RSC-FORTH v1.5

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Aeroraptor
Junior Member

Join Date: Oct 2007
Posts: 19

RSC-FORTH v1.5

May 2, 2008, 10:00 PM #1

I posted this over at the 68kMLA, but I realized people here might also be interested. (Edited copy/paste)

So, about two weeks ago a guy to ask if I was interested in some old equipment he was getting rid of, of course I'd take it so I said sure and later he swung by the house with a bunch of old fairly generic PC stuff, mostly cables and basic cards. He said he'd be by again soon with a bunch more, once he saw how positive my reaction to the old equipment was. Most of it was pretty standard, several new Etherlink II cards, couple PCI video cards, baby AT mobo with a Pent Pro, laplink setups, ya know- basic 90s PC stuff.

About a week after that, three days ago, he came by with something really cool. A little, and I mean little, this thing is 2" thick, 4" wide, and 6" long, black box and a manual. A big manual. The box had a single RS232 db25 port and a reset switch (and an external PSU, rated at 9v 300ma). However I've since added a power switch and made a socket/plug for the power supply so it's detachable. According to the guy, and the manual, this is an RSC-FORTH, or Rockwell Single Chip FORTH development/hobbyist board. According to the manual and stack of papers I got with it (one of them being an ad) say it's from around fall 83, and was made by a company called Rockwell International. It is an entirely self sustained computer, complete with parallel-type headers and a low-level floppy drive interface. The processor is a Rockwell R65F11, a 1MHz, 40 pin, chip based off the 6502 with some enhancements. Ones I see straight off are that it has room for 3K ROM and 192B RAM, as well as a direct TTL based serial interface, to bring it to RS232C specs you just need a handful of discrete parts, all of which are on my board so it works as normal serial. My board also has a power regulator on it, so anything from 6 to 10v DC works. In the 3K of ROM is a very basic, but still usable, implementation of the FORTH development language. Basic, but still very usable.

To make it more usable, there are three chip sockets, two of mine are filled: one 2K RAM chip and one ROM. The RAM is a standard CDM6116E2 chip, the ROM is another Rockwell part, R65FR1, running also at 1MHz. It contains the full version of the FORTH development language, dictionary and all. Into the third slot I can put an EEPROM to save applications to, or theoretically 12kB RAM, as the R65F11 supports up to 16kB outside its 192B. To connect to it, you connect any serial terminal/terminal emulator, no null modem adapter needed. It operates at 1200 baud, 7 bits, no parity, 2 stop bits, hardware flow control. I can set it to 9600 baud from software, but since it's text only it's not really sensible. In total there are eight chips, processor, ROM, RAM, two 74xxxx TTL chips for data latches, and a few little discrete chips. The board is blue and exactly 10cm on each side.

The part that makes this little box really usable, though, is the manual. It's probably around 200 pages or so, the original copy was typed on a typewriter and then xeroxed, bound with those plastic rings. This thing is just absolutely packed with FORTH theory, low level hardware info on the R65F11, loads of code examples, schematics, troubleshooting, etc. When I get the time I really need to take it apart and scan it all, it's priceless. Without it the RSC-FORTH box would be pretty useless.

Here's pictures of the case/board (and some video cards I also got from him) -
http://picasaweb.google.com/john8520/RSCFORTHVideoCards

And the front panel after I added the switch and whatnot (dig the labels!) - http://i28.tinypic.com/2z7ik5y.jpg

And here's a scan (not mine, but I own the document) of an add for it - http://i29.tinypic.com/15z1nyr.jpg

So far I'm having a lot of fun programming and fiddling with it, it's a seriously cool little computer, definitely the smallest and most powerful, considering its age. Very easy to use, you can program it in two ways too, either program it line by line, or you can create one big (or several big, linked together) named operations. An example of code for each, respectively could be: CR ." HELLO WORLD" . where CR does a charachter return and a line feed, ." tells it to pretty much ignore whatever is input, and save it, and then " tells it to stop ignoring. The . then is the same as the print command in basic. Once you enter that line and hit return it would dump out HELLO WORLDOK because I didn't put a space after world, and OK because after every non-errored line entered it says OK. For a named definition, : HW (PRINTS HELLO WORD) CR ." HELLO WORLD" . ; would work. The : means start colon definition, the ( ) is for a comment, the rest is the same as before, aside from the ; which ends the colon definition.

My current
over the su

Tags: None

May 3, 2008, 06:41 AM #2

Dwight Elvey
Senior Member

Join Date: Jun 2003
Posts: 4578

Hi
Rockwell was a great supporter of Forth for embedded applications.
They first made the AIM65. This was a traditional developemnt board
except it included a small thermal printer(I have one of these).
The sold several different ROM sets for these. The default was
Forth but they also had a BASIC. They had a few developement
application ROMs as well. these included an assembler, PLI language
(similar to PLM).
The board was similar in operation to the KIM/SIM boards of the time.
They were used in many embedded low run application. I once helped
debug some code for a disk ceritifier(sp?) that Seagate used.
Later Rockwell came out with the F11. I was vary popular for medium
run application (you know, 20 to 1000 each). They had the development
board that you have but many created their own boards.
16K is a lot of code in Forth. It is about 64K or more in C, so you can
write quite a bit.
The Forth used is basically FIG Forth as I recall. I still use Forth for
any code I write for my self, even though I do some C++ at work.
I find Forth more usedful for creating my "one ofs".
Dwight

May 3, 2008, 10:24 AM #3

Ksarul
Senior Member

Join Date: Apr 2007
Posts: 442

And a very nice find. Is there any thought of trying to do a scan of the manual to preserve it for posterity? A lot of these older systems manuals only exist in miniscule numbers, many less than the remaining examples of the boards, which is unfortunate.

Enter My Mind At Your Own Risk!

May 3, 2008, 05:58 PM #4

Aeroraptor
Junior Member

Join Date: Oct 2007
Posts: 19

Yes, I'd very much like to scan the manual, however at the moment I have no scanner (or access to a scanner) with a top sheet feeder, and that's the only effective way to scan this.

December 18, 2015, 09:21 AM #5

rw6hrm
Junior Member

Join Date: Feb 2010
Posts: 15

Hi
To build a 65F11-based computer I'm looking for 65FR1. This chip is difficult to acquire in our country, but does anyone have a firmware dump of 65FR1? I think that use a simply UW-ROM will be cheaper... Thanks.

December 18, 2015, 05:03 PM #6

inotarobot
Senior Member

Excellent score.

Well done. Always pays to accept with 'grace and smile' things that are being offered to you; even if much of it is really not in your primary field of interest or you know full well at first glance is junk.

Often leads, as you found out, to a subsequent lot of items arriving into your possession, amongst which is the 'gem', as you saw with the Forth board.

Join Date: Feb 2014
Posts: 1065

Generally I
so, as they
the day after it was given to you, as junk.

Having moved a few times now, many of my older items are scattered into different storage boxes, located in 3 or 4 places, so its difficult to put all things together again.

Need a big shed on level ground with easy access and 6 months to sort. OK I also need to win a lottery to have the spare cash to take the time to sort and combine.

December 19, 2015, 05:49 AM #7

Gerardcjat
Senior Member

Join Date: Feb 2010
Posts: 170

> *Originally posted by **rw6hrm***
> *Hi*
> *To build a 65F11-based computer I'm looking for 65FR1. This chip is difficult to acquire in our country, but does anyone have a firmware dump of 65FR1? I think that use a simply UW-ROM will be cheaper... Thanks.*

Hi,
Did you see this ebay item ?? :
http://www.ebay.fr/itm/Rockwell-AIM-...IAAOSwstxVNIHQ

and this one also ??

http://www.ebay.fr/itm/R65FR1P1-7-Se...4AAOSwyQtVtLUe

Last edited by Gerardcjat; December 19, 2015, 06:03 AM.

December 19, 2015, 11:15 AM #8

gslick
Senior Member

Join Date: Dec 2010
Posts: 2032

> *Originally posted by **Gerardcjat***
> *Hi,*
> *Did you see this ebay item ?? :*
> *http://www.ebay.fr/itm/291438091377*

Aren't those ROM images already available here?
http://www.classiccmp.org/cini/systems.htm
http://www.classiccmp.org/cini/zips/aim_roms.zip
http://www.classiccmp.org/cini/zips/forth_pl65roms.zip

December 19, 2015, 01:35 PM #9

dave_m
Senior Member

Join Date: Feb 2009
Posts: 3199

> *Originally posted by **Gerardcjat***
> *Hi,*
> *Did you see this ebay item ?? :*
> *http://www.ebay.fr/itm/Rockwell-AIM-...IAAOSwstxVNIHQ*
>
> *and this one also ??*
>
> *http://www.ebay.fr/itm/R65FR1P1-7-Se...4AAOSwyQtVtLUe*

The first link seems to be for the FORTH EPROMs that will run in the AIM65 starting at $B000 through $CFFF using AIM65 Monitor routines.
The second link seems to be for the R65FR1 that will run the the RSC Forth board at $2000 through $3FFF.

The ROM images I've seen on the web are usually for the AIM65.

December 23, 2015, 11:03 AM #10

rw6hrm
Junior Member

Join Date: Feb 2010
Posts: 15

If anibody need R65FR1 image (RSC-Forth V1.7), see link for archive http://www.4e4th.com/RSC_Forth_V1.7.zip or mirror https://vk.com/doc-72949118_437147289

January 31, 2019, 01:25 AM #11

> *Originally posted by **Aeroraptor***

exidyboy
Senior Member

Acco
a company called Rockwell International.

Join Date: May 2018
Posts: 259

While the OP hasn't logged in for 10 years if anyone else has documentation for this (actually) New Micros of Dallas NMIX-0011 FORTH development board I would be very interested in getting scans as I just bought one off ebay.

The large manual for RSC FORTH does indeed live up to the OP's claims and can be found at the link below but I am after the manuals for the hardware itself.
http://www.smallestplcoftheworld.org...27s_Manual.pdf