1. SD Card

From the release zip folder copy the cromix-root-cpm-cf.iso image to a CF Card minimum size 256MB. If using Linux the following dd command can be used:

```
dd if=cromix-root-cpm-cf.iso of=/dev/sda bs=512
```

Where /dev/sda is the device associated with your CF Card (double check).

For Windows, a tool such as balena Etcher can be used.

This CF card can be in either Drive A or Drive B of the IDE Card. I will be using Drive A in these instruction.

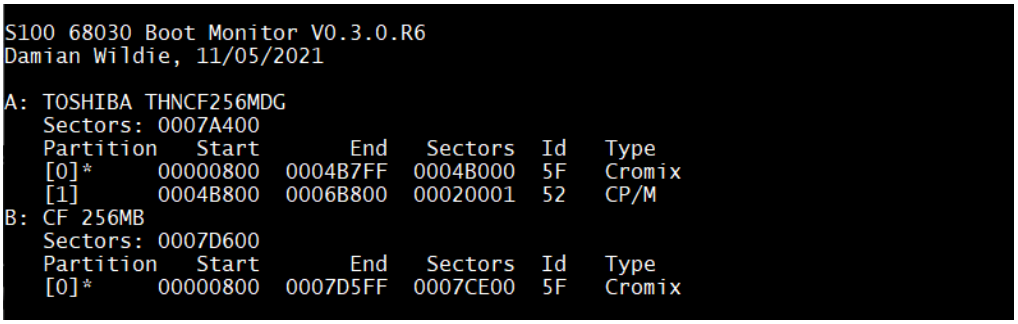
2. Consoles

The first part of the Cromix boot will use the same console as the 68030 Boot Monitor, either the Propeller board or the USB port on the Serial IO Board.
For the second part of the Cromix boot. Port 1 of Serial IO Board is used as the console.

Before booting connect a terminal to Serial Port 1: 9600 baud, no parity, 8 bits, 1 stop bit.

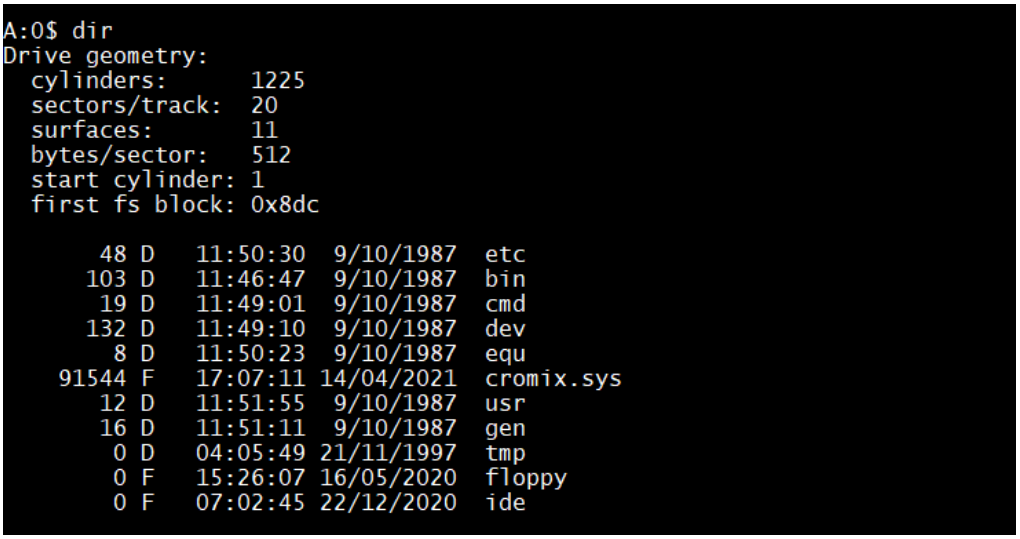
3. Boot Cromix Plus

Boot the 68030 Boot Monitor.



The MBR partition table for the CF Card in Drive A will be displayed showing the Cromix and CP/M partitions.

The contents of the current partition can be displayed using the *dir* or *ls* commands.



Cromix is booted using the *cromix* command.

```
A:0$ cromix
Loading file: cromix.sys, 91544 bytes to address 0x0
Loaded 91544 bytes

Booting cromix ...
Address: Memory test by 16K blocks
000000h: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
100000h: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
200000h: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
300000h: ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
idecf init(12,1)

IDE/CF Drives:
 Drive A   Start      Size       Type
    [12,0] 0x00000800 0x0004b000 Cromix (ST)
    [12,1] 0x0004b800 0x00020001 CP/M
 Drive B   Start      Size       Type
    [12,4] 0x00000800 0x0007ce00 Cromix (ST)

tim_init(4)
stty init(16,2)
stty init minor 0, port 0xa0
stty init minor 1, port 0xa1
siospeed 0xa1, 13, hi 0x00, lo 0x0e
siospeed 0xa0, 13, hi 0x00, lo 0x0e

Floppy = 1, STDC = 6, ESDC = 11
Enter major root device number: 12
Enter minor root device number: 0
idecf open(0xc00,0x1)
cylinders:      1225
sectors/track:  20
surfaces:       11
bytes/sector:   512
start cylinder: 1

68010 XPU 162   Cromix-Plus Operating System
S100computers Cromix-Plus - Damian Wildie, 2020

stty open(0x1001)
siospeed 0xa1 126, no change
```

