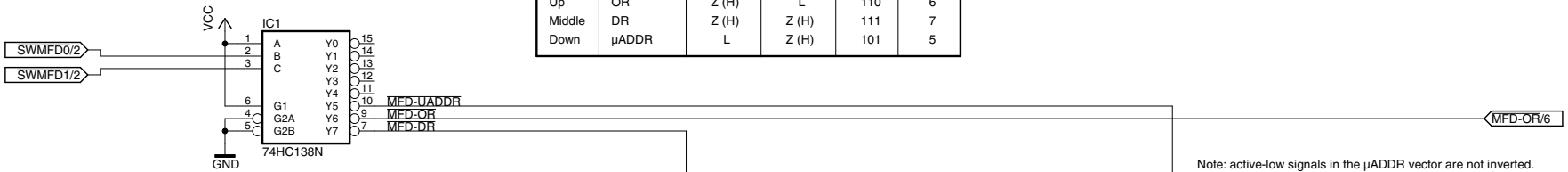
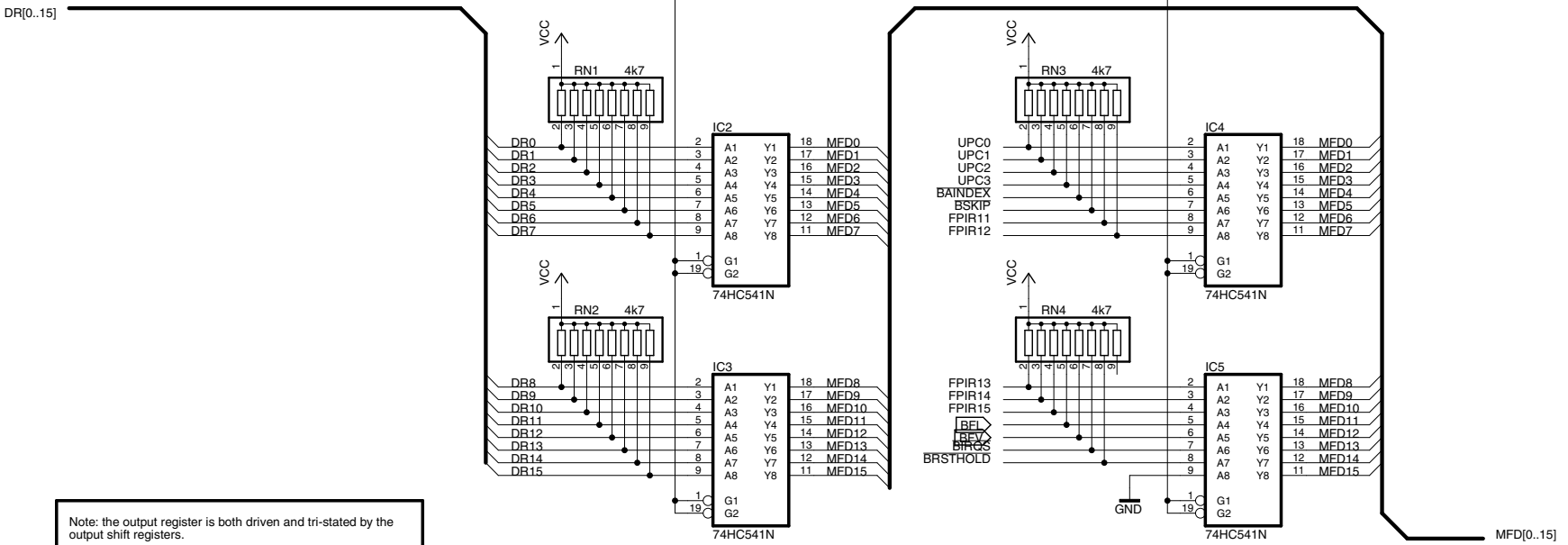
CFT Mini-Computer

Front Panel: Multi-Function Display

Switch	MFD Shows	SWMFD0	SWMFD1	Vector	Output
Up	OR	Z (H)	L	110	6
Middle	DR	Z (H)	Z (H)	111	7
Down	µADDR	L	Z (H)	101	5



Note: active-low signals in the µADDR vector are not inverted. The aim is to show the micro-instruction address in ROM, and inverted bits would confuse the matter. The front panel shows this.

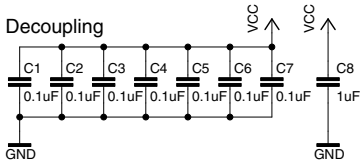


Note: the output register is both driven and tri-stated by the output shift registers.

