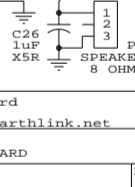
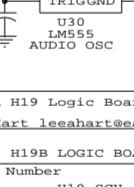
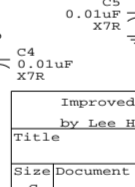
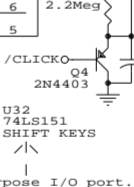
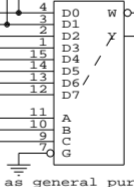
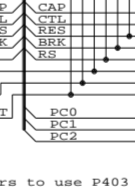
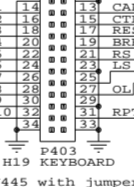
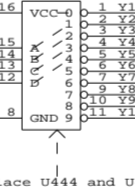
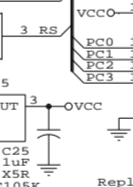
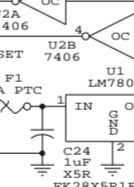
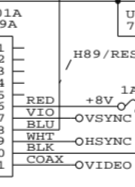
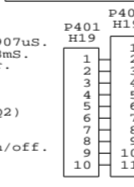


**NOTES:**

1. Char.Gen EPROM has normal and reverse versions of each character. Set bit D7=1 for reverse video version of the character.
2. Z80 uses RAM from 32-64k; 6845 uses RAM from 48-64k.
3. VGA output (instead of NTSC). Characters formed in 8w x 16h matrix. 80 characters x 25 lines, so resolution is 640w x 400h pixels (in a field of 781w x 480h). Monochrome, but color is jumper-selectable. DOTCLK=24.576MHz, CHARCLK=DOTCLK/8=3.072MHz (ACE baud rate clock). Active video = 26.042us out of 31.779us/line. Hor 31.467 KHz, front porch 0.636us, neg.sync 3.813us, back porch 1.907us. Vert 59.94Hz, front porch 0.318ms, neg.sync 0.064ms, back porch 1.048ms.
4. VGA output: 0.7vpp, 74 ohms double-terminated. Black background color. Foreground color jumpers selectable to RGB, with 2 levels for each. Reverse video swaps foreground/background colors.
5. PS/2 Keyboard: KCIN = ACE RI KCOUT = ACE /OUT1 (inverted by Q2) KDIN = ACE /RLSD KDOUT = ACE /OUT2
6. Output latch U441: D0=POINT, D1=REVERSE, D2-D6=Audio freq, D7=Audio on/off.
7. H19 board is 10"x11". Noberto's H89-SBC is 5.625"x9.25".
8. C27+, D9+, R20+, U33+ not used.



Improved H19 Logic Board		
by Lee Hart leeahart@earthlink.net		
Title	H19B LOGIC BOARD	
Size/Document Number	C H19.SCH	
Date:	July 10, 2016	Sheet 1 of 1

Replace U444 and U445 with jumpers to use P403 as general purpose I/O port.