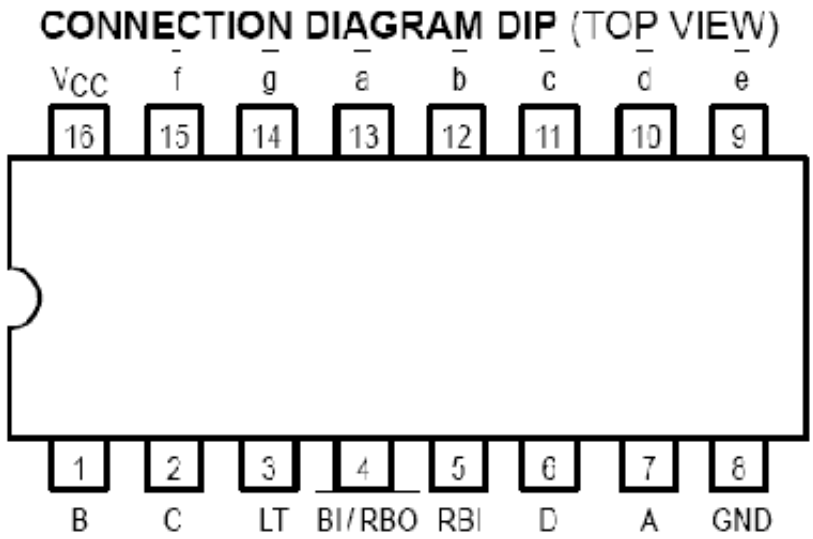
Using the 74xx47 BCD to Seven-segment display

The 74xx47 chip is used to drive 7 segment display. You must use the 74xx47 with a **common anode 7-segment display** (e.g. Kingbright part number SA03). The input to the 74xx47 is a binary number **DCBA** where D is 8s, C is 4s, B is 2s and A is 1s. The inputs DCBA often come from a binary counter.

The display is only sensible if the binary number is between DCBA=0000 (0) and DCBA=1001 (9); this is called Binary Coded Decimal or BCD for short. If the number is larger than 9 you get a strange output on the display. Try this out by moving your mouse over the truth table.

The inputs $\overline{BI}/\overline{RBO}$, $\overline{RBI}$ and $\overline{LT}$ are usually connected to 5v

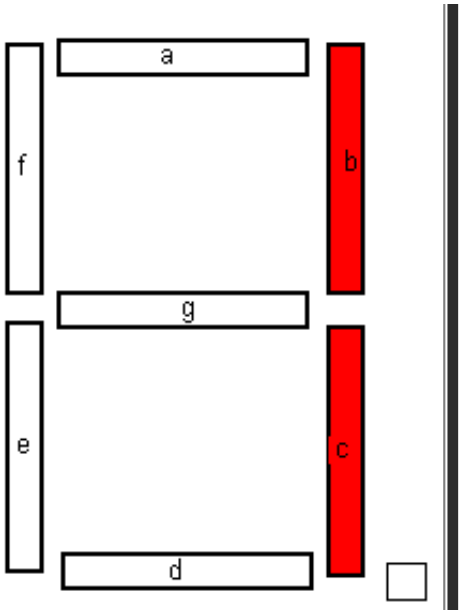


Simple use

1. Connect V_{cc} [pin 16], $\overline{LT}$ [pin 3], $\overline{BI}/\overline{RBO}$ [pin 4] and $\overline{RBI}$ [pin 5] to 5v.
2. Connect Gnd [pin 8] to 0v.
3. connect DCBA [pins 1, 2, 6 and 7] to DCBA on your counter.
4. Connect $\overline{a}\,\overline{b}\,\overline{c}\,\overline{d}\,\overline{e}\,\overline{f}\,\overline{g}$ [pins 9-15] to abcdefg on the common anode 7-segment display.

Inputs							Outputs							
D	C	B	A	$\overline{BI}/\overline{RBO}$	$\overline{RBI}$	$\overline{LT}$	$\overline{a}$	$\overline{b}$	$\overline{c}$	$\overline{d}$	$\overline{e}$	$\overline{f}$	$\overline{g}$	Display
0	0	0	0	1	1	1	0	0	0	0	0	0	1	
0	0	0	1	1	1	1	1	0	0	1	1	1	1	
0	0	1	0	1	1	1	0	0	1	0	0	1	0	
0	0	1	1	1	1	1	0	0	0	0	1	1	0	
0	1	0	0	1	1	1	1	0	0	1	1	0	0	
0	1	0	1	1	1	1	0	1	0	0	1	0	0	
0	1	1	0	1	1	1	1	1	0	0	0	0	0	

0	1	1	1	1	1	1	0	0	0	1	1	1	1
1	0	0	0	1	1	1	0	0	0	0	0	0	0
1	0	0	1	1	1	1	0	0	0	1	1	0	0
1	0	1	0	1	1	1	1	1	1	0	0	1	0
1	0	1	1	1	1	1	1	1	0	0	1	1	0
1	1	0	0	1	1	1	1	0	1	1	1	0	0
1	1	0	1	1	1	1	0	1	1	0	1	0	0
1	1	1	0	1	1	1	1	1	1	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1



Advanced use

$\overline{LT}$ stands for Lamp Test. When $\overline{LT}$ is low all the segments on the 7-seg display are lit regardless of DCBA. Click here to try this out on the truth table below.

$\overline{BI}$ stands for Blanking Input. When $\overline{BI}$ is low the display is blank so all the segments on the 7seg display are off regardless of DCBA. Click here to try this out on the truth table below.

$\overline{RBI}$ stands for Ripple Blanking Input. When $\overline{RBI}$ is low and DCBA=0000 the display is blank otherwise the number is displayed on the display. This is used to remove leading zeroes from a number (e.g. diplay 89 instead of 089). To use with more than one display connect $\overline{RBO}$ (Ripple Blanking Output) from most significant 74xx47 to the $\overline{RBI}$ of the next 74xx47.
Connect $\overline{RBI}$ of the least significant 74xx47 to 5v unless you want the diplay to turn off when the number is 0.

Inputs							**Outputs**							
D	**C**	**B**	**A**	$\overline{BI}$/$\overline{RBO}$	$\overline{RBI}$	$\overline{LT}$	$\overline{a}$	$\overline{b}$	$\overline{c}$	$\overline{d}$	$\overline{e}$	$\overline{f}$	$\overline{g}$	**Display**
X	X	X	X	0	1	1	1	1	1	1	1	1	1	
X	X	X	X	1	1	0	0	0	0	0	0	0	0	
0	0	0	0	1	0	1	1	1	1	1	1	1	1	
0	0	0	1	1	0	1	1	0	0	1	1	1	1	
0	0	1	0	1	0	1	0	0	1	0	0	1	0	
0	0	1	1	1	0	1	0	0	0	0	1	1	0	
0	1	0	0	1	0	1	1	0	0	1	1	0	0	
0	1	0	1	1	0	1	0	1	0	0	1	0	0	
0	1	1	0	1	0	1	1	1	0	0	0	0	0	
0	1	1	1	1	0	1	0	0	0	1	1	1	1	

1	0	0	0	1	0	1	0	0	0	0	0	0	0
1	0	0	1	1	0	1	0	0	0	1	1	0	0
1	0	1	0	1	0	1	1	1	1	0	0	1	0
1	0	1	1	1	0	1	1	1	0	0	1	1	0
1	1	0	0	1	0	1	1	0	1	1	1	0	0
1	1	0	1	1	0	1	0	1	1	0	1	0	0
1	1	1	0	1	0	1	1	1	1	0	0	0	0
1	1	1	1	1	0	1	1	1	1	1	1	1	1