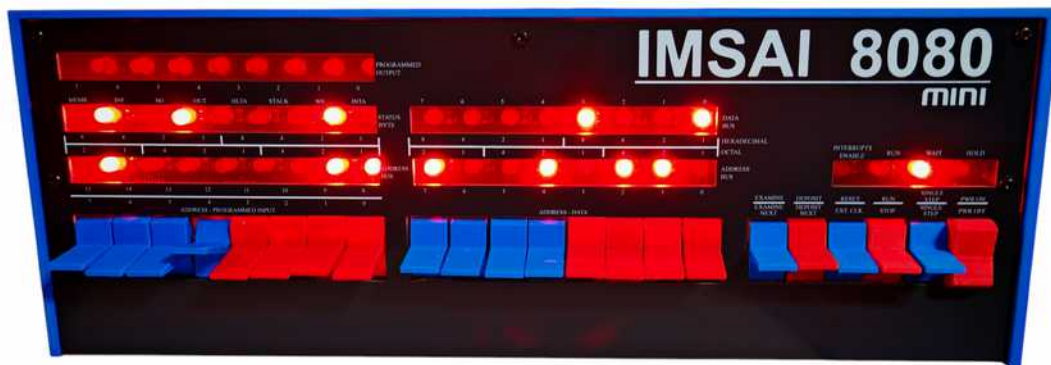


# IMSAI 8080

## MINI

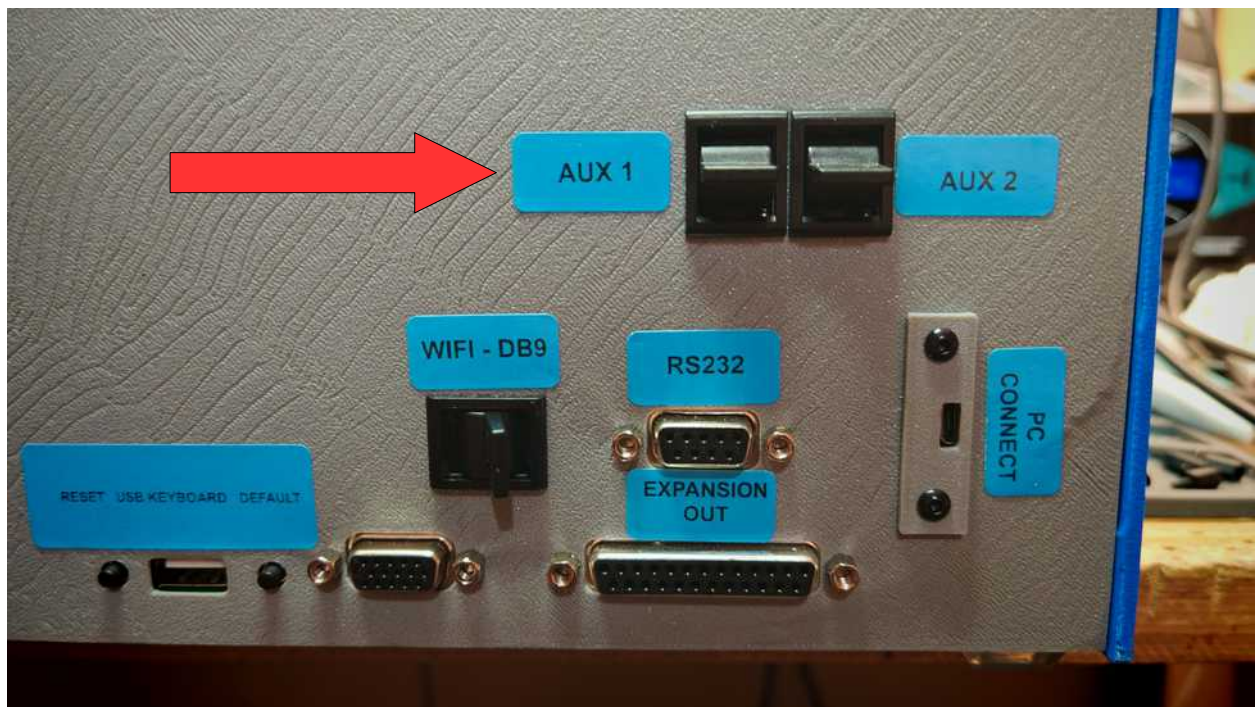
# USER MANUAL

(ver. 1.0)



