

Mikroişlemci Sistemleri

Yrd. Doç. Dr. Erkan Uslu

10

YTÜ-CE

Ders-10 Konular

- DAC (digital to analog converter)
 - Binary weighted DAC
 - R/2R ladder DAC
 - DAC entegresi :
DAC0830
 - DAC örneği
- ADC (analog to digital converter)
 - Parallel ADC
 - Ramp converter ADC
 - ADC entegresi :
ADC0804
 - ADC örneği

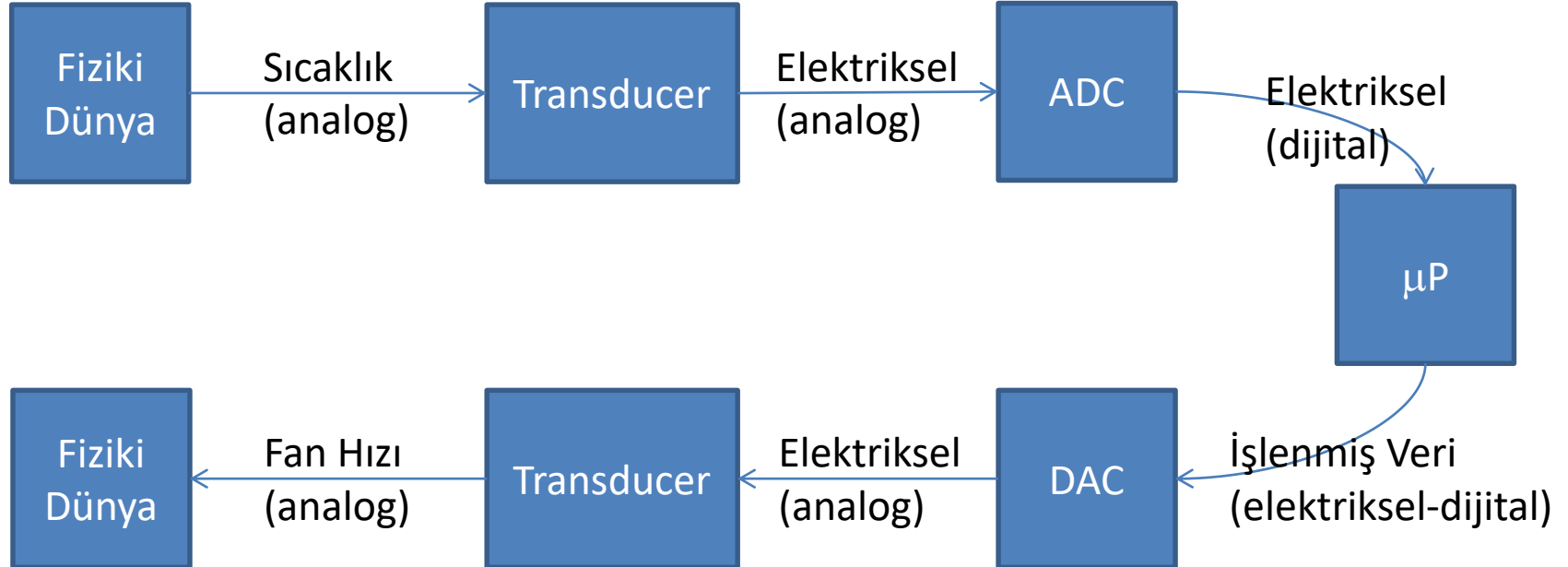
DAC – digital to analog converter

ADC – analog to digital converter

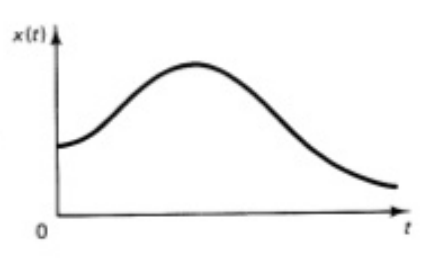

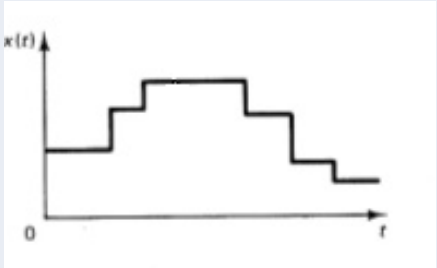
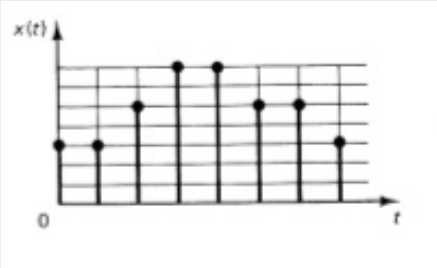
- μ P dijital değerlerle çalışır, ama fiziki dünya analogtur.
- Sıcaklık, basınç, nem, hız, ses ... : analog değerlerdir.
- Fiziki dünya ile μ P arasında etkileşim için Analog \leftrightarrow Dijital dönüştürücü gerekli.

DAC – digital to analog converter

ADC – analog to digital converter

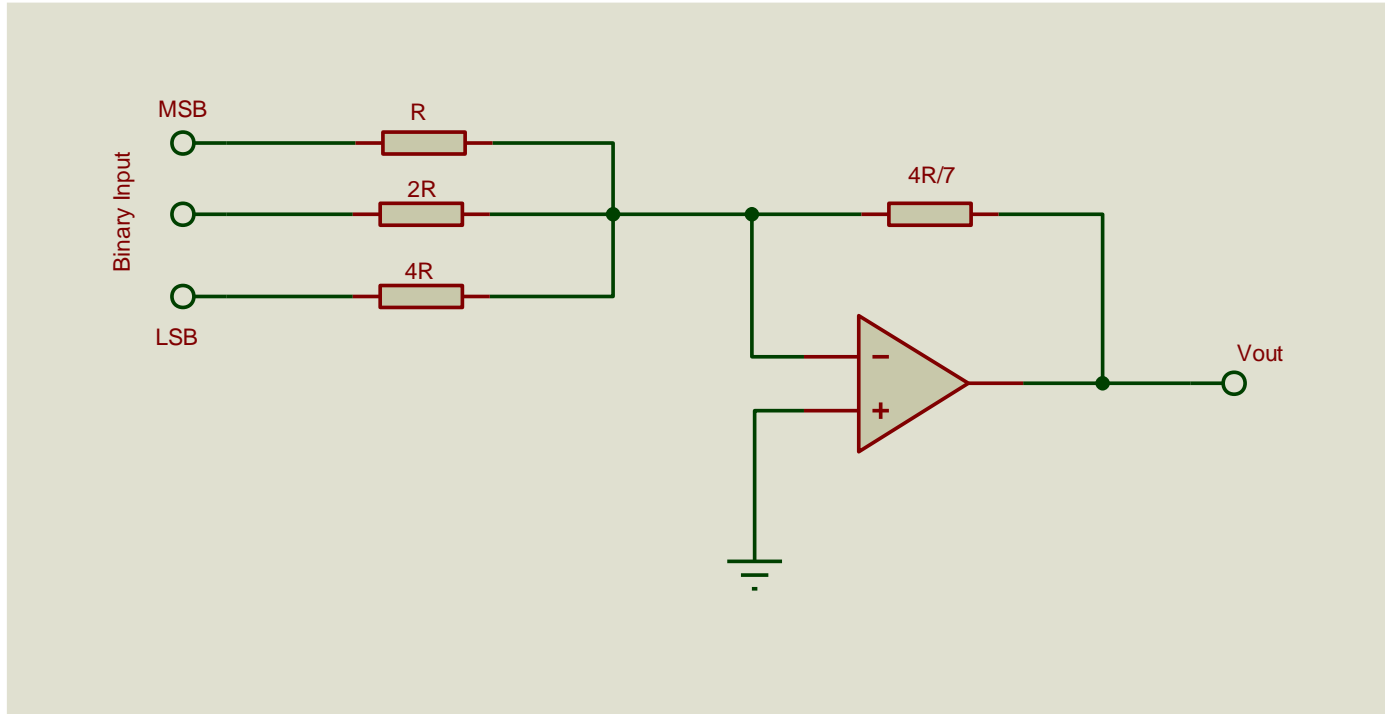


Analog-Dijital Sinyal

	Zamanda Sürekli Sinyal	Zamanda Ayırık Sinyal
Genliği Sürekli Sinyal		
Genliği Ayırık Sinyal		

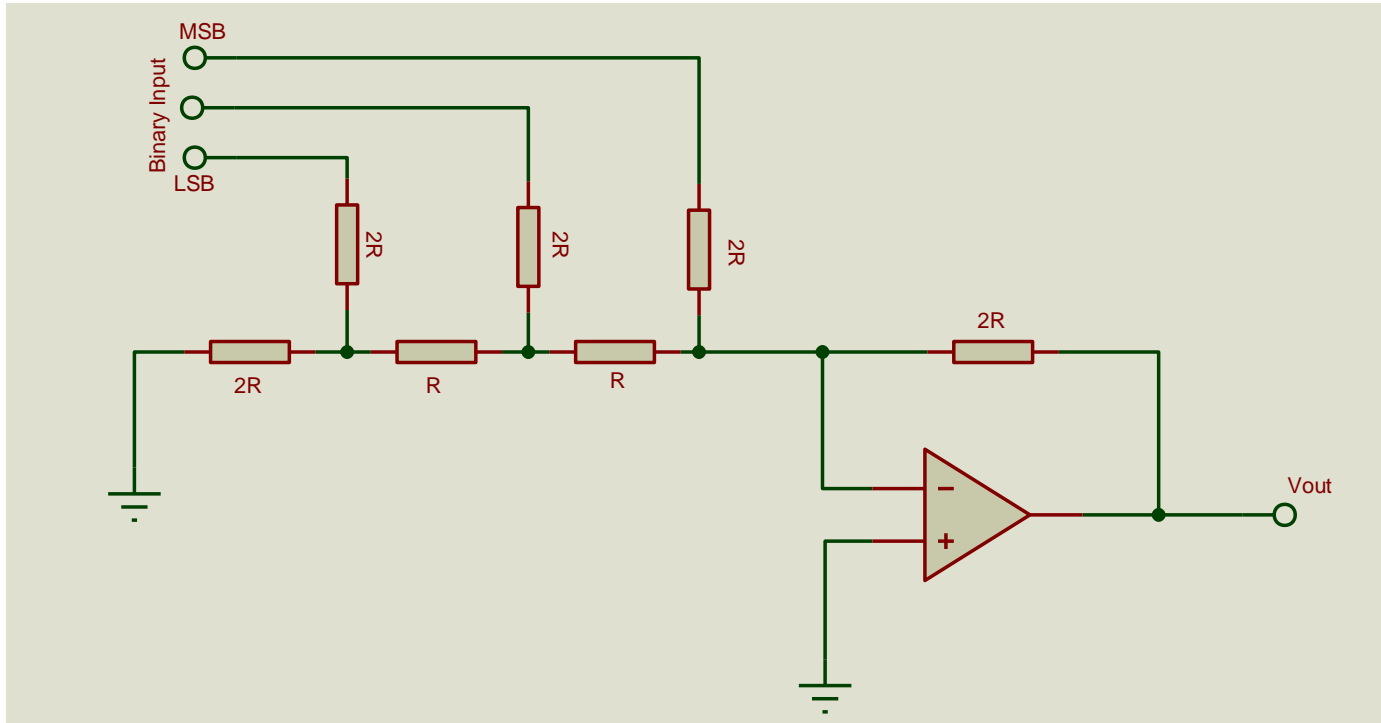
DAC (digital to analog converter)

