QuickTake for Apple II

User guide

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Introduction

The QuickTake for Apple II project started once Mastodon for Apple II neared completion. It seemed to be a continuity (I could use this to post pictures online using Mastodon), while also providing new challenges - reverse-engineering of serial protocols, of image codecs, and new kinds of optimisations.

I have not been disappointed and am quite proud of the functionality that this little program provides. About all of the basic image edition things you'd do with a modern computer are doable with an Apple //c, if only "a bit" slower. And if 2 to 10 minutes to decompress a picture may seem a bit long, it was 90 minutes at first!

This user guide is written to give the curious reader a sense of what can be done today with an Apple II - a machine built forty years ago! - and maybe give them the motivation to go through the initial setup and give this a real test, and marvel at the 280x192 green-and-black images that once were state of the art.

Startup and initial configuration

Requirements

This software requires an Apple //c, //c+, IIgs, or IIe with:

- an extended 80-columns card, providing 128kB of RAM total

- a 65c02 CPU

- two serial cards

Serial communications setup

The serial slot(s) to use differs with the camera you want to connect, and with different iterations of the Apple II computer.

Apple II type	Serial ports
Apple //c and //c+	Slot 1: Printer port
	Slot 2: Modem port
Apple IIe	Physical installation slots of the Super Serial Cards
Apple IIgs	Channel A: Printer
	Channel B: Modem

Table 1: Serial ports by Apple II type

The Quicktake 100 and 150 connection to an ACIA-based Apple II

The Quicktake 100 and 150 will not start talking to the computer as long as the DTR line is up. This is not a problem on an Apple IIgs, but will be on Apple II computers with an ACIA-based Super Serial Card: as soon as DTR is deasserted, the ACIA serial chip completely stops communicating. This is a problem for Quicktake 100 and 150, that has to be worked around in a hardware fashion. You will need to build a custom serial cable, which will plug into the Quicktake on one end, and two SSCs on the other ends. Data will be handled by the modem port, and DTR will be handled by the printer port. By default, Quicktake for Apple II on a //c or IIe will try to communicate with slots 1 (DTR line) and 2 (Data line). On a IIgs, the default port is the modem port.

For an Apple //c, your cable will look like this:

Mini-DIN-8, Quicktake	DIN-5, modem port	DIN-5, printer port	
6 7 8 3 4 5 1 2	1 5 2 4 3	1 5 2 4 3	Pin numbering, seen from front of male plug
2		1	DTR
3	4		RX
4	3		GND
5	2		TX
7		1	DTR

For an Apple IIe, your cable will look like this:

Mini-DIN-8, Quicktake	DB-25, modem port	DB-25, printer port	
6 7 8 3 4 5 1 2	1 2 3 4...11 12 13 14 15 ... 24 25	1 2 3 4...11 12 13 14 15 ... 24 25	Pin numbering, seen from front of male plug
2		20	DTR
3	3		RX
4	7		GND
5	2		TX
7		20	DTR

The Quicktake 100/150 connection to an Apple IIgs

A simple, standard AppleTalk cable will do the job.
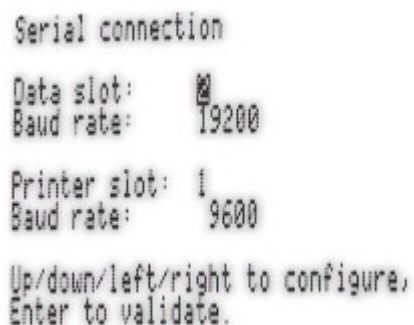
The Quicktake 200 connection

Connecting a Quicktake 200 is simpler. It is provided with a mini-jack to female DB-9 null-modem cable, so you will just need a male DIN-5 (for //c), DB-25 (for IIe) or Mini-DIN-8 (for IIgs) to male DB-9 straight cable.

Verifying the connection

At startup, the software will try to connect to a Quicktake. If one is plugged in and turned on, the connection will be made and you will arrive on the main menu. Otherwise, you will be asked whether to configure the serial ports, or try again at a slower speed, 9600 bps.

