

# IRM $\mu$ s Timer Uses

## *Search of IRM source code*

Thu, Mar 15, 2001

This is an annotated search results for the microsecond timer on the 162 board.

Search / 'T2MCCNT' / \*.a

```
File "Defines.a"; Line 134 # T2MCCNT EQU $FFF42010 ;MCchip Tick2 1MHz ctr
File "Ethernet.a"; Line 655 # MOVE.L T2MCCNT,D3 ;Sample 1 MHz counter
File "Ethernet.a"; Line 717 # MOVE.L T2MCCNT,D2
File "Ethernet.a"; Line 731 # MOVE.L T2MCCNT,D5 ;Microsec counter
File "IntsFP.a"; Line 324 # MOVE.L T2MCCNT,D0 ;1MHz counter
File "IntsFP.a"; Line 384 # MOVE.L T2MCCNT,D0 ;1MHz counter
File "IntsFP.a"; Line 445 # MOVE.L T2MCCNT,D0
File "IntsFP.a"; Line 622 # MOVE.L T2MCCNT,D2 ;Read 1 MHz counter
File "RdAD.a"; Line 121 # MOVE.L T2MCCNT,D6 ;Initial base time
File "RdAD.a"; Line 198 # MOVE.L T2MCCNT,D0 ;Use 1MHz timer
File "RdAD.a"; Line 1051 # MOVE.L T2MCCNT,D0
File "RdAD.a"; Line 1076 # MOVE.L T2MCCNT,D1 ;Capture interrupt time
File "RdAD.a"; Line 1108 # MOVE.L T2MCCNT,D1 ;Time from MHz ctr
File "RFTData.a"; Line 278 # MOVE.L T2MCCNT,D2 ;Time from 1 uS counter
File "SNAP.a"; Line 1099 # MOVE.L T2MCCNT,D0 ;Get random MHz ctr
File "Switch.a"; Line 114 # MOVE.L T2MCCNT,D2 ;Microsec counter on 162
```

The ethernet module measures receive interrupt timing. (It also measures timing for the occurrence of the transmit interrupt, but it uses the 2KHz counter for this.)

The IntsFP module measures timing between 15 Hz interrupts and between 40 ms interrupts as a hardware-oriented diagnostic. It also uses the MHz timer to time-stamp clock events and measure elapsed time between last two occurrences of each event.

The RdAD module measures timing for each Data Access Table entry execution. It also computes an average time between A/D scan interrupts (usually 1KHz) for one or two IP A/D boards. Finally, it logs the time for each of the 512 slots for the IP board in slot D, allowing for FTPMAN support to time-stamp any of the KHz data points. The same timing must be used to record times for these slots as is used to record times of clock events, since we need to relate the KHz digitization times to clock events.

The EventAge routine in the RFTData module watches for old entries in the clock event times table and removes each after 30 minutes without such an event.

SNAP uses the counter to get a random number for scheduling IGMP reply timing over a 10 second interval. The Switch module measures each task's execution time.

In addition to the above uses, the local application ACLK, which monitors the ethernet multicast message containing clock events and a cycle counter, needs to access the same microsecond counter that is used to time-stamp events. The cycle counter is used for supporting time-stamped data acquisition. At this time, LOOPACLK runs in node06C3, and results are multicast to 09FB, which only targets Booster IRMs.