## Timer initialize ( simple delay)

Conter register: 16 bit

Prescaler register: 16 bit

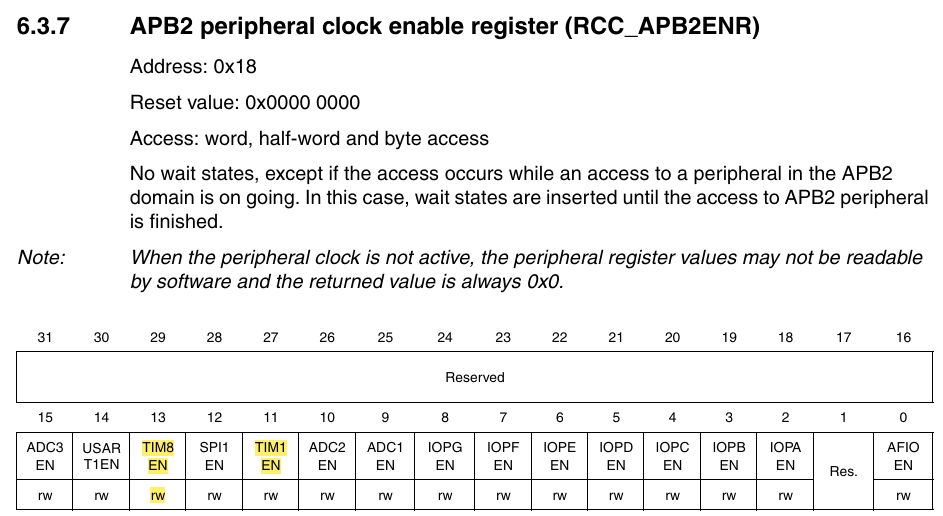
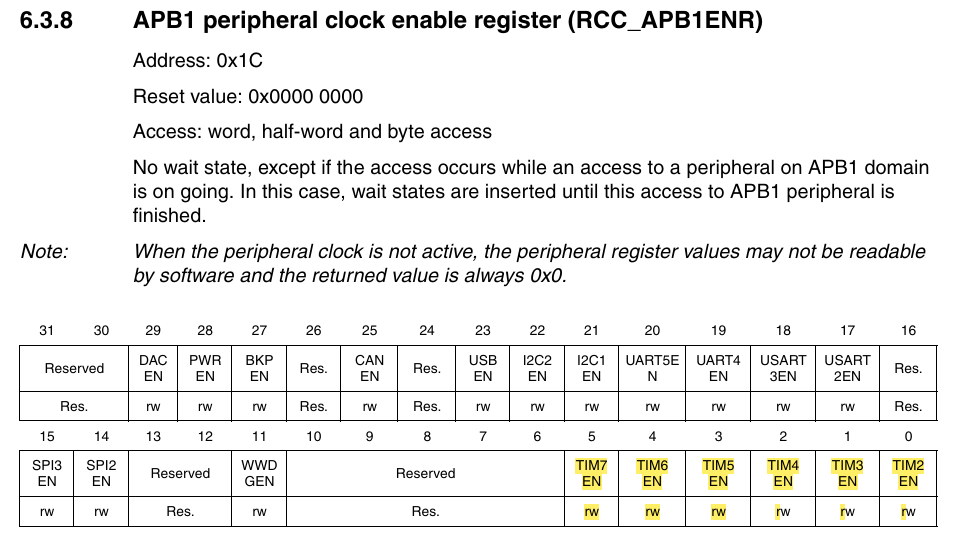
Auto reload register: 16 bit

Tim->1 is in APB2

Tim->2,3,4 in APB1

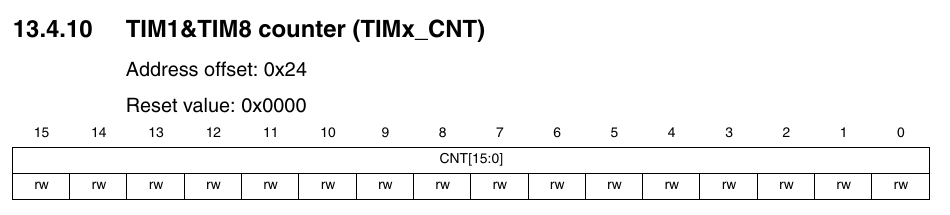
## Steps to enable:

### Enable clock:

* 1. Tim->1 is in APB2-> bit 11
  2. Tim->2,3,4 in APB1

### 

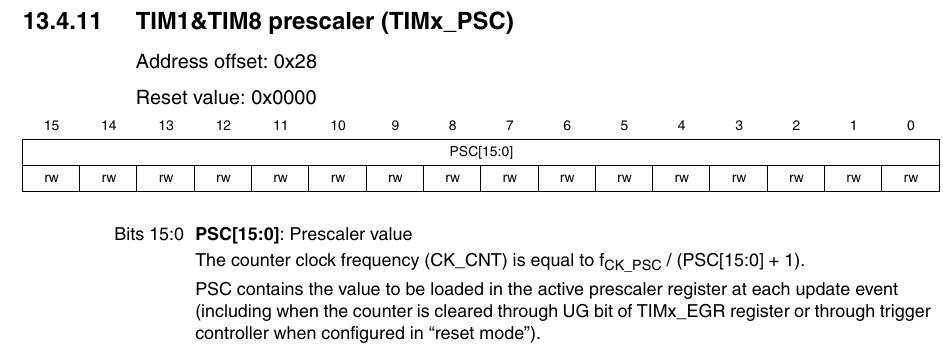
### Set counter value zero



### Set prescaler

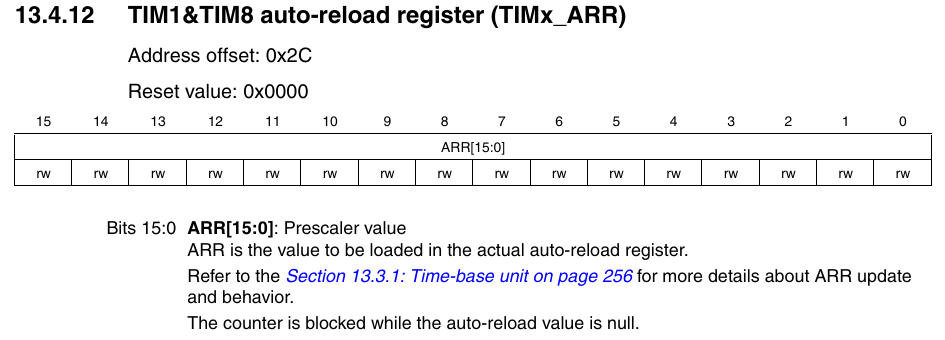
Time delay = (1+psc)/7200 ms

For 1 ms delay, psc = 7200-1



### Set reload value

TIM->ARR (auto reload register), the value of this register is loaded to the counter cnt autometic when counter goes to zero.

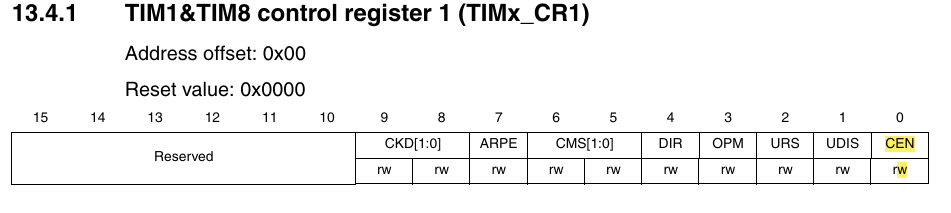


### Select up or down counter

In Tim cr1, bit 4 is DIR (direction) is 0, then up counter, if 1 then down counter.

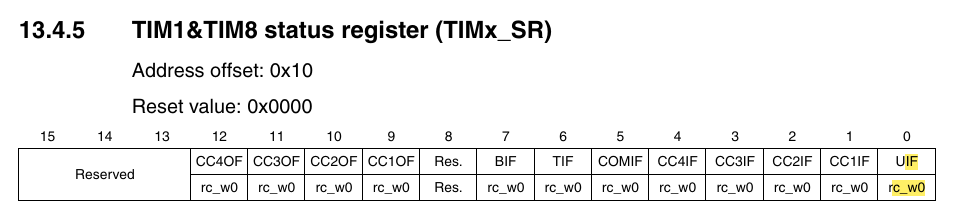
### Enable counter

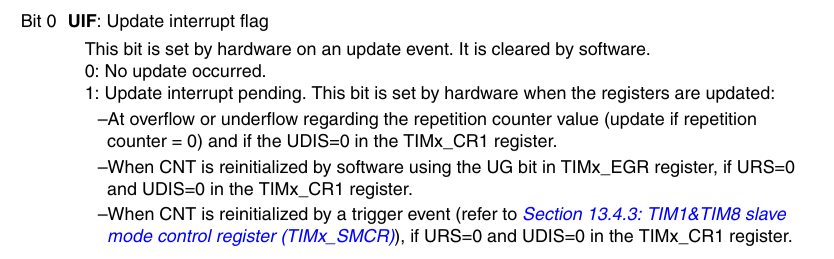
Enable the counter in timer control register.



### Chacking status register

TIM1->SR contain a bit which is set to 1 while reloading.





This bit can be used to check time count…

On the other hand one pulse in cr1 can also be used to detect the count.