Description of Alesis HD24 Meter Display – 40-bit word breakdown

A short description of the basic working of the meter display:

The Alesis HD24 VFD's are driven by multiple Oki MSC1162A chips. The 1162A contains a 40-bit bidirectional shift register, a 40-bit latch circuit and a 40-bit output circuit. The Meter display MSC1162A receives a 40-bit word clocked into pin 29, triggered by the leading edge of a Clock signal applied to pin 34. When the full 40-bit word has been clocked in, a Latch Signal is clocked on pin 26, which moves the data word to the latch registers, and sets up the outputs on the HVO1 thru HVO40 pins. These High Voltage Outputs are connected to the segments, grids, and filaments of the Vacuum Florescent Display, thereby activating each segment of the display.
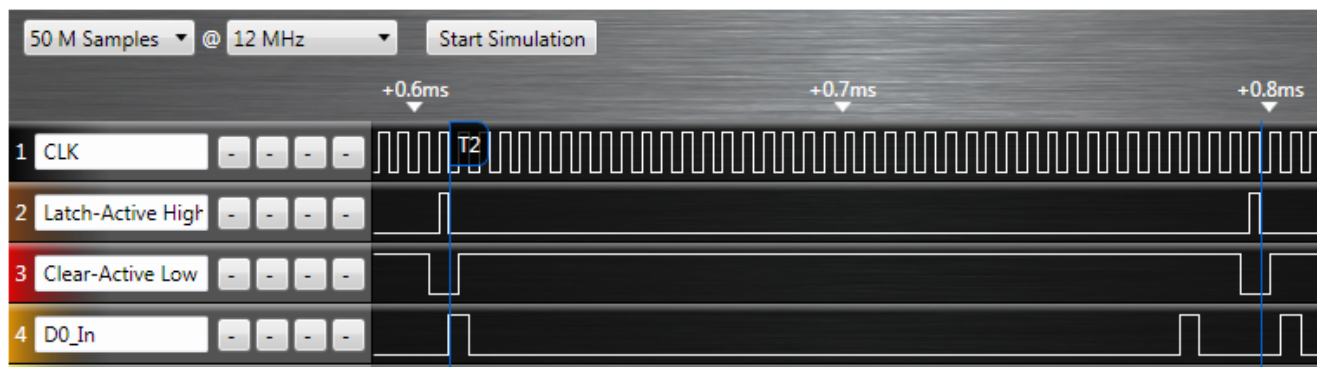

Figure 1.