In the serial configuration screen, the Data slot is where you plug the QuickTake data lines, and the Printer slot is where you plug the DTR line, if applicable.

The Printer slot is also used for printing images.

Figure 1: The serial configuration screen

If you want to access image edition and viewing features without connecting your Quicktake, you can wait for the timeout and use the N key to stop trying to connect.

The main menu

The main menu header will contain information about your camera, and present you with a list of actions.

Figure 2: Quicktake for Apple II's main menu

Some choices exist only for the Quicktake 100/150. These are:

- Preview pictures

- Delete all pictures

- Snap a picture

- Set camera name

- Set camera time

- Set quality mode

- Set flash mode

Get one picture

When you select "Get one picture", the software will ask you for the number of the picture you want to download and edit. It will then ask you for the

destination directory (using a file selector). Navigate to the desired directory using the directional keys and validate with **Enter**.

Figure 3: Selecting the destination directory

Then, complete the path with the desired image name and press **Enter**.

Figure 4: Filling in the image name

You can cancel the process and return to the main menu using the **Escape** key.

The software will now download the picture to disk, and start converting it.
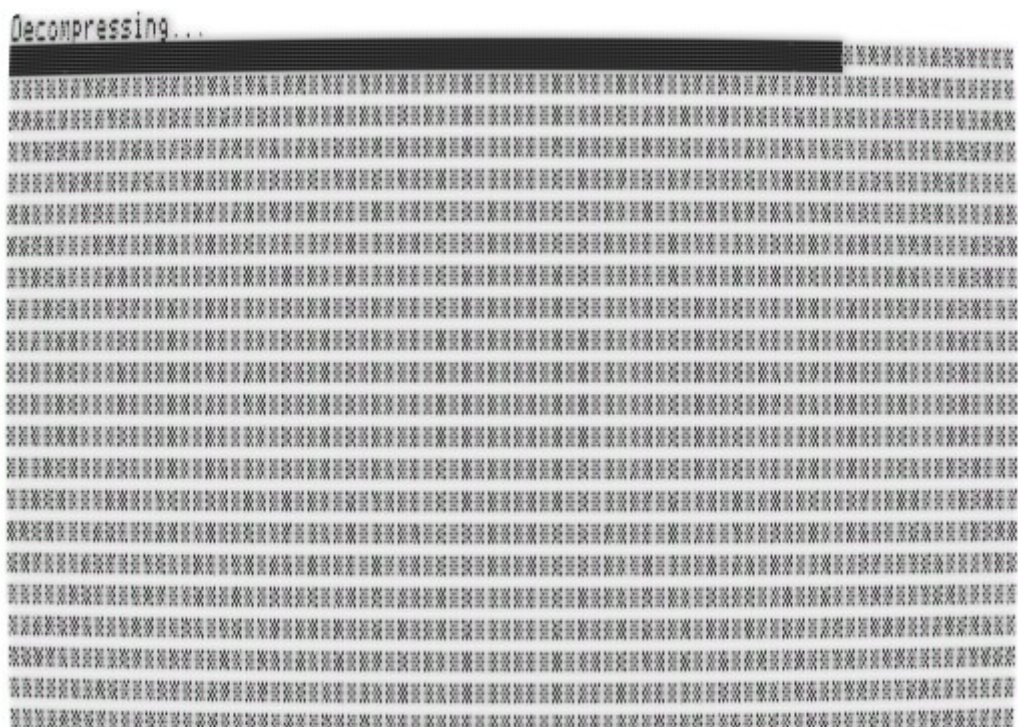
Figure 5: Decompression of a picture

Once the process is finished, you will be able to edit the picture.

Preview pictures

When you select "Preview pictures", you will be shown the thumbnail for the first picture in your Quicktake, along with the picture's date and time, the quality mode used to shoot it, and whether the flash was active. You can decide to download the picture (**G** key), return to the menu (**Escape** key), or proceed to the next thumbnail (any other key).

The software will remember the last viewed thumbnail during the session, and start again at the next one if you re-use the **Preview pictures** function.

Delete all pictures

Use this function to empty your Quicktake 100/150 memory.

