

# Suboptimal Port Utility (v1.0 July 2024)

for Coleco ADAM CP/M and TDOS

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This **Coleco ADAM** utility runs on **CP/M 2.2** or **TDOS** operating systems. It allows direct communication to any of the 256 possible hardware ports for **technical** experimentation, demonstration, or diagnostic purposes. Incorrect usage of some ports may cause malfunctions requiring a system restart. Commands are issued one byte at a time so results may be observed and documented. Program inputs and outputs are performed in human-friendly decimal numbers.

## Instructions

1. Boot your **CP/M** or **TDOS** operating system.
2. Insert the port utility media and run the program **"PORTUTIL"** (specify a drive letter if needed).
3. Remove all media from drives after the program greeting displays. This protects media from possible malfunctions.
4. Follow the onscreen menu and prompts using command initials. If a command causes malfunction, promptly perform full system restart and document the conflict.
5. The menu repeats for the next command. Option **"Q"** will quit the program.
6. After exiting the program turn the system **OFF**, or perform a full restart to ensure a normal environment before continuing operation.

## Various Usage Methods

### A) Direct Control

When **ALL DETAILS** of selected hardware are well understood, issue commands for demonstration or diagnostic testing. This method is easiest.

### B) Direct Experimentation

When port numbers of selected hardware are **THE ONLY KNOWN DETAILS**, attempt **INPUT** or **OUTPUT** commands with best educated guesses to observe and record results. Difficulty is much higher unless technical documentation provides further guidance.

### C) Discovery by A/B Port Probe

When **NO DETAILS** of the hardware are known, run a **SERIES** of **INPUT** commands (up to 256) **WITH AND WITHOUT** the hardware attached in attempts to find affected port numbers. Record all port numbers and results as you proceed so you can compare the **TEST A** series to the **TEST B** series looking for differences. This is the most difficult method of testing. Some hardware may not respond with obvious results.

It is **NOT** recommended to use **OUTPUT** commands with this method since it add considerable complexity to obtaining valid results. However, there are no restrictions preventing it.

### Direct Control Usage Examples

#### A) Activate a Tone on Sound Voice #2

OUTPUT PORT 240, DATA 169  
OUTPUT PORT 240, DATA 12  
OUTPUT PORT 240, DATA 176

#### B) Turn OFF Sound Voice #2

OUTPUT PORT 240, DATA 191

#### C) Test for Presence of ADAMLink 300 Baud Modem

INPUT PORT 95

Results: 0 = Present 95 = Absent 255 = ADAMEm Emulator Only

Here is the list of port numbers provided in the **Coleco ADAM Technical Reference Manual**. Other ports are reserved (or unknown). Numbers in this table have been converted to decimal.

### Z80 I/O Port Assignments

<u>Port</u>	<u>(Hex)</u>	<u>(Decimal)</u>	<u>Description</u>
00H through 1DH			Reserved
1EH		30	Optional Auto Dialer
1FH			Reserved
20H through 3EH			Reserved
3FH*		63	Network reset; EOS enable
40H through 4EH			Reserved
4FH		79	Expansion connector #2
50H through 5DH			Reserved
5EH		94	Optional Modem Data I/O
5FH		95	Optional Modem Control Status
60H through 7EH			Reserved
7FH		127	Memory Map Control
80H through FFH			Reserved for ColecoVision use

\*Net reset - The net reset function is performed by setting bit 0 and then resetting bit 0.

\*EOS enable - Setting bit 1 enables the EOS ROM. Resetting bit 1 disables EOS ROM. The EOS enable function only affects the SmartWRITER ROMs. To access the EOS ROM, the SmartWRITER ROMs must be selected.

For further details on port assignments, see PORT\_COLLECTION in the EOS Source Code Listing.