Output Register

Data Register (DR)

µADDR Vector



TODO:

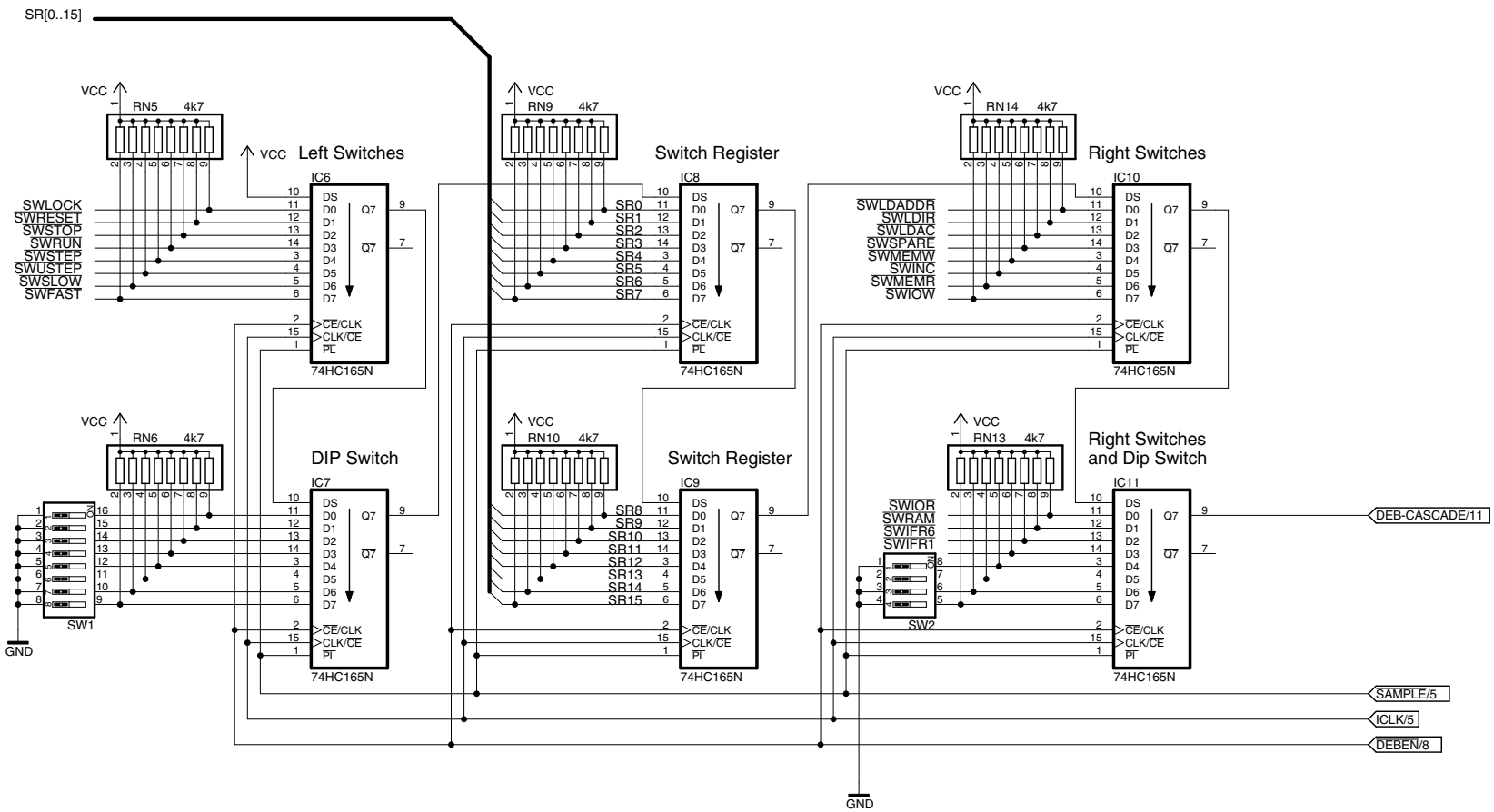
* DRC

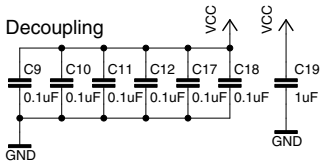
U

Title: front-panel-revD-DEB-board1	
Revision: Rev C	
Last Change: 29 Nov 2013 13:41:25	
Drawn by: Alexios	3/11
Simulation filename: N/A	
More Info: http://www.bedroomlan.org/cft	

CFT Mini-Computer

Input Shift Registers, switches and computer buses

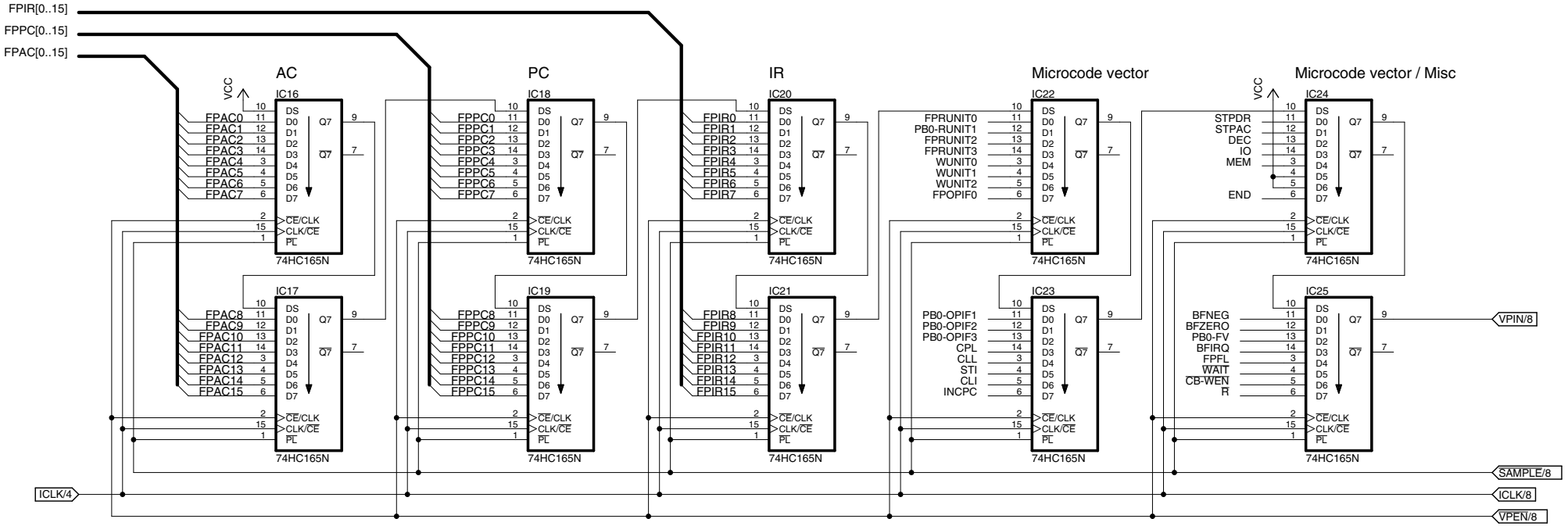


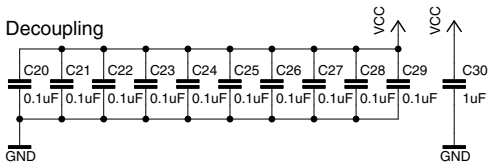


U	Title: front-panel-revD-DEB-board1
	Revision: Rev A
	Last Change: 29 Nov 2013 13:41:25
	Drawn by: Alexios 4/11
	Simulation filename: To be coded
	More Info: http://www.bedroomlan.org/cft

CFT Mini-Computer

Input shift registers, processor state

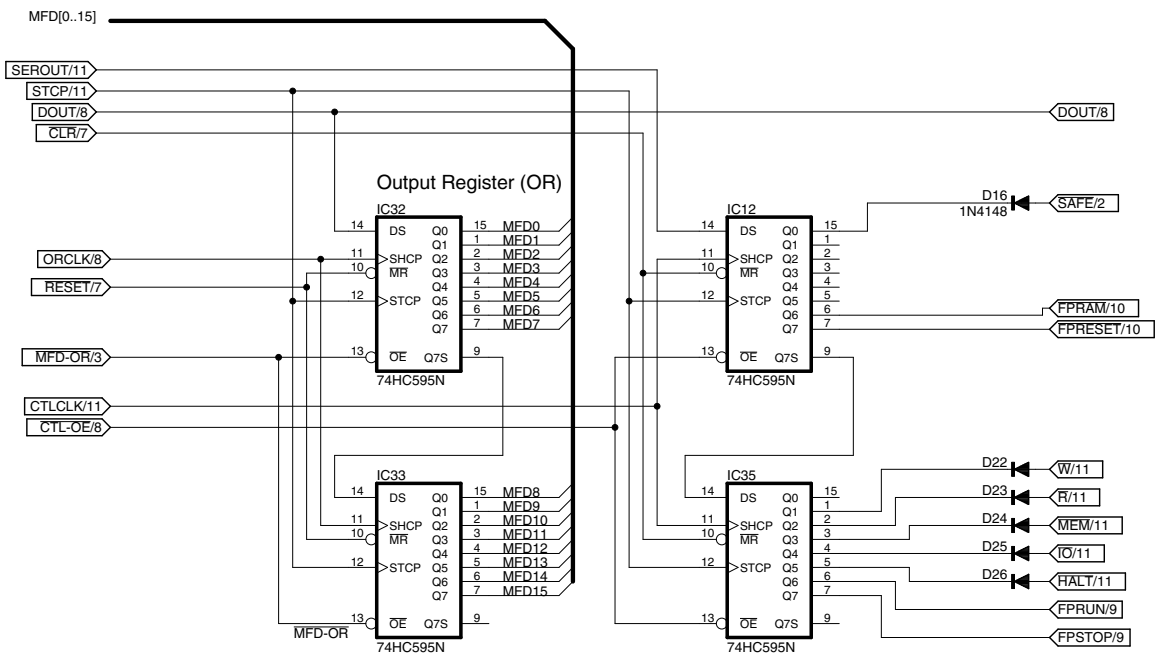




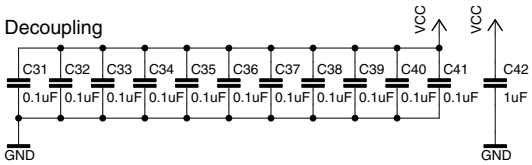
U	Title: front-panel-revD-DEB-board1
	Revision: Rev A
	Last Change: 29 Nov 2013 13:41:25
	Drawn by: Alexios 5/11
	Simulation filename: To be coded
	More Info: http://www.bedroomlan.org/cft

CFT Mini-Computer

Output shift registers



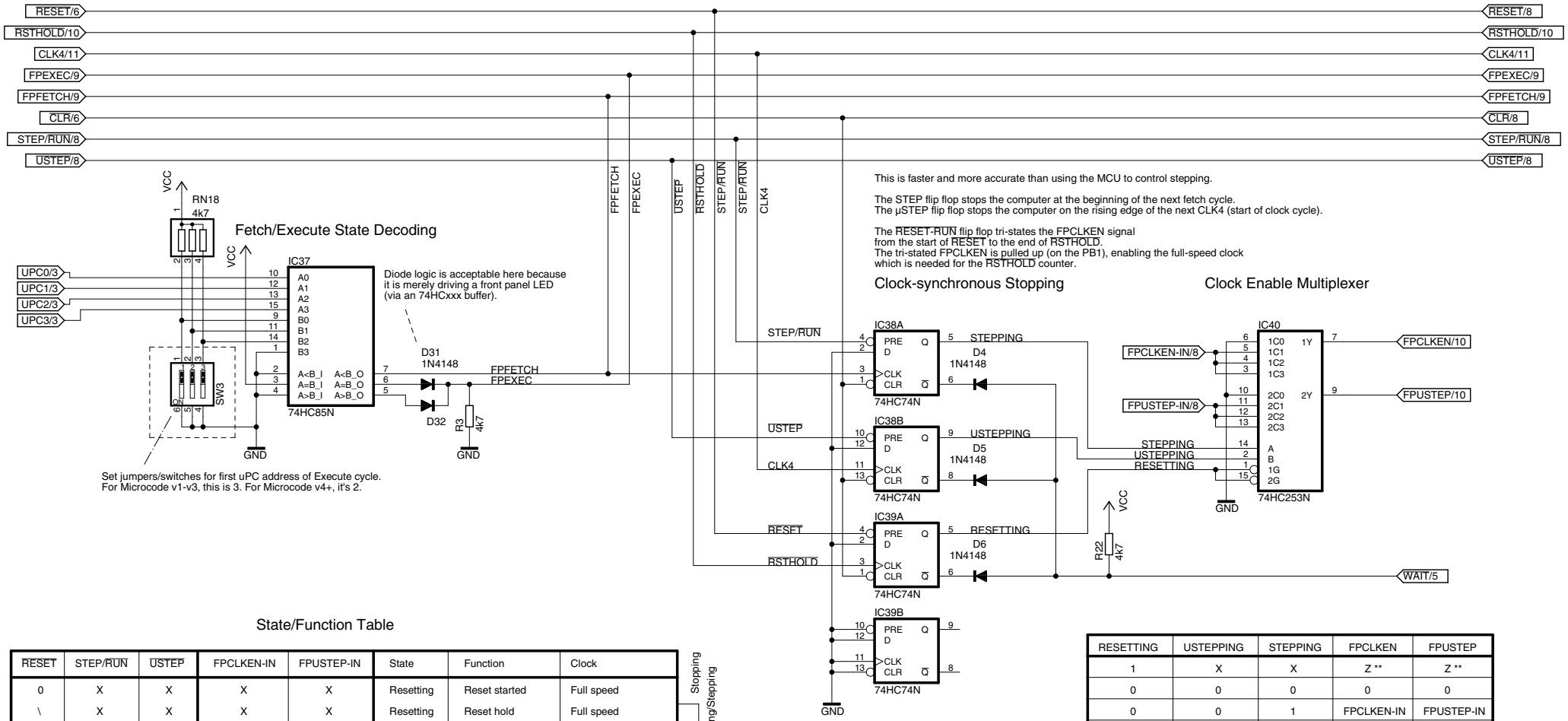
The OR supplies signals to the MFD bus directly.
It displays on the front panel Multi Function Display (MFD)
When the MFD switch is in the OR position (i.e. MFD-OR is low)
It's also unaffected by CLR strobes, resetting to zero when
the computer itself resets (RESET asserted).



U	Title: front-panel-revD-DEB-board1
	Revision: Rev A
	Last Change: 29 Nov 2013 13:41:25
	Drawn by: Alexios 6/11
	Simulation filename: To be coded
	More Info: http://www.bedroomlan.org/cft

CFT Mini-Computer

Front Panel: Fetch/Execute Decoding, Synchronous Stopping



State/Function Table

RESET	STEP/RUN	USTEP	FPCLKEN-IN	FPUSTEP-IN	State	Function	Clock
0	X	X	X	X	Resetting	Reset started	Full speed
\	X	X	X	X	Resetting	Reset hold	Full speed
1	0	X	1	X	Running	Normal operation	Full speed
1	0	X	0	Strobing	Running	Normal operation	Slow (FPUSTEP-IN)
1	/	X	1	X	Stepping	Step Initiated	Full speed
1	/	X	0	Strobing	Stepping	Step Initiated	Slow (FPUSTEP-IN)
1	1	/	1	X	µStepping	µStep Initiated	Full speed
1	1	/	0	Strobing	µStepping	µStep Initiated	Slow (FPUSTEP-IN)
1	1	1	1	X	Stopping	Stopping/Stopped	N/A
1	1	1	0	Strobing	Stopping	Stopping/Stopped	N/A
1	1	1	0	0	Stopped	Stopped	N/A

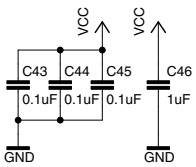
Stopping

Starting/Stepping

RESETTING	USTEPPING	STEPPING	FPCLKEN	FPUSTEP
1	X	X	Z **	Z **
0	0	0	0	0
0	0	1	FPCLKEN-IN	FPUSTEP-IN
0	1	0	FPCLKEN-IN	FPUSTEP-IN
0	1	1	FPCLKEN-IN	FPUSTEP-IN