**For Assistance please contact**  
**info@altairmini.com** For all manuals please  
**visit: <https://www.altairmini.com/support/>**

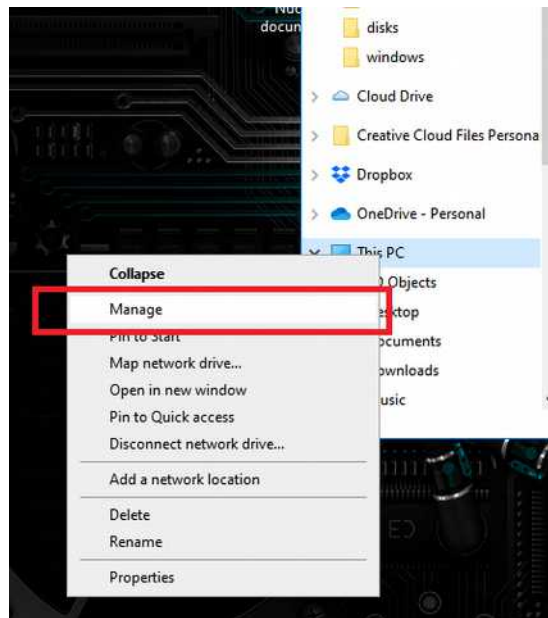
## REAR PANEL



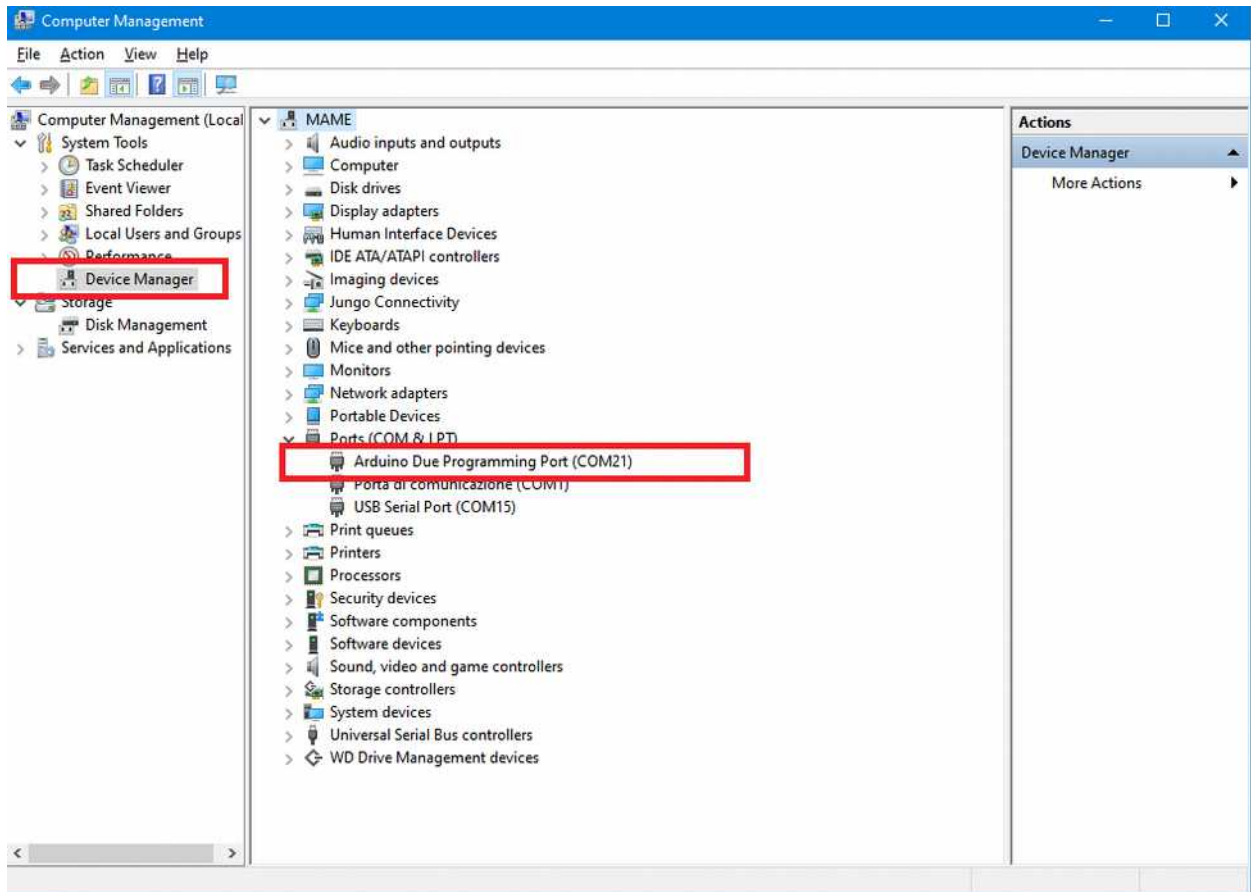
The AUX 1 and AUX 2 switches are not present on the original IMSAI so they have been placed on the back and are needed to access the setup menu and to load disk images from the SD card.

## Connection to computer

The IMSAI 8080 Mini has cassette interface and centronics interface cards inside, so it requires external power. To turn on the machine and connect it to the computer via the USB cable, you must first turn on the IMSAI with the front switch and then connect the USB cable to the computer.



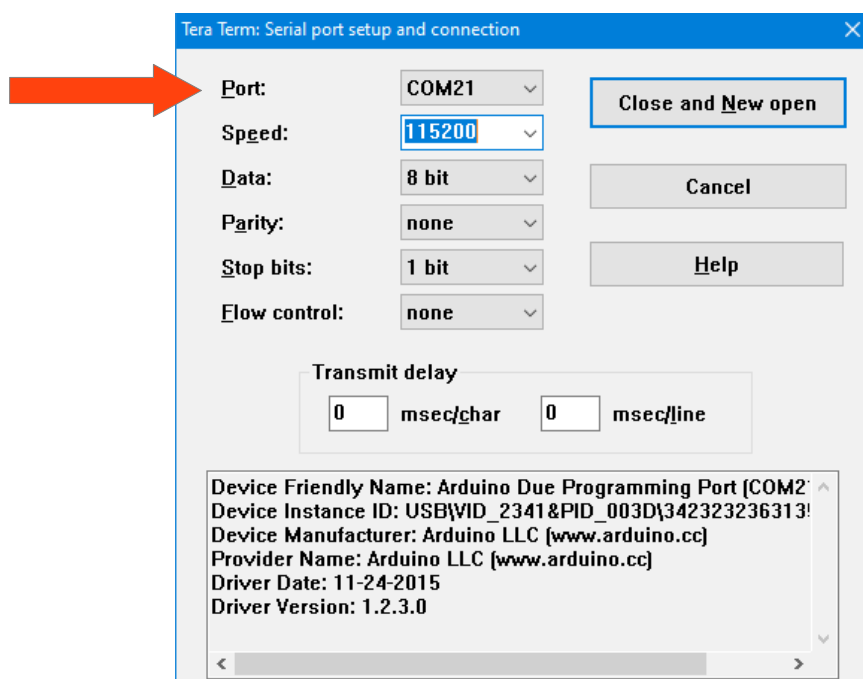
Right-click on "This PC" and click on "Manage"



Locate the COM port of the IMSAI MINI and use it to connect with any terminal emulator, such as [Teraterm](#)

The connection parameters are:

Enter the correct port number



# Instructions

If you come from the DOS and CP/M "keyboard world", the handling of the switches takes a lot of getting used to at first. Especially at the beginning, you always forget to reset the switches!

## # Communicating via ...

You have three options to communicate with the IMSAI MINI. All necessary connectors are located on the back of the IMSAI MINI.

Which connection you use depends on your personal preferences. I would start with the USB port.

1. USB port
2. Serial port
3. Internal Terminal Emulator (**this option working only if you have the IMSAI MINI with the VT100 terminal emulator inside**)

### (1) USB Port

{USB mini connector}

By default the IMSAI MINI is set up to communicate by the USB port (115.200, 8N1). The power switch is not used. Power is also supplied via USB.

This connection or usage of the IMSAI MINI has the decisive advantage that you can use modern hardware and software (macOS, Windows 10 or Linux) in connection with a direct data exchange with XMODEM. I use TeraTerm with macOS Catalina & Parallels Desktop and Windows 10.

For example, you can send and receive complete images (FD, HD) from the SD card using the FILE MANAGER in the CONFIGURATION MENU. A backup is done in a few seconds or minutes.

