

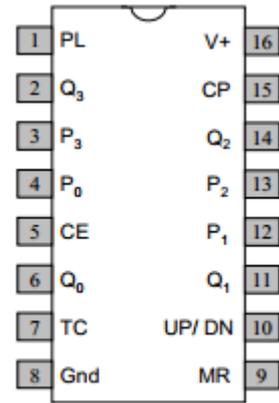
# Kitronik Ltd – 4510B – Up down counter

## TECHNOLOGY DATA SHEET AND SPECIFICATIONS

The 4510B counter is a binary coded decimal four bit up down counter. It can either count up from zero to nine or down from nine to zero. The output is indicated in binary.

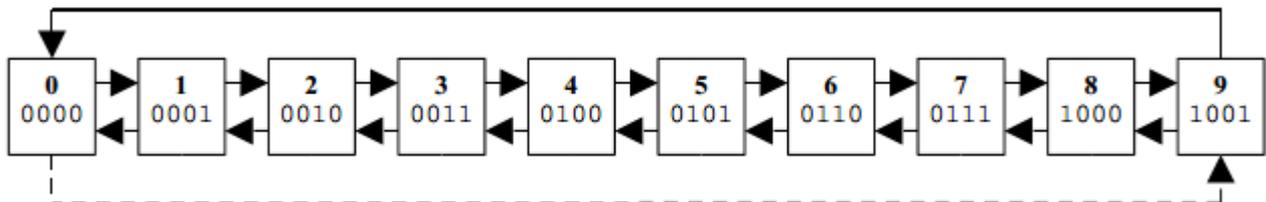
**DC Characteristics**

Min supply voltage = 3V  
 Max supply voltage = 15V  
 Max current < 0.6 mA  
 Max clock freq (CP) = 2MHz



Pin out - top view

The diagram below shows how the counter operates when clocked, the solid line indicates a clock when set to count up and the dotted line when set to count down. The second number in each of the boxes is the binary representation of the data that will be present on the counter outputs Q3 to Q0.



In addition to the four outputs Q3 to Q0, there are four inputs P3 to P0 to Parallel Load (PL) a desired value. When the PL pin is taken high the data on the inputs P3 to P0 are loaded into the counter. This functionality can be used to reload the counter with any value.

The following table lists the pins not mentioned so far and their setting:

Pin Name	Input/ Output	Description
CE	Input	Count enable (active low) Low = Counting functionality enabled High = Clocking the count line has no effect, the previous value is held
CP	Input	Clock pulse – causes the count to either go up or down by one, clocking take place on the rising edge
UP / DN	Input	Up / Down mode Low = down High = up
MR	Input	Master Reset (active high) Low = normal operation High = hold the device in a reset state, where CP, PL and outputs Q3 to Q0 are disabled. The count is zeroed.
TC	Output	Terminal Count (active low) Low = the count is about to wrap around High = normal operation The terminal count pin can be used to clock a 2 <sup>nd</sup> counter. TC is low when the count is zero for down counting, or low when the count is nine for up counting. Thus as the count actually wraps around the TC pin changes from low to high, which can be fed into the CP of the next digit.