** PB0 board pulls up FPCLKEN, enabling the clock when the output is in the high impedance state.

Decoupling

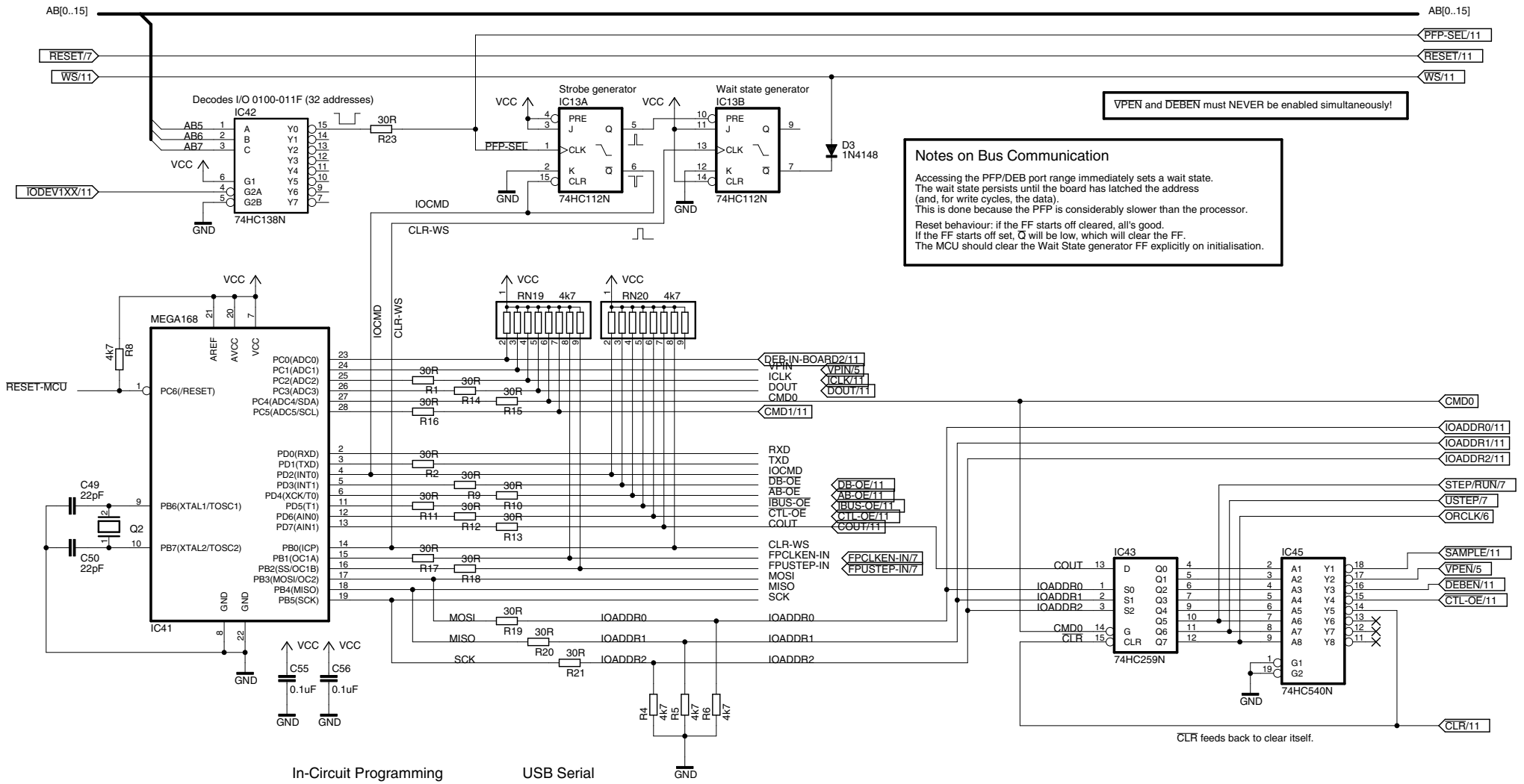


U

Title:	front-panel-revD-DEB-board1
Revision:	Rev A
Last Change:	29 Nov 2013 13:41:25
Drawn by: Alexios	7/11
Simulation filename:	To be coded
More Info:	http://www.bedroomlan.org/cft

CFT Mini-Computer

Front Panel: System Device



TODO:

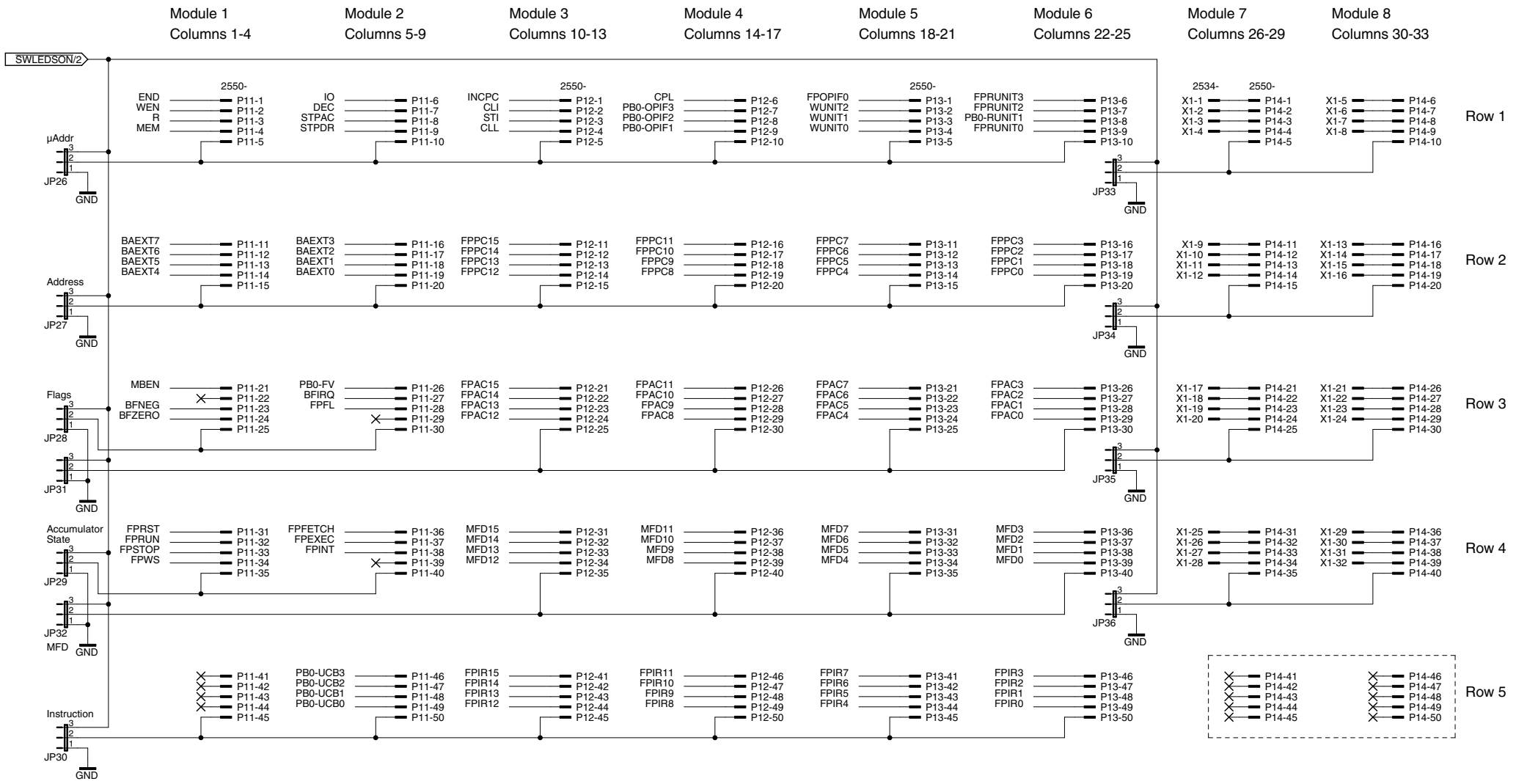
* DRC

U

Title:	front-panel-revD-DEB-board1
Revision:	Rev A
Last Change:	29 Nov 2013 13:41:25
Drawn by:	Alexios 8/11
Simulation filename:	To be coded
More Info:	http://www.bedroomlan.org/cft

CFT Mini-Computer

Front Panel Light Connections

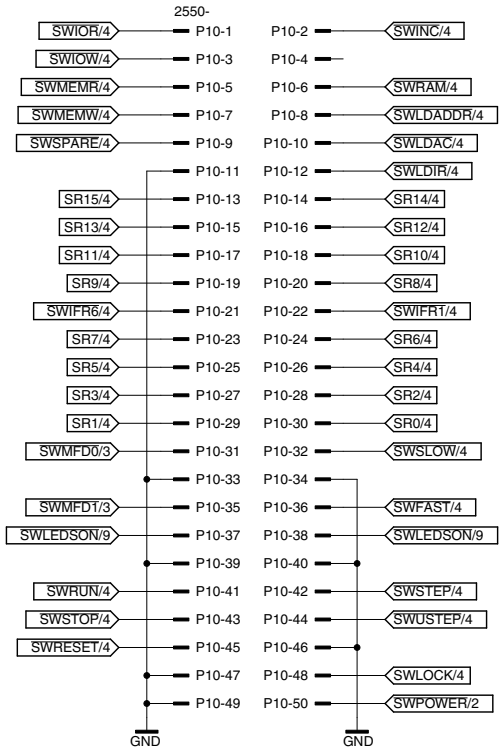


U	Title: front-panel-revD-DEB-board1
	Revision: Rev A
	Last Change: 29 Nov 2013 13:41:25
	Drawn by: Alexios 9/11
	Simulation filename: N/A
	More Info: http://www.bedroomlan.org/cft

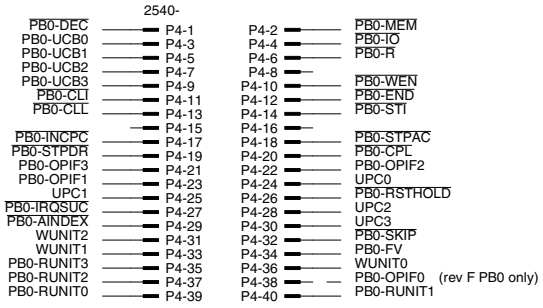
CFT Mini-Computer

Connectors

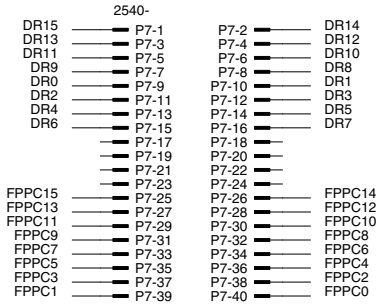
Switch Assembly



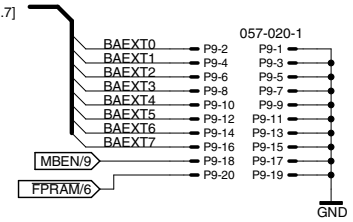
Processor Board 0



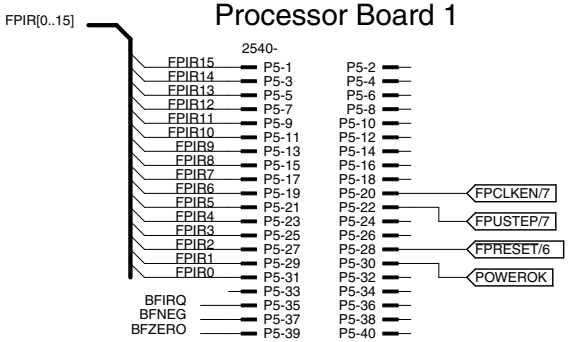
Processor Board 2



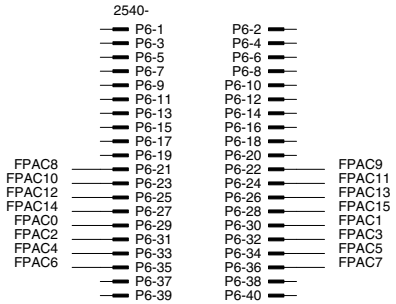
Processor Board 3 (MBU)

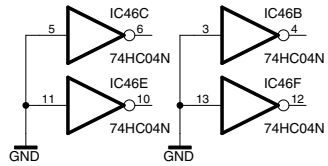


Processor Board 1



Processor Board 2

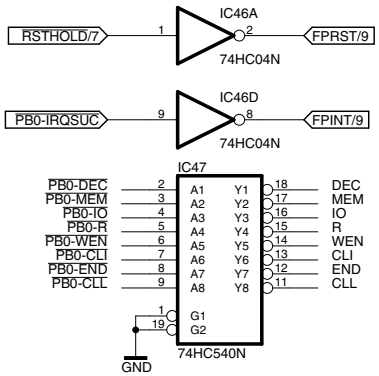


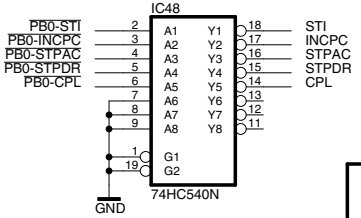


Microcode Address signals are NOT inverted.

PB0-IRQSUC	=	BIRQS
PB0-SKIP	=	BSKIP
PB0-RSTHOLD	=	BRSTHOLD
PB0-AINDEX	=	BAINDEX

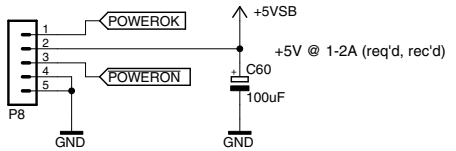
Signal Inversion

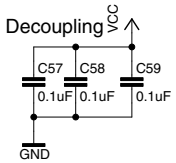




Power Supply

From power supply loom

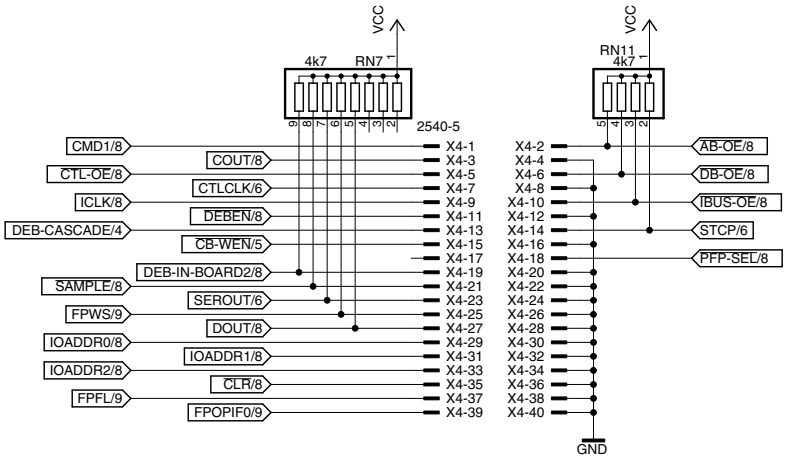




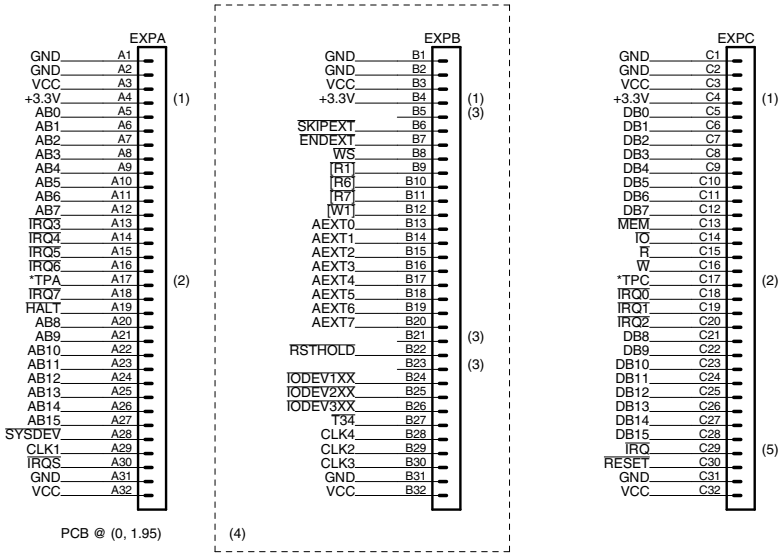
Title:	front-panel-revD-DEB-board1
Revision:	Rev C
Last Change:	29 Nov 2013 13:41:25
Drawn by: Alexios	10/11
Simulation filename:	N/A
More Info:	http://www.bedroomlan.org/cft

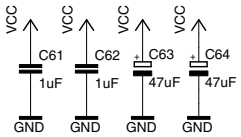
CFT Mini-Computer

Bus Connectors



Expansion Bus (computer bus)





Notes

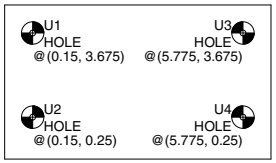
(1) This pin is connected to a bus bar for power distribution, but the CFT does not (yet) require it. It's likely to be connected to another voltage level like +3.3V for easier interfacing. Reserved for now.

(2) Pins *TPA and *TPC are not bussed. They are locally connected to each card's corresponding test pins (A17 & C17) to serve as test points.

(3) Reserved for future expansion

(4) Cheaper, 64-pin A+C row DIN41662 Type C plugs may be used for most expansion cards.

(5) $\overline{IRQ}$ is provided for systems which lack an interrupt controller ($\overline{IRQ0\text{-}7}$)



[PCB Logo]

[QR Code http://www.bedroomlan.org/cft (shortened)]

open hardware

J

Title: front-panel-revD-DEB-board1	
Revision: Rev J	
Last Change: 29 Nov 2013 13:41:25	
Drawn by: Alexios	11/11
Simulation filename: N/A	
More Info: http://www.bedroomlan.org/cft	