

Counter/Timer On Measurement

Precision Timing of Events, Frequencies or Signal Periods

General Specifications

Operates 3.0 to 5.5V

24 Bit Counter

SPI Interface

LSB first, read only the bits as needed

Count Input Pulses

Microprocessor start and stop timer

External start and stop as from a RTC

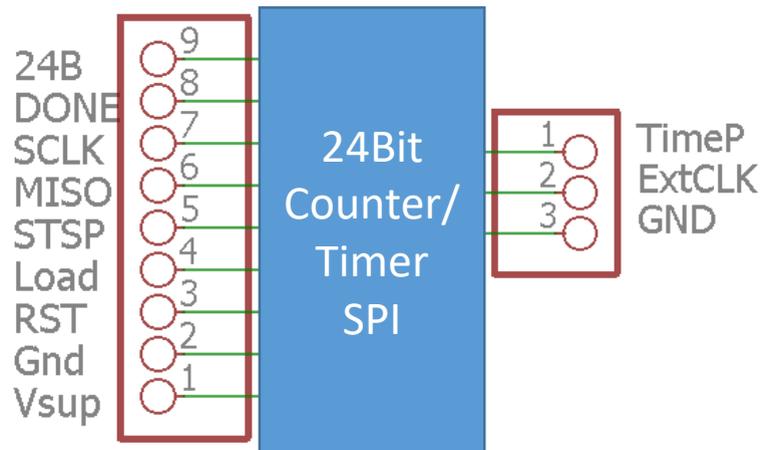
Time the period of a digital signal

For measuring events

On board 25M/50MHz clock

External Clock Option as

An RTC with 1 second pulse X 24bits = ~190 days with 1 second resolution



Go to www.onmeasurement.com and download sketch "Timer/Counter"

Applications

The Counter/Timer Shield frees up your uP and reduces your amount of coding while improving accuracy. This 24Bit counter can be used to measure the period of a signal, measure the length of a high pulse, or count the number of events (pulses) of a signal. Using the fast comparator shield this Counter/Timer Shield can measure the timing between two analog signals. The comparator also has a which came first bit.

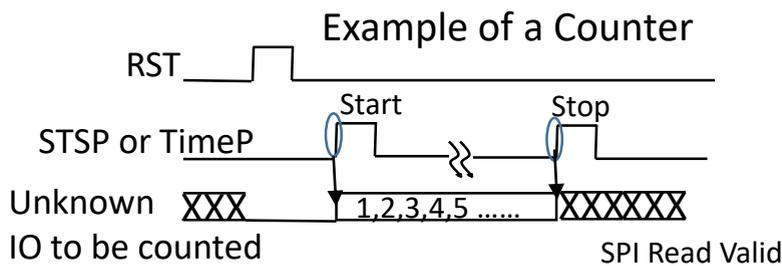
As a counter, the counter will count the number of digital logic high pulses at the ExtCLK input. For example, if an optical switch is tripped by an event, you can track the number of events using the uP timer and this counter.

As a fast timer, the timer can track the period (1/frequency) of a frequency or the timing between two pulses.

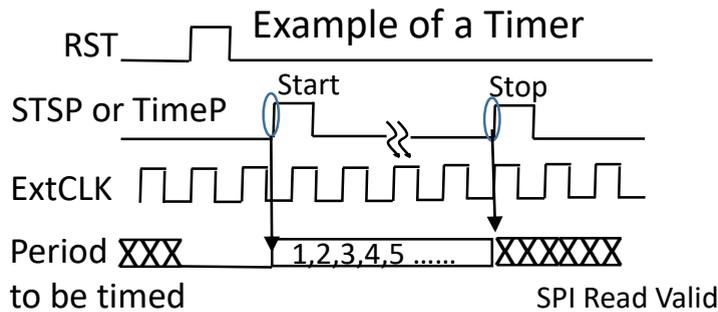


General Operation

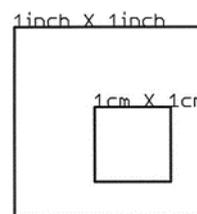
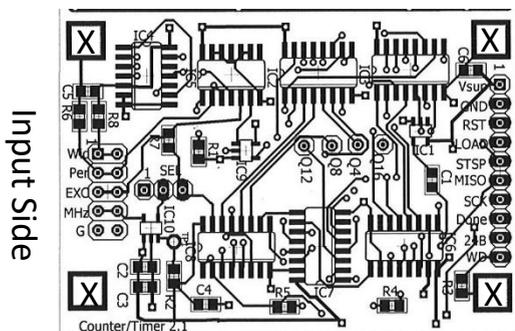
The RST single comes from the uP as a digital IO. A RST = "1" holds the 24 bit counter in reset, all zeros. Once the RST = "0" the counter will start counting with either (not both) the STSP or TimeP input digital IO signal. The uP can start and stop (STSP) the counter providing a fix period for counting. The counter starts on a rising edge and then stops on the following rising edge. Or the counter starting and stopping can be from an external IO signal, TimeP. For example, if TimeP is the 1 second clock from a RTC, the 24Bit counter will count any incoming IO for 1 second. The ExtCLK clock is the digital IO signal to be counted.



Using a fixed frequency clock at the ExtCLK input, the counter becomes a period timer for the TimeP or STSP input. The period is $\text{Counter} * \text{Frequency}(\text{ExtCLK})$. The period value is turn into the frequency of the TimeP or STSP input by $1/(\text{Counter} * \text{Frequency}(\text{ExtCLK}))$. Can also use the Arduion tone() function for 32Hz to 64KHz.



The images below are 1:1. Print them as "Actual Size", cut it out and use to layout your assembly and for drilling mounting holes. Use the print test square to verify your printer setting.



"X" Mounting Holes