

```
1 -----
2 -- This component divides the 50 MHz clock signal down to a clk signal
3 -- of 762Hz and a clk_3 signal of 3Hz.
4 -----
5
6 library ieee;
7 use ieee.std_logic_1164.all;
8 use ieee.numeric_std.all;
9
10 entity clock_manager is
11     port(clk_50 : in std_logic;
12          clk_man : in std_logic;
13          sel_man : in std_logic;
14          clk      : out std_logic;
15          clk_3    : out std_logic);
16 end clock_manager;
17
18 architecture structure of clock_manager is
19     signal count, count_next : unsigned(15 downto 0) := (others => '0');
20     signal count3, count3_next : unsigned(23 downto 0) := (others => '0');
21     attribute clock_signal : string;
22     attribute clock_signal of clk : signal is "yes";
23
24 begin
25     count_next <= count + 1;
26     count3_next <= count3 + 1;
27
28 -----
29 -- this process generates the clk and clk3 signal, which are derived from
30 -- the 50MHz clock. When MSB of count = '1' clk will go high, when MSB of
31 -- count = '0' clk will go low. Same with count3 and clk_3. If sel_man is
32 -- set to 1, clk will be set to the input signal clk_man.
33 -----
34
35     process(sel_man, clk_man, count, count3)
36     begin
37         if sel_man = '1' then
38             clk <= clk_man;
39         else
40             clk <= count(15);
41         end if;
42         clk_3 <= count3(23);
43     end process;
44
45 -----
46 -- on the rising edge of the 50MHz clock
47 -- count and count3 will be increased by 1
48 -----
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49
50     process(clk_50, count, count3)
51     begin
52         if rising_edge(clk_50) then
53             count <= count_next;
54             count3 <= count3_next;
55         end if;
56     end process;
57
58 end structure;
59
```