Cromix like UNIX and Linux uses major and minor numbers to specify devices. For the IDE/CF driver the major number is 12 and the minor numbers are:

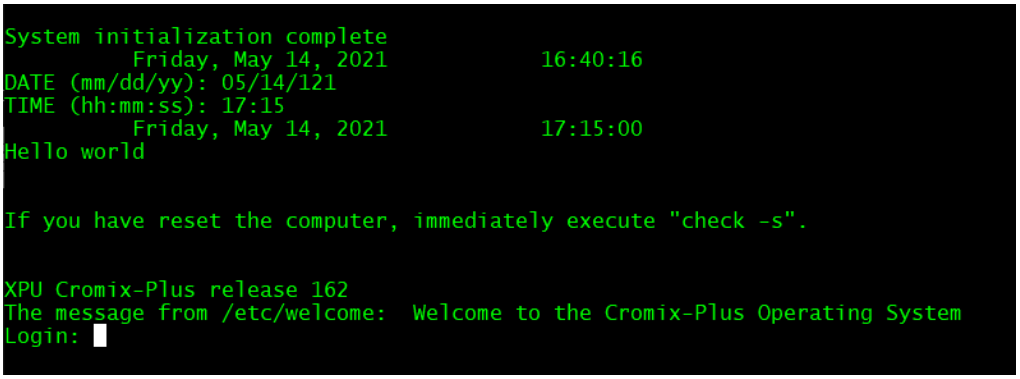
0	First partition of drive A
1	Second partition of drive A
2	Third partition of drive A
3	Fourth partition of drive A
4	First partition of drive B
5	Second partition of drive B
6	Third partition of drive B
7	Fourth partition of drive B

The major and minor numbers are shown on the console, just after the memory test, for the available partitions.

When prompted to “Enter major root device number”, enter 12.

When prompted to “Enter minor root device number”, enter 0 the CF card is in Drive A or 4 if using Drive B.

Once the stty open and siospeed messages appear on the console, Cromix switches to using serial port 1 as the console.



When entering the date, specify the year as an offset from 1900, ie. 121 for 2021.

Login as “system” (equivalent to the UNIX root user), no password is required.

4. Using Cromix Plus

Some notes:

1 Useful Cromix – UNIX command equivalents
Use d instead of cd
Use type instead of cat
Use copy instead of cp
Use makdir instead of mkdir
2 There is a help command.
3 The Cromix screen editor, ce, is functional. I have created a termcap, Z100, which seems to work with a VT100 terminal emulator.
4 Cromix periodically “syncs” the disks but the *shutdown* command should be used to shutdown the system.
5 Read the Cromix-Plus User’s Reference Manual Revision F.

5. Adding a second terminal

A second terminal connected to the second serial port (9600N81) on the Serial IO Board can be used. To enable the terminal edit the /etc/ttys file and change the first character on the second line from a 0 to 1, save the file. The terminal will be automatically enabled on reboot or enter the following command to enable immediately:

```
kill -1 1
```

6. Limitations

The “raw” I/O functions have not yet been implemented in the IDE/CF driver, therefore, it is not possible to initialise and format new disks images.

7. Driver library

The source for the ported drivers is located in the /home/drivers directory. It can be built using the *mk* command.

Generating a new cromix.sys:

The files required to regenerate cromix.sys are located in the /gen directory. The sysdef file defines the system configuration and contains a lot of helpful information. You can:

- Change the amount of available memory, currently 4 Megabytes.
- Change the logon message
- Set a default root device so that it does not have to be specified at every boot.

Use the *gen* command to generate a new cromix.sys in the /gen/directory. This can be booted with the following Cromix command:

boot /gen/cromix.sys

Once tested, the new cromix.sys can be made the default using the following Cromix command:

copy -f /gen/cromix.sys /cromix.sys

8. Booting CP/M-68K

The second partition on the supplied CF image is a bootable CP/M-68K system. To boot, issue the following commands:

part 1	Select partition 1
boot	Boot CP/M-68

The booted system has 10 (A – J) 4MB disks.

```
S100 68030 Boot Monitor V0.3.0.R6
Damian Wildie, 11/05/2021

A: TOSHIBA THNCF256MDG
   Sectors: 0007A400
   Partition   Start       End   Sectors  Id   Type
   [0]*     00000800  0004B7FF  0004B000  5F   Cromix
   [1]      0004B800  0006B800  00020001  52   CP/M
B: CF 256MB
   Sectors: 0007D600
   Partition   Start       End   Sectors  Id   Type
   [0]*     00000800  0007D5FF  0007CE00  5F   Cromix

A:0$ part 1
A:1$ boot

CP/M-68K S100 Boot Loader V0.1.1.R3


CP/M-68K(tm) Version 1.3  08/05/85
Copyright (c) 1985 Digital Research, Inc.


CP/M-68K S100 BIOS V0.1.1.R3 [CPM]

A>
```