LE4 Calculations

LE4-6 Calculations:

**LE4-7 Calculations**

*First, we will compute the value of PR2 for 10 Hz, 100 Hz, and 1000 Hz.*

**(10 Hz Frequency)**

10

**(100 Hz Frequency)**

10

**(1000 Hz Frequency)**

10

Now we will calculate the value of CPR1L:CCP1CON <5:4> for the given duty cycles…

**10% Duty Cycle**

10% Duty Cycle @ 10 Hz

* 1. \* 0.1s = 0.01s

10

10 or (1001 1100 0100)2

**CCPR1L = (**1001110001**)2or 0x271**

**CCP1CON<5:4> = (00)2 or 0x0**

**10% Duty Cycle @ 100 Hz**

0.1\* 0.01s = 0.001s

10 or (1111 1010)2

**CCPR1L = (111110)2or 0x3E**

**CCP1CON<5:4> = (10)2 or 0x2**

**10% Duty Cycle @ 100 Hz**

0.1\* 0.001s = 0.0001s

10

10 or (0001 1001)2

**CCPR1L = (000110)2or 0x06**

**CCP1CON<5:4> = (01)2 or 0x1**

**25% Duty Cycle**

25% Duty Cycle @ 10 Hz

0.25\* 0.1s = 0.025s

10

10 or (0001 1000 0110 1010)2

**CCPR1L = (**00011000011010**)2or 0x61A**

**CCP1CON<5:4> = (10)2 or 0x2**

25% Duty Cycle @ 100 Hz

0.25\* 0.01s = 0.0025s

10

10 or (0001 1001 0101)2

**CCPR1L = (**0001100101**)2or 0x65**

**CCP1CON<5:4> = (01)2 or 0x1**

25% Duty Cycle @ 1000 Hz

0.25\* 0.001s = 0.00025s

10

10 or (0011 1110)2

**CCPR1L = (**001111**)2or 0x0F**

**CCP1CON<5:4> = (10)2 or 0x2**

**50% Duty Cycle**

50% Duty Cycle @ 10 Hz

0.50\* 0.1s = 0.05s

10

10 or (0011 0000 1101 0100)2

**CCPR1L = (0011 0000 1101 01)2or 0xC35**

**CCP1CON<5:4> = (00)2 or 0x0**

50% Duty Cycle @ 100 Hz

0.50\* 0.01s = 0.005s

10

10 or (0100 1110 0010)2

**CCPR1L = (**0100111000**)2or 0x138**

**CCP1CON<5:4> = (10)2 or 0x2**

50% Duty Cycle @ 1000 Hz

0.50\* 0.001s = 0.0005s

10

10 or (01111101)2

**CCPR1L = (**011111**)2or 0x1F**

**CCP1CON<5:4> = (01)2 or 0x01**

**75% Duty Cycle**

75% Duty Cycle @ 10 Hz

0.75\* 0.1s = 0.075s

10

10 or (0100 1001 0011 1110)2

**CCPR1L = (**0100 1001 0011 11**)2or 0x124F**

**CCP1CON<5:4> = (11)2 or 0x3**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **DUTY CYCLE** | **FREQUENCY(Hz)** | **Period(s)** | **CCPR1L:CCP1CON<5:4>(DECIMAL)** | **CCPR1L (BINARY)** | **CCP1CON<5:4> (BINARY)** |
| 0.1 | 10 | 0.01 | 250010 | 10 0111 00012 | 002 |
| 0.1 | 100 | 0.001 | 25010 | 1111 102 | 102 |
| 0.1 | 1000 | 0.0001 | 2510 | 000110012 | 012 |
| 0.25 | 10 | 0.025 | 625010 | 0001 1000 0110 102 | 102 |
| 0.25 | 100 | 0.0025 | 62510 | 0010011100012 | 012 |
| 0.25 | 1000 | 0.00025 | 6210 | 0011 112 | 102 |
| 0.5 | 10 | 0.05 | 1250010 | 00110000110101002 | 002 |
| 0.5 | 100 | 0.005 | 125010 | 0100 1110 002 | 102 |
| 0.5 | 1000 | 0.0005 | 12510 | 011111012 | 012 |
| 0.75 | 10 | 0.075 | 1875010 | 01001001001111102 | 102 |
| 0.75 | 100 | 0.0075 | 187510 | 0111 0101 002 | 112 |
| 0.75 | 1000 | 0.00075 | 18710 | 101110112 | 112 |
| 0.95 | 10 | 0.095 | 2375010 | 01011100110001102 | 102 |
| 0.95 | 100 | 0.0095 | 237510 | 1001 0100 012 | 112 |
| 0.95 | 1000 | 0.00095 | 23710 | 111011012 | 012 |