NetMedia

Basic Express BX-35 Application Note

Using ADC to Read a Potentiometer

Connecting to Analog-To-Digital Converter on BX-35

This application note describes both hardware and software methods for interfacing a potentiometer to the ADC (Analog-to-Digital converter) on a BX-35 system

An ADC converts an analog voltage into a digital format. The BX-35 contains 8 channels of 10-bit ADCs, which are connected to I/O pins 33 to 40. The ADCs have an input range of 0.0 V to 5.0 VDC (on 5 V systems) and will report measured voltage levels in the form of a linear 10 bit digital value (0 to 1023). The resolution is about 4.9 mV. The maximum sample rate is about 6000 samples per second.

Syntax

System call GetADC is used to read the ADC.

There are 2 versions of GetADC. The integer version returns the raw 10-bit integer voltage. The float version returns the nondimensional voltage in range 0.0 to 1.0. Comparative syntax:

```
Const PinNumber As Byte = 40
Dim iV As Integer, V As Single

' Integer version; iV ranges from 0 to 1023.
iV = GetADC(PinNumber)

' Float version; V ranges from 0.0 to 1.0.
Call GetADC(PinNumber, V)
```

Example program

The program ADCexample illustrates the use of system call GetADC to read a potentiometer connected to pin 40 (see Figure 1 below). The position of the pot is used to vary the blink rate of an LED connected to pin 17.

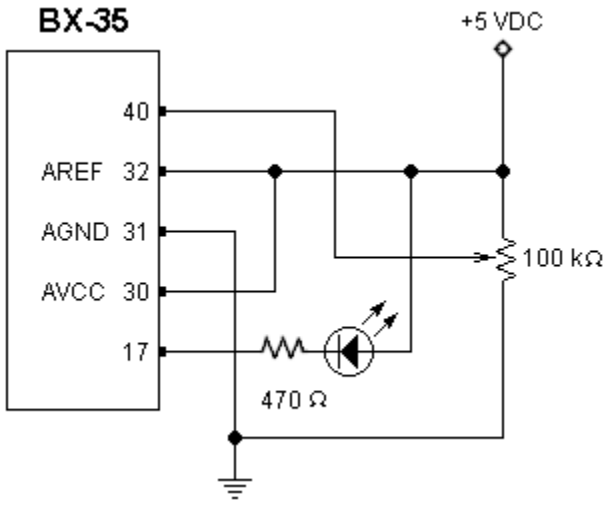

Figure 1

Figure 1 shows an LED connