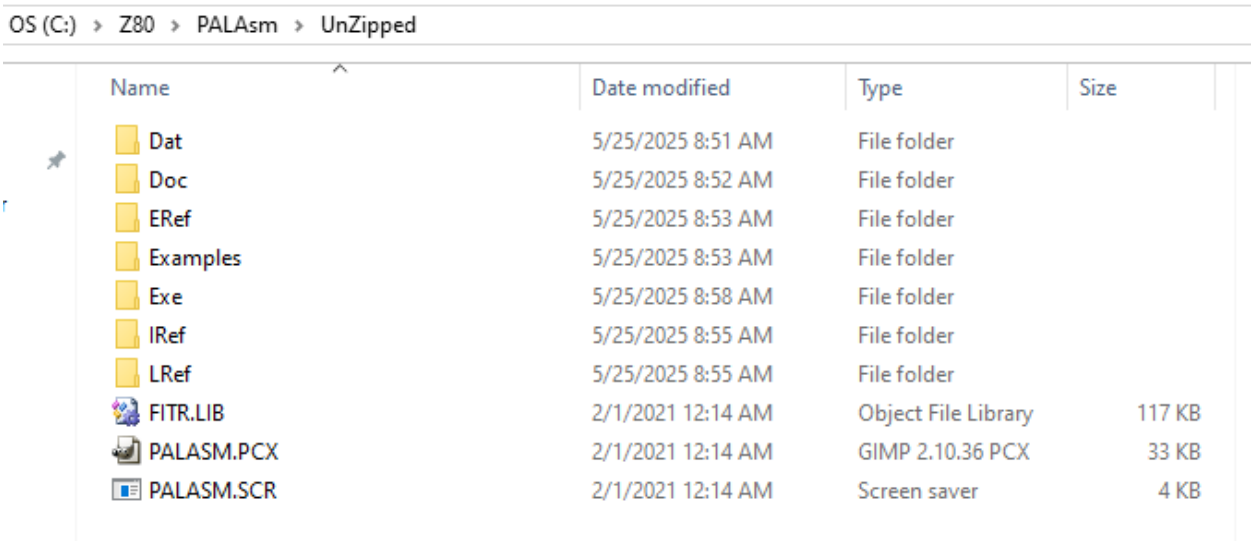
Installing PALAsm

PALAsm comes with an INSTALL.EXE on disk 1. Sadly, it assumes that you are using a real floppy drive and can change the disks. Since I was not able to get DOSBox to swap floppy drives, I had to install PALAsm manually the hard way.

Here are the steps to accomplish this (in the normal Windows environment – no DOSBox involved.) You need to have a copy of WinZip installed.

