

Experiment 6

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- Aim : ADC 0804 interfacing with 8051 microcontroller.

Theory :

ADC 0808 chip with 8 analog channels :
Another useful chip is the ADC 0808 / 0809 from National Semiconductor. While the ADC 0804 has only one analog input, this chip has 8 of them. The ADC 0808 chip allows us to monitor up to 8 different analog inputs using only a single chip. Notice that the ADC 0808 has an 8-bit data output just like the ADC 804. The 8 analog input channels are multiplexed and selected according to Table using three address pins, A, B and C.

In the ADC 0808 / 0809, $V_{ref}(+)$ and $V_{ref}(-)$ set the reference voltage. If $V_{ref}(-) = GND$ and $V_{ref}(+) = 5V$, the step size is $5V / 256 = 19.53mV$. Therefore, to get a 10mV step size we need to set $V_{ref}(+) = 2.56V$ and $V_{ref}(-) = GND$ we use A, B & C addresses to select $IN_0 - IN_7$ and active ALF to latch in the address. SC is for start conversion. SC is the same as the WR pin in other ADC chips. EOC is for end of conversion and OE is for output Enable (R-EAD). The EOC and OE are the same as the INTR & RD pin respectively. Table shows the step size relation to the V_{ref}

```

Program : //program for ADC 8 BIT
#include <reg51.h>
sbit CS = P2^4;
sbit Yd = P2^5;
sbit Wr = P2^6;
sbit intr = P2^7;
void conv(void);
void read(void);
void delay(unsigned int);

void main()
{
    P2 = 0xFF;
    delay(100);
    while(1)
    {
        conv();
        read();
    }
}

void conv(void)
{
    CS = 0; // make CS low
    Wr = 0; // make WR Low
    delay(2);
    Wr = 1; // make WR high
    CS = 1; // make CS high
    while(!intr); // wait for INTR
}
    
```



```
void read (void);
```

```
{
```

```
cs = 0;
```

```
// Make cs low
```

```
rd = 1;
```

```
// make RD low
```

```
delay (2);
```

```
rd = 0;
```

```
// make RD high
```

```
cs = 1;
```

```
// Make cs high
```

```
}
```

```
void delay (unsigned int i time)
```

```
{
```

```
unsigned int i, j;
```

```
for (i = 0; i < i time; i++)
```

```
for (j = 0; j < 100; j++);
```

```
}
```

• CONCLUSION

ADC 0804 interfaced with 8051 using C program.

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