Binary weighted DAC

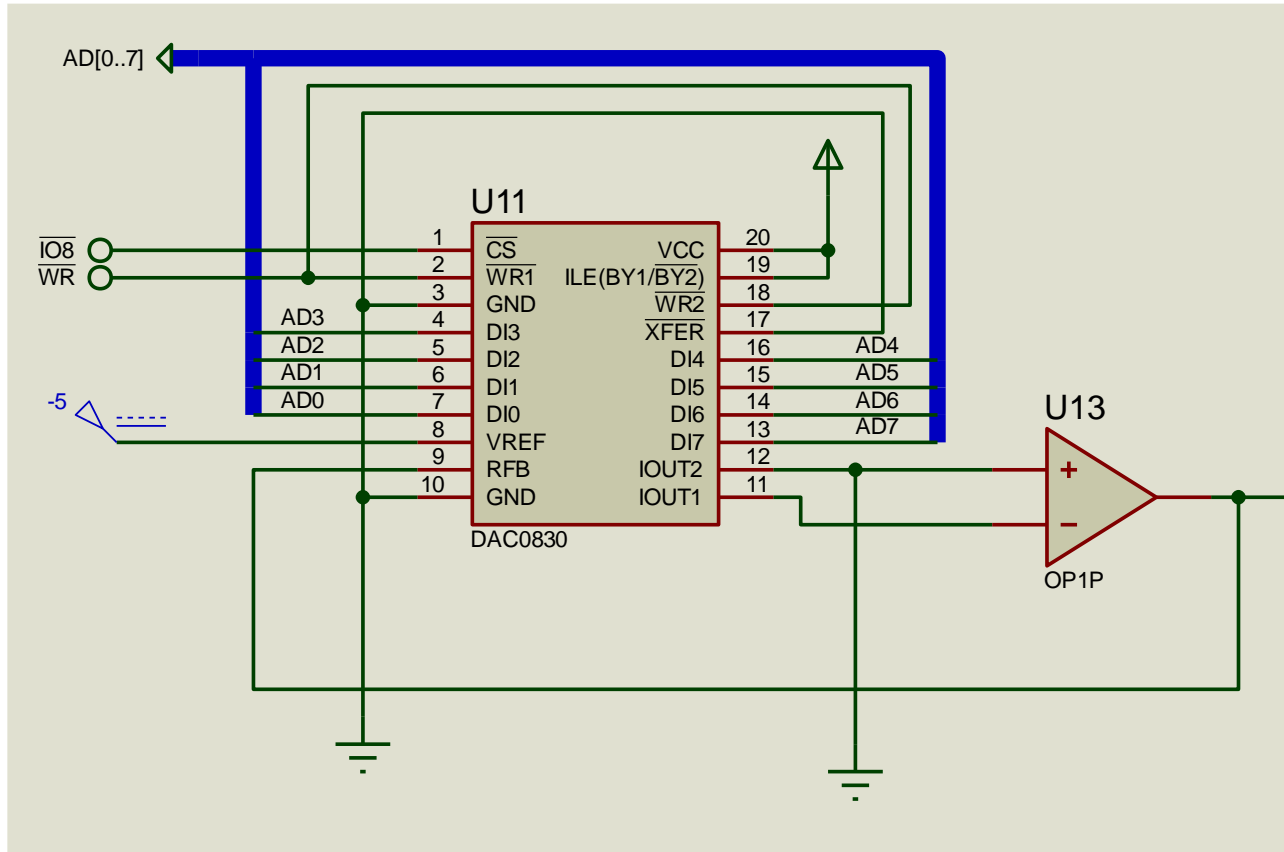


DAC (digital to analog converter)

R/2R ladder DAC



DAC0830



DAC0830

\overline{CS} : Chip Select (active low). The CS in combination with ILE will enable WR1.

ILE: Input Latch Enable (active high). The ILE in combination with CS enables WR1.

\overline{WR}_1 : Write 1. The active low WR1 is used to load the digital input data bits (DI) into the input latch. The data in the input latch is latched when WR1 is high. To update the input latch—CS and WR1 must be low while ILE is high.

\overline{WR}_2 : Write 2 (active low). This signal, in combination with XFER, causes the 8-bit data which is available in the input latch to transfer to the DAC register.

\overline{XFER} : Transfer control signal (active low). The XFER will enable WR2.

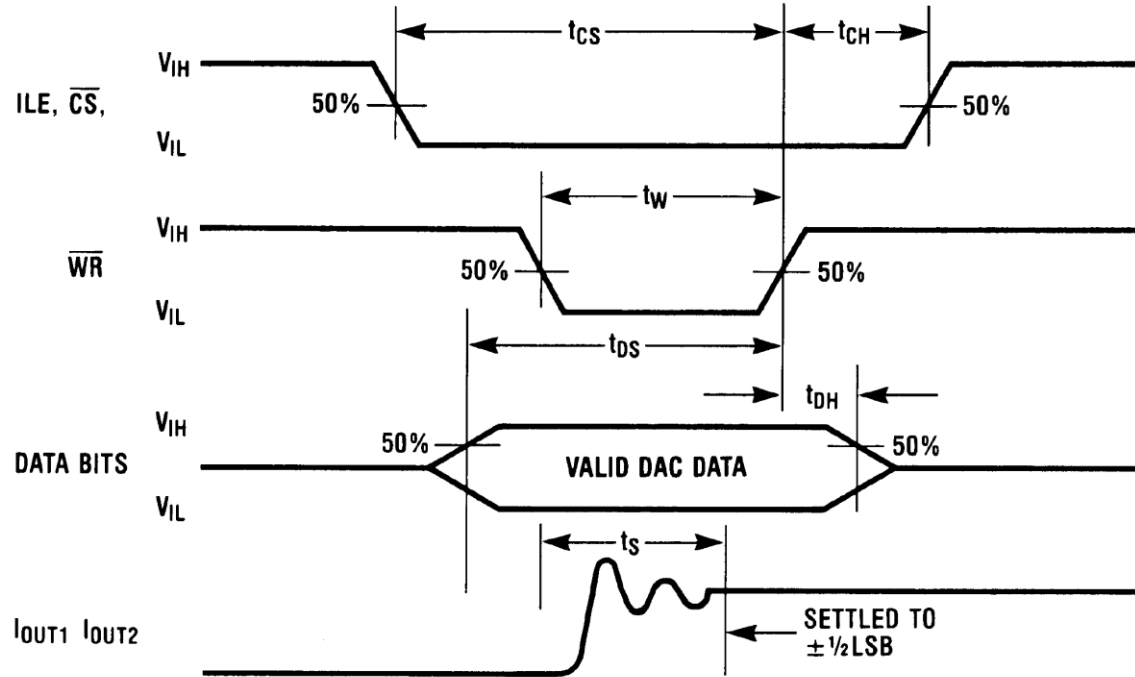
DI_0 - DI_7 : Digital Inputs.

IOUT1: DAC Current Output 1 - IOUT2: DAC Current Output 2 : to OPAMP

Rfb: Feedback Resistor for R-2R

VREF: Reference Voltage Input. This input connects an external precision voltage source to the internal R-2R ladder. **VCC - GND**

DAC0830



Örnek

```
MOV DX, 1000H
```

```
MOV AL, 00H
```

```
TEKRAR:
```

```
OUT DX, AL
```

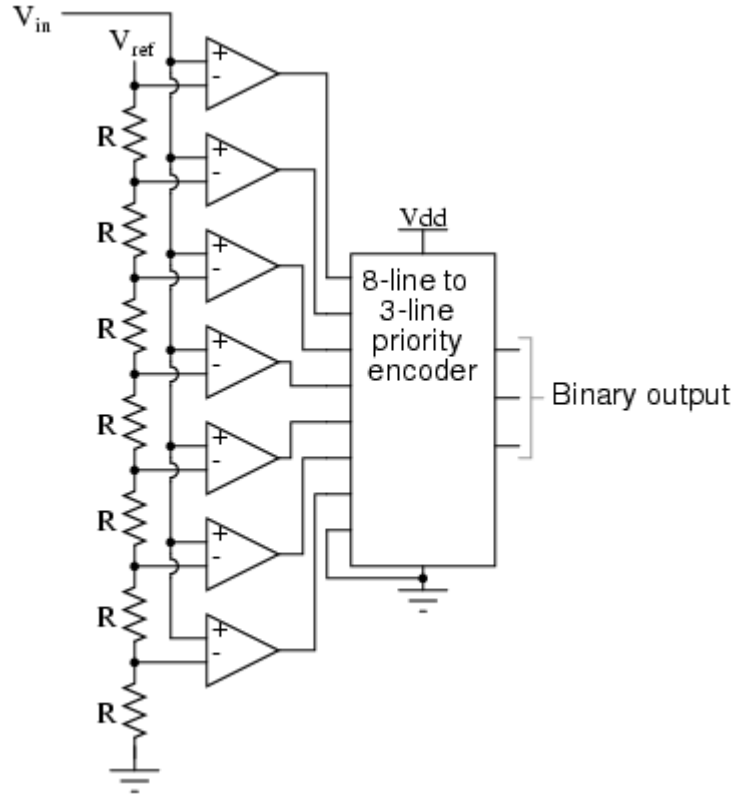
```
CALL DELAY
```

```
INC AL
```

```
JMP TEKRAR
```

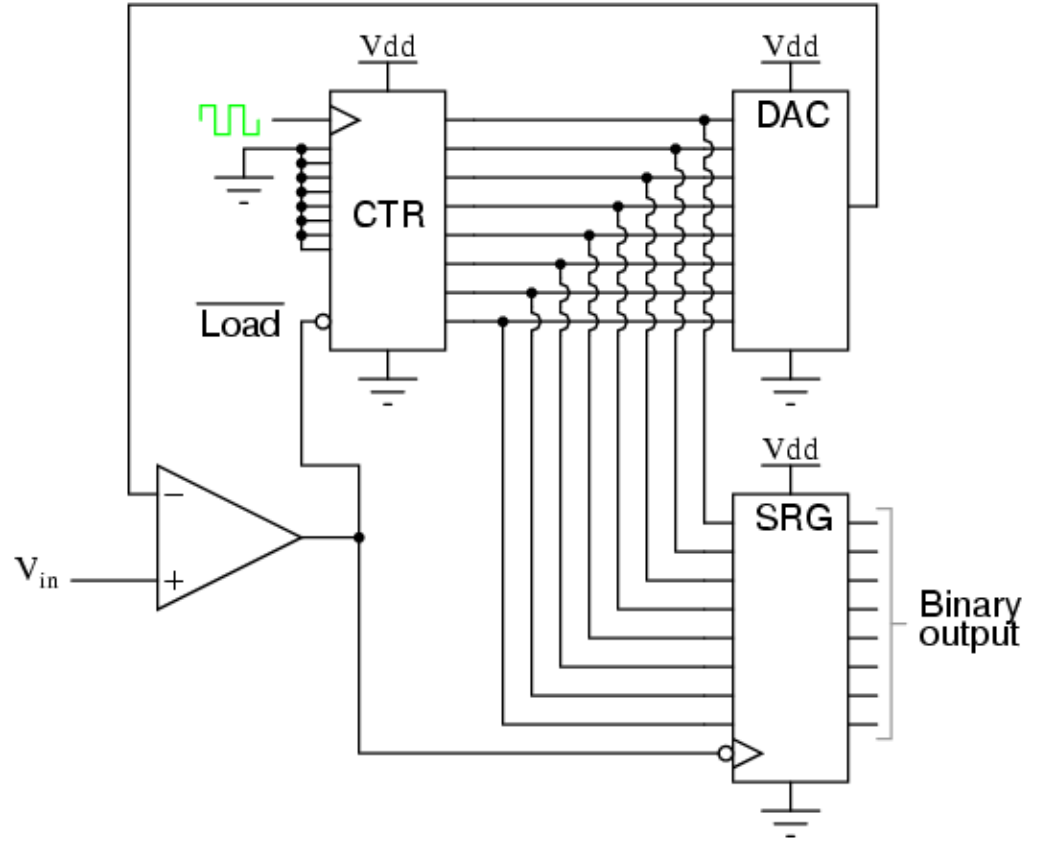
ADC (analog digital converter)

- Parallel ADC

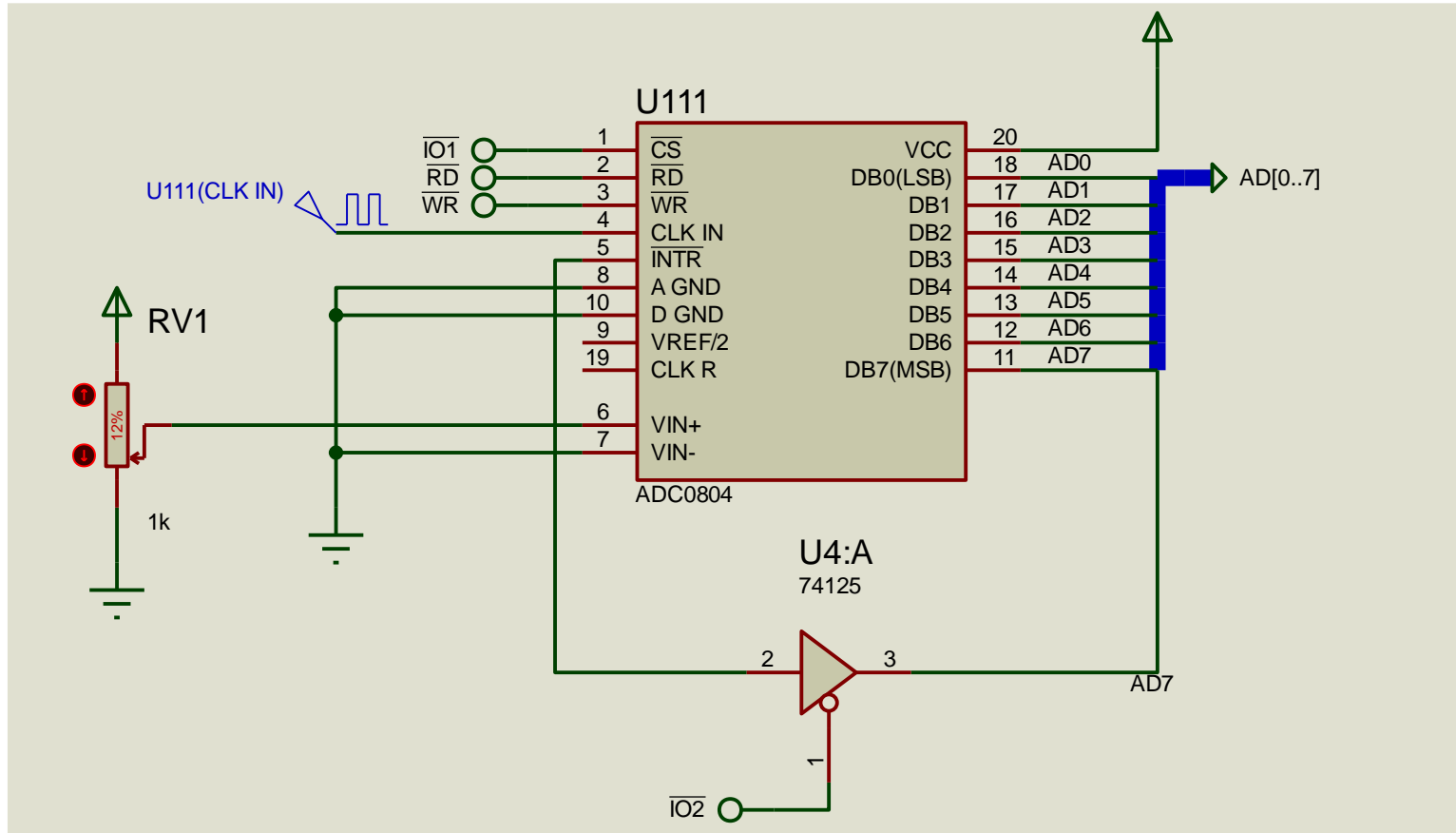


ADC (analog digital converter)

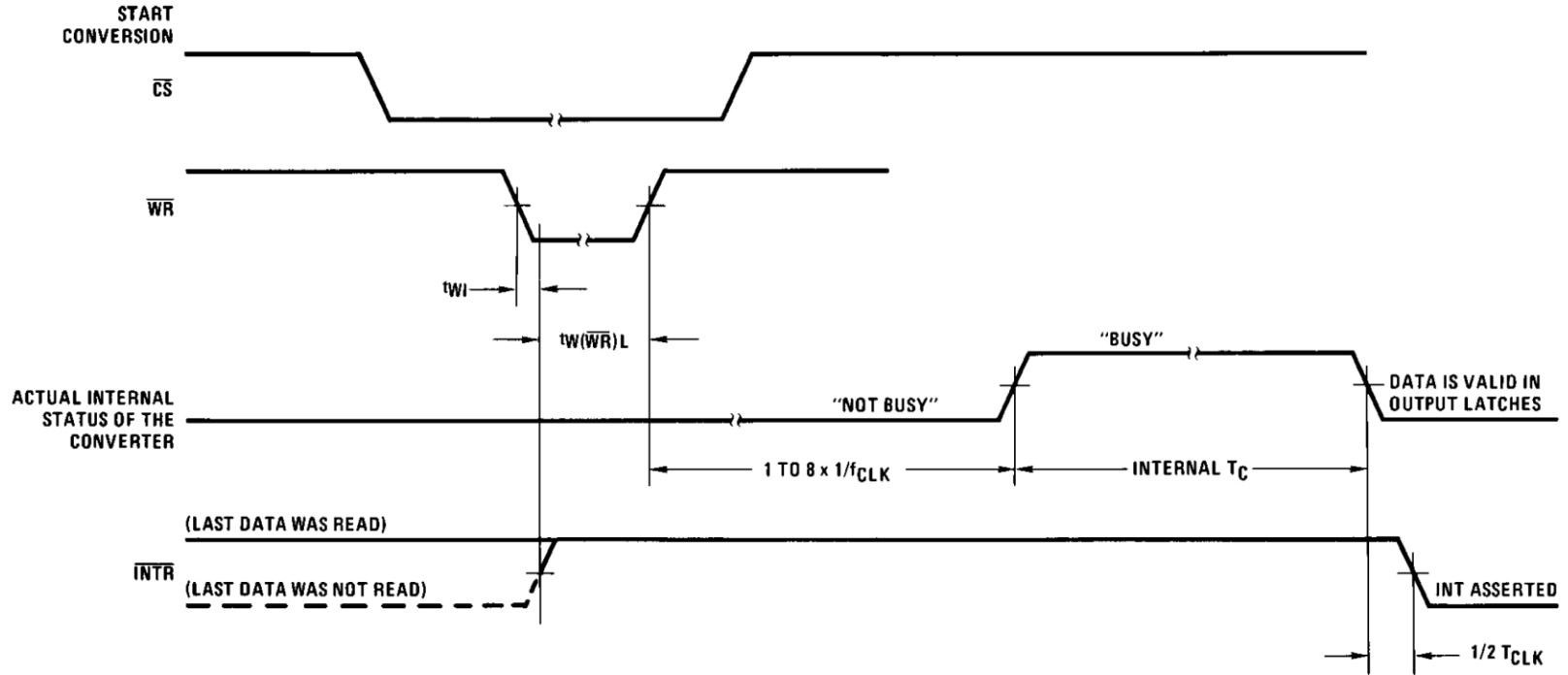
- Ramp converter



ADC0804

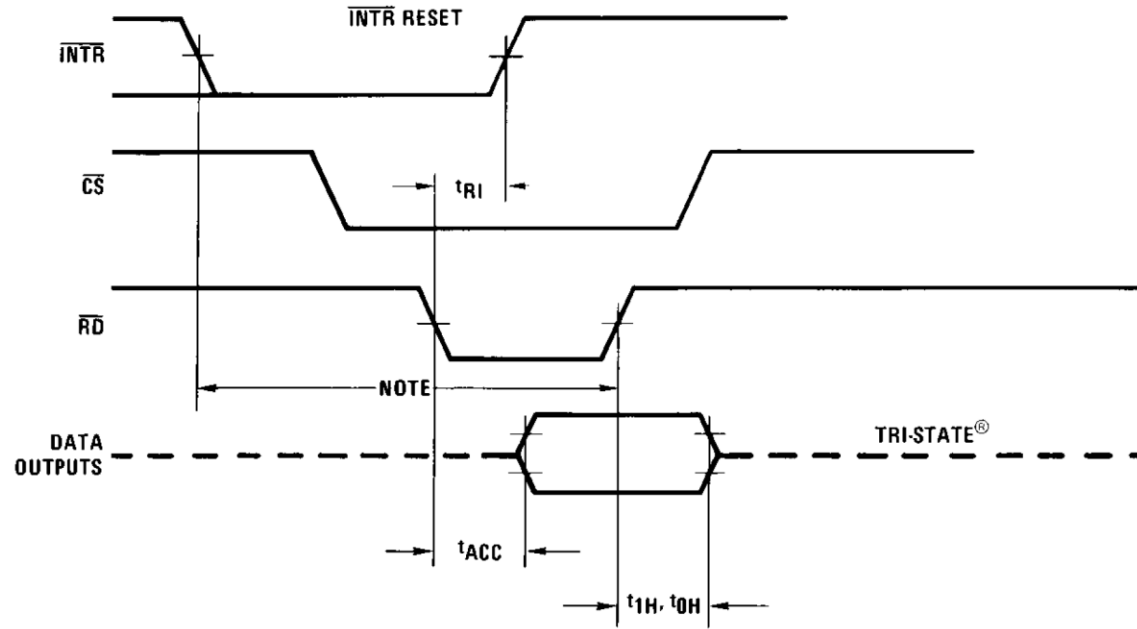


ADC0804



ADC0804

Output Enable and Reset $\overline{\text{INTR}}$



Örnek

TEKRAR:

MOV DX, 0200H

MOV AL, 00H

OUT DX, AL

MOV DX, 0400H

INTR_KONTROL:

IN AL, DX

TEST AL, 80H

JNZ INTR_KONTROL

MOV DX, 0200H

IN AL, DX

CALL DELAY

JMP TEKRAR