Snap a picture

Use this function to trigger the Quicktake 100/150 to take a picture.

Set camera name

Use this function to change your Quicktake 100/150's name.

Set camera time

Use this function to set your Quicktake 100/150's clock.

Set quality to...

Use this function to change the selected quality mode of your Quicktake 100/150.

Set flash to...

Use this function to change the selected flash mode of your Quicktake 100/150.

Editing a picture

You can open the picture edition screen in two ways. It is automatically opened after a raw picture is downloaded from the Quicktake camera, and a raw picture stored on disk can be re-edited using the main menu's **"Re-edit a raw picture from floppy"** item.

In this screen, you will be able to tweak a few settings to make the best out of the picture. The help at the bottom of the screen will remind you of the available commands, and can be hidden (in order to see the bottom of the picture).

Figure 6: The picture edition screen

Brightness/contrast settings

You can disable or enable auto-leveling. This feature finds the darkest and clearest parts of the picture, and re-equalizes the histogram so that the darkest is black, and the clearest is white. This often gives better results, but not always.

You can also manually brighten or darken the picture. If the most interesting parts of a picture are washed-out white, for example, try darkening it a bit.

Dithering

Dithering is the process of reducing the palette. Different algorithms are available: Sierra Lite dithering is the default one, using error diffusion and often giving the best results. Bayer dithering is also available, using ordered dithering instead of error diffusion, and giving quite a different look to the picture. No dithering is also an option, although its use is dubious.

Rotation and reframing

If your picture was shot in landscape mode, it will be 256x192 pixels. If it was shot in portrait mode, you will be able to rotate it left or right. By default, the picture will be rescaled so that all of it fits on-screen, resulting in a 144x192 pixels picture. If you prefer to zoom into the middle part of the picture, you can choose Crop instead of Fit; the picture will then be 192x192 pixels.

When the picture is not rotated, you will be able to reframe it: zoom in a part of a picture.

Figure 7: The reframing UI

The levels of zoom available depend on the resolution of the raw picture. A Quicktake 100 raw standard-resolution picture is 320x240 pixels, and you will be able to zoom into a 256x192 region of it. Quicktake 100 high-

resolution pictures and Quicktake 150/200 pictures are 640x480, and you will be able to zoom into regions of either 512x384 pixels, 320x240 pixels or 256x192 pixels. Validating the reframing triggers a new decompression in order to achieve a good quality result.

Saving the result

Once you are happy with the results, you can save the picture in HGR format. This is the format that will allow you to quickly re-view converted pictures, print them, or if you feel like it, send them using Mastodon for Apple II!

By default, the HGR picture name will be saved with the same name as the raw picture, with a .HGR extension.

Viewing HGR pictures

You can view your HGR pictures with the software of your choice, and Quicktake for Apple II comes with a basic image viewer.

Choose "**View a converted picture from floppy**" to launch it, then select the picture you want to view using the file selector.

The controls of the image viewer are rather simple:

- The **Space** key allows you to open the next picture in the same directory (and loops over all pictures of this directory).

- The **Escape** key quits the viewer.

- The **P** key allows you to print the picture to an ImageWriter II

- Any other key toggles the inline help.

Printing a picture

Before you print a picture, you will be asked for the print scale. You can choose between 72dpi, where one pixel on screen equals one matrix dot and the resulting image will be approximately 9 x 6,7 centimeters; or 36 dpi, where one pixel on screen equals four matrix dots and the resulting image will be 18 x 13 centimeters.

Before starting to print, the software will remind you of the expected printer settings and let you, if necessary, unplug the Quicktake 100/150's DTR line and plug the printer instead.

Note: only XON/XOFF flow control is supported. This is set on the ImageWriter II by toggling DIP switch 2-3 to off.

Links and resources

The project code lives at <ins>https://github.com/colinleroy/a2tools/</ins>

Its homepage is at <ins>https://www.colino.net/wordpress/en/quicktake-for-apple-ii/</ins>

It is built using cc65, <ins>https://github.com/cc65/cc65/</ins>

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