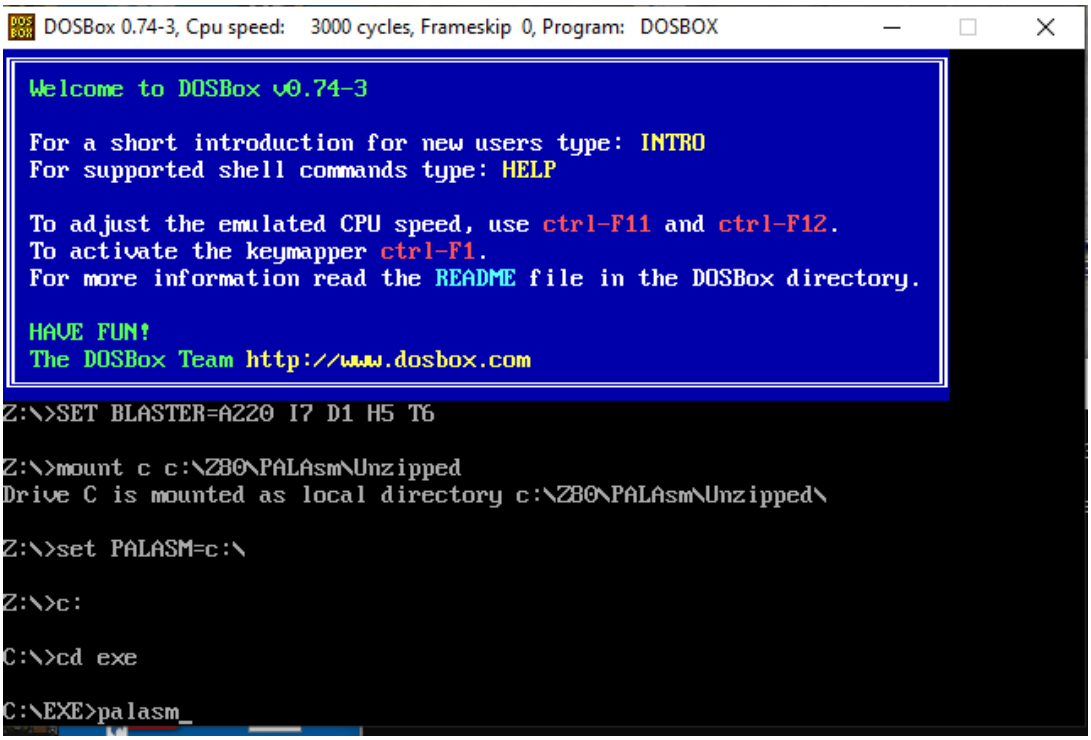
1. Create a folder somewhere where you will put your un-zipped files (ex: UnZipped)
2. Open each of the first 3 PALAsm install set floppy image folders (disk1, disk2, disk3)
    a. Manually copy non-zip files to your UnZipped folder
    b. Un-Zip each .ZIP file into a folder with the same name as the ZIP file
        i. For example: unzip DAT.ZIP into UnZipped\DAT
        ii. For the EXE-9.ZIP files, unzip them all into UnZipped\EXE
        iii. Ignore the EXT-0.ZIP file
        iv. Ignore the disk4 image (I think it's for Orcad extensions)

You should end up with something like the following:

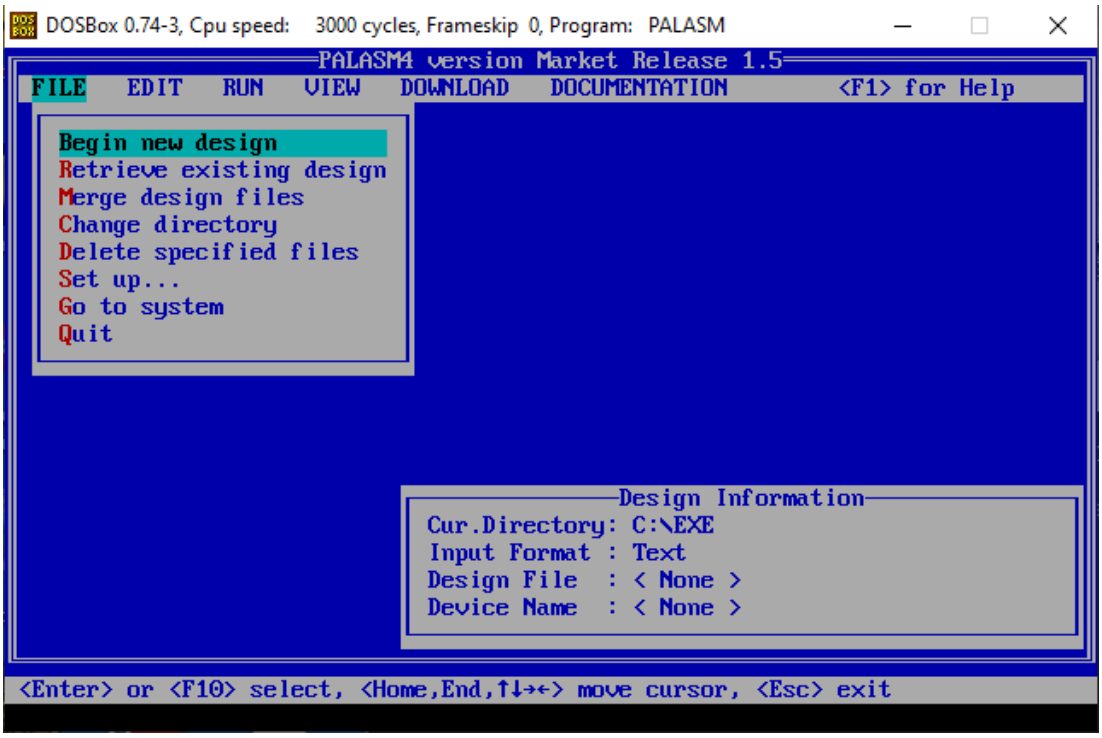


Running PALAsm

You need to run the following commands inside DOSBox:



After which point you should see PALAsm running inside DOSBox.



Configuring DOSBox Setup

After a while it gets tedious mounting the drives and configuring the environment every time.

You can automate this by editing the DOSBox setup file (C:\Users\Alec\AppData\Local\DOSBox\dosbox-0.74-3.conf) and adding lines to the [autoexec] section at the end:

```
keyboardlayout=auto

[ipx]
# ipx: Enable ipx over UDP/IP emulation.

ipx=false

[autoexec]
# Lines in this section will be run at startup.
# You can put your MOUNT lines here.
mount c c:\Z80\PALAsm\UnZipped
set PALASM=c:\
c:
cd exe
```

Non-Obvious PALAsm Issues

Directories & Setup Project

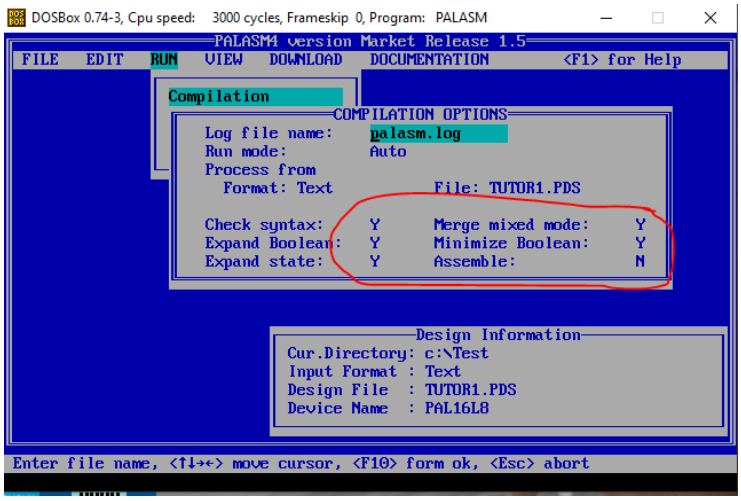
The easiest thing is to copy a file from the Examples directory and modify it to your needs. You should create a new folder (where DOSBox can see it – typically inside where you have mapped the C: drive) and put your .PDS file there.

Then you need to use ‘File-Change Directory’ to change the default directory there.

Then you can use ‘File-Retrieve existing design’ to open your .PDS file.

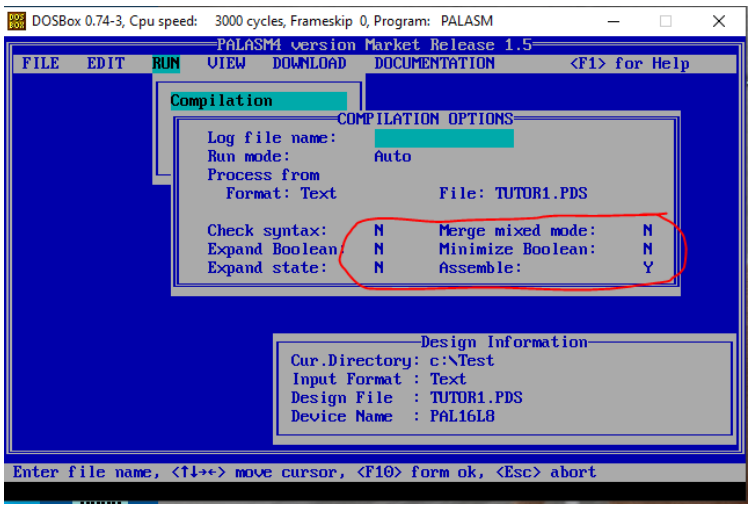
Compiling

When you are ready to build a JEDEC file, you should use 'Run-Compilation.' This will present you with the following confusing screen:



If you notice, the 'Assemble' option is turned off ('N') by default. If you simply change that to 'Y' (by tabbing over and using F2) it will mysteriously NOT produce a JEDEC file!