### (2) Serial Port

DB9 serial connector

WIFI Telnet (use the back switch to select Wifi)

switch up: ..... SW1 / D1

switch up and hold: DEPOSIT

turn on: ..... IMSAI MINI

release: ..... DEPOSIT

This will cause the IMSAI MINI to load the configuration #2 from STORAGE.DAT from the SD card. You have to use the external power supply and the power switch.

If you have a Wifi optional module installed, select RS232 on back switch

### **(3) Internal Terminal Emulator**

- 1. Connect the VGA monitor**
- 2. Connect the USB Keyboard**

switch up: ..... SW0 / D0

switch up and hold: DEPOSIT

turn on: ..... IMSAI MINI

release: ..... DEPOSIT

This will cause the IMSAI MINI to load the configuration #1 from STORAGE.DAT from the SD card. You have to use the external power supply and the power switch.

### **# Configuration, Reset, ...**

#### **CONFIGURATION MENU**

This menu does NOT exist on the original IMSAI 8080, but only on the simulator!

switch up: ..... STOP and then AUX1

Enable pro(f)iling : no

Set throttle delay (t/T) : auto adjust

Enable serial (p)anel : no

Enable serial (i)nput : no

Enable serial (d)ebug : no

Configure (m)emory : 64 KB RAM, 0 ROMs

Pro(c)essor : Intel 8080

Aux1 shortcut program (u/U) : 16k ROM Basic

Configure host (s)erial : Primary: USB Programming Port

(E) Configure serial cards : SIO,2SIO-P1 mapped

(P) Configure printer : None

(D) Configure disk drives : 0 mounted

(H) Configure hard disks : 0 mounted

(V) Configure VDM-1 : Disabled

(I) Configure interrupts : Interrupts connected directly to CPU

(M)anage Filesystem (F)ile manager for SD card

(S)ave configuration (L)oad configuration

(R)eset to defaults E(x)it

Command:

### **(M)anage Filesystem**

Here you can view your saved configurations.

### **(F)ile manager for SD card**

Here you can view your floppy disk and hard disk images and exchange them with XMODEM (in total).

---

### **HARD RESET - Before You do Something New**

switch up: ..... STOP & RESET

---

### **# Making a Serial Connection for Data and File Transfer**

I have already briefly described the topic of file transfer between IMSAI MINI and Windows 10, for example, above.

If you use the above-mentioned options (1) and (2), i.e. the terminal connections, then you can also exchange data via this connection without any further settings.

switch up: ..... STOP and then AUX1

```
Enable pro(f)iling           : no
Set throttle delay (t/T)    : auto adjust
Enable serial (p)anel       : no
Enable serial (i)nput       : no
Enable serial (d)ebg       : no
Configure (m)emory         : 64 KB RAM, 0 ROMs
Aux1 shortcut program (u/U) : Disk boot ROM
Configure host (s)erial     : Primary: Serial (pin 18/19)

(E) Configure serial cards  : SIO,2SIO-P1,2SIO-P2,2SIO2-P1,2SIO2-P2 mapped
(P) Configure printer      : None
(D) Configure disk drives  : 1 mounted
(H) Configure hard disks   : 0 mounted
(I) Configure interrupts   : Interrupts connected directly to CPU

(F)ile manager for SD card
(S)ave configuration      (L)oad configuration
(R)eset to defaults      E(x)it   *=Lamp test

Command:
```

IMSAI MINI - Configuration Menu

```
Configure host serial settings

(0) USB Programming Port : 115200 baud
(1) Serial (pin 18/19)   : 9600 baud 8N1
(2) USB Native Port      : 115200 baud 8N1

(P)rimary host serial : USB Programming Port

(A)pply host serial settings

E(x)it to main menu

Command: █
```

IMSAI MINI - Configuration Menu (s)IMSAI MINI - Configuration Menu (E)

## Configure serial cards

```
(1) Configure SIO           : Primary (USB Programming Port)
(2) Configure ACR          : Not mapped
(3) Configure 2SIO port 1  : Primary (USB Programming Port)
(4) Configure 2SIO port 2  : Not mapped
```

E(x)it to main menu

Command: █

### IMSAI MINI - Configuration Menu (E) (4)

With this setting, you can, for example, exchange individual files in a mounted diskette drive with PCPUT and PCGET.

With this setting, however, you can NOT transfer entire images in the FILE MANAGER. This is only possible with the serial or USB terminal connection.

### Using PCGET & PCPUT

These programs make it easy to load a file from the PC into a CP/M system (PCGET) or write a file from a CP/M system to a PC (PCPUT). The XMODEM protocol is used for file transfer. The program uses 2SIO port A by default, however, if the command line is followed by a B, then file transfer takes place over the 2SIO's port B.

### On the Move With PIP

How do I transfer files on CP/M if there is no corresponding software such as KERMIT, XM or PCGET on the receiving side? Just go with PIP to copy a Intel HEX version of PCGET!

{On the IMSAI MINI:}

```
A>PIP PCGET.HEX=UR2:[H]
```

or

```
A>PIP PCGET.HEX=CON:[H]
```

{Windows 10 with TeraTerm}

Send PCGET.HEX using simple ASCII transfer

(SETUP: set transmit delay to 10 msec/char)

(Menu FILE / SEND FILE)

After the transfer type CTRL-Z to signal  
PIP END-OF-FILE (EOF).

{On the IMSAI MINI:}

A>LOAD PCGET

FIRST ADDRESS 0100

LAST ADDRESS 0400

BYTES READ 0301

RECORDS WRITTEN 07

... done

The only difficulty is to select the right DEVICE (IOBYTE assignment). By default it would be CON, but specifically with the IMSAI MINI it is UR2. UR2 is the RDR (input) device on 2SIO port 2.

With option (2), serial connection via DB9, you have to use CON. Don't get confused. Search the Internet for the keywords IOBYTE and CP/M.

---

## # Displaying, mounting & booting a MITS (88-DCDD) disk drive

... displaying ...

SW15 to SW0: 0 001 000 000 000 000

AUX2 down

0001) DISK01.DSK: CP/M (63k)

0010) DISK02.DSK: ALTAIR DOS 1.0

0011) DISK03.DSK: ALTAIR Disk Basic

0100) DISK04.DSK: ALTAIR Disk Basic programs

0101) DISK05.DSK: Games (CP/M programs)

0110) DISK06.DSK: SuperCalc II (CP/M program)

0111) DISK07.DSK: WordStar (CP/M program)

1000) DISK08.DSK: Zork (CP/M game)

... and others

**... mounting ...**

nxxx: 4-bit number selecting the drive

0 001 nnn nDD DDD DDD

SW15 to SW0: 0 001 000 000 001 000

AUX2 down

[mounted disk image 'DISK08.DSK:  
Zork (CP/M game)' in drive 0]

... or ...

0 001 nnn nDD DDD DDD

SW15 to SW0: 0 001 000 100 000 111

AUX2 down

[mounted disk image 'DISK07.DSK:  
WordStar (CP/M program)' in drive 1]

**... booting ...**

SW15 to SW0: 0 000 000 000 001 000

AUX1 down

[Running Disk boot ROM]

62K CP/M

Version 2.2mits (07/28/80)

Copyright 1980 by Burcon Inc.

**... unmounting ...**

nxxx: 4-bit number selecting the drive

0 001 nnn nDD DDD DDD

SW15 to SW0: 0 001 000 000 001 000

AUX2 up

[unmounted drive 0]

---

## # Displaying, mounting & booting a MITS (88-HDSK) hard disk drive

### ... displaying...

SW15 to SW0: 0 011 000 000 000 000

AUX2 down

Available hard disk images:

-----  
0001) HDSK01.DSK: Altair Hard Disk BASIC  
0010) HDSK02.DSK: Altair Accounting System  
0011) HDSK03.DSK: Mike Douglas' 88-HDSK CP/M  
0100) HDSK04.DSK: CP/M Infocom Adventures  
-----

### ... mounting ... Mike Douglas' 88-HDSK CP/M

nnnn: 4-bit number selecting the drive

0 001 nnn nDD DDD DDD

SW15 to SW0: 0 011 000 000 000 011

AUX2 down

[mounted hard disk image 'HDSK03.DSK:  
Mike Douglas' 88-HDSK CP/M' in platter 0 of unit 1]

### ... booting ... Mike Douglas' 88-HDSK CP/M

SW15 to SW0: 0 000 000 000 001 110

AUX1 down

[Running Hard disk boot ROM]

HDBL 2.00

LOADING FROM 0

63K CP/M 2.2b ver 1.5

For MITS 88-HDSK

A>

**... unmounting ... Mike Douglas' 88-HDSK CP/M**

nnnn: 4-bit number selecting the drive

0 001 nnn nDD DDD DDD

SW15 to SW0: 0 011 000 000 000 011

AUX2 up

[unmounted platter 0 of unit 1]