The above is a screenshot of the logic analyzer results from the HD24. Signal D0_In is the 40-bit word. You will notice Bit 1 and Bit 37 are High, and all other display bits are low. This means that this word is the display data for Track 1. See attached charts for more details. Bit 37 possibly corresponds to the channel number segment for each track, in this case the "1" segment. You can also see that the following 40-bit word has Bit 1 is low, and Bit 2 is high. The bigger picture is that the 40-word is clocked 26 times, with each word carrying data for a corresponding track or display column. Only 1 of the first 26 bits are set high for addressing the desired column, and the remaining 14 bits are set high or low to denote which segment of the selected column is lit.
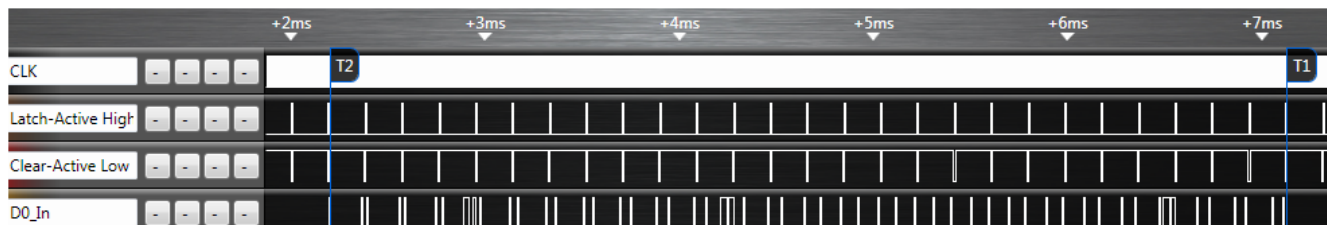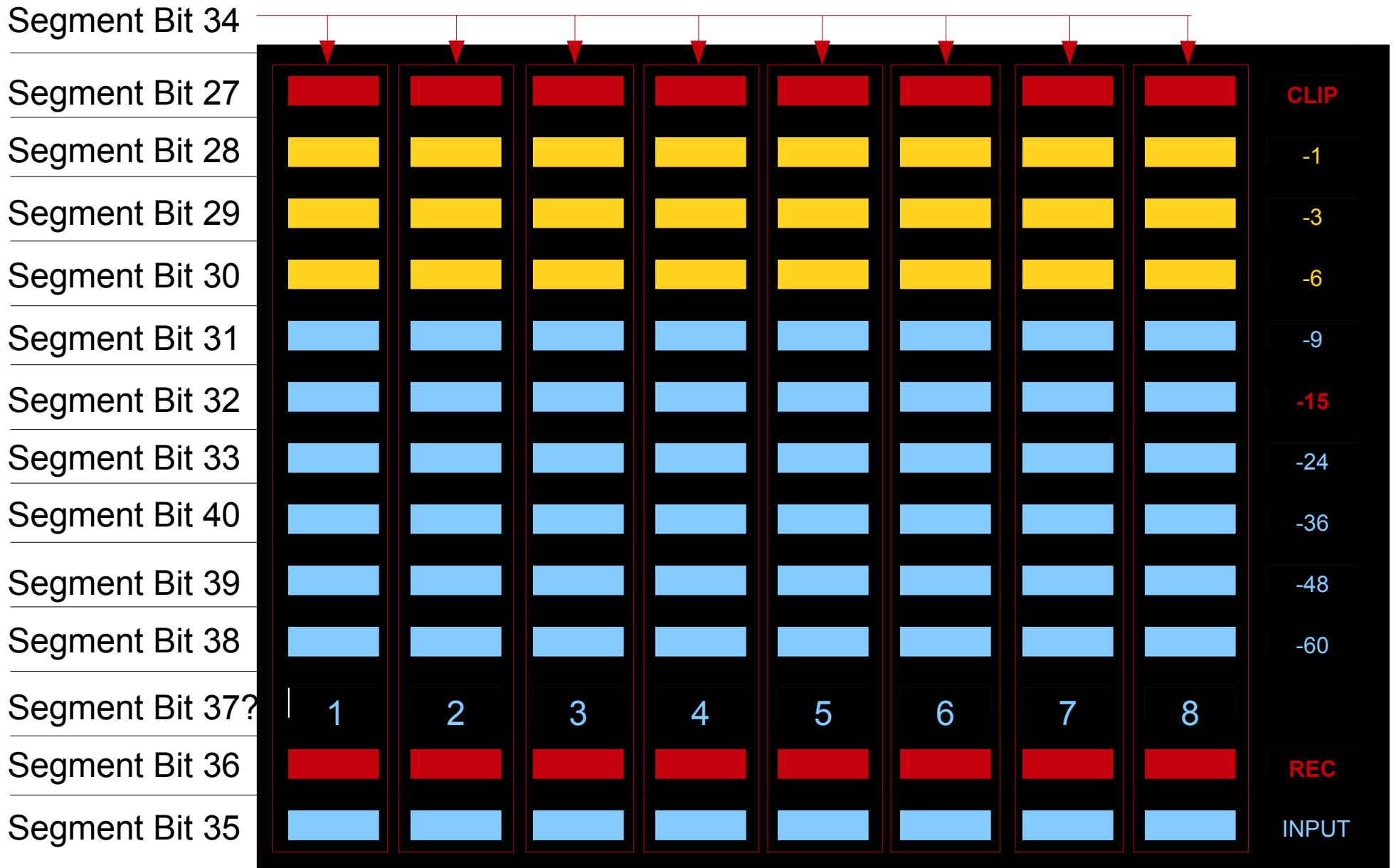

Figure 2.

Figure 2 shows a full 26 segments of 40-bit words clocked through. Total time for this is 4.931167 milliseconds. Following this is 2.65525 milliseconds of no words being clocked, then the process repeats. Every 7.586417 a new set of display data words start clocking, which means a refresh rate of roughly 131.8 times per second. No flicker :)

Just so I don't seem like a complete nerd I will move on from the math. I hate math. I cheated. My logic analyzer did the math for me.

I will be using this information to continue my project of a remote display for the HD24. If anyone finds any discrepancies or has questions, go ahead and email me.

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12/27/2008

Possible Bit Chart for Alesis HD24 Meter Display – Oki MSC1162A

Drawn by: Kris Hall 12/27/2008

Segment Bit 34

	1	2	3	4	5	6	7	8	
Segment Bit 27									CLIP
Segment Bit 28									-1
Segment Bit 29									-3
Segment Bit 30									-6
Segment Bit 31									-9
Segment Bit 32									-15
Segment Bit 33									-24
Segment Bit 40									-36
Segment Bit 39									-48
Segment Bit 38									-60
Segment Bit 37?	1	2	3	4	5	6	7	8	
Segment Bit 36									REC
Segment Bit 35									INPUT

Track 1-8 Bits	1	2	3	4	5	6	9	10	11?
Track 9-16 Bits	12	13	14	15	16	26	25	24	23?
Track 17-24 Bits	22	21	20	19	18	17	7	8	