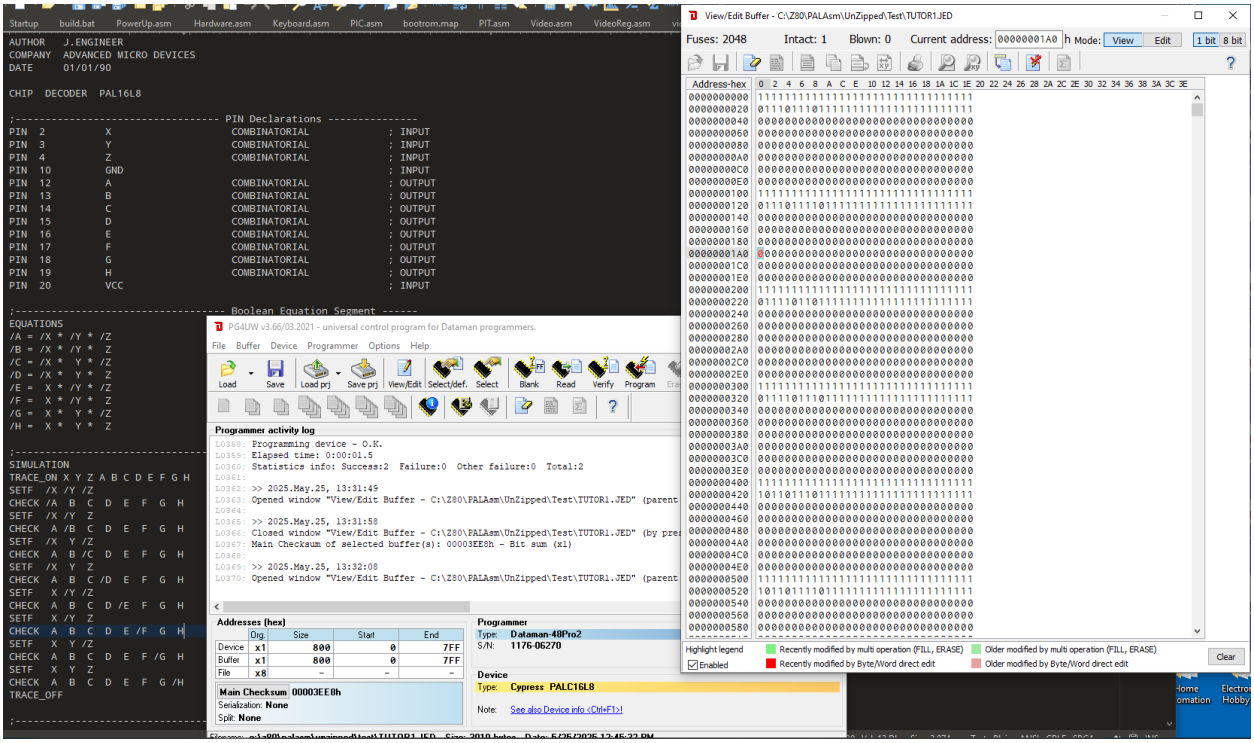
You have to turn off all the other options first to assemble! So, your screen should look like this before you hit F10.



Then, F10 will generate the TUTOR1.JDK file you need to burn the chip.

Program and Test

I was able to load the JEDEC file generated into my Dataman-48Pro2 programmer and burn a Cypress PAL16L8 (erasable – with window) device successfully.



I was then able to verify that the device outputs changed correctly as the input levels changed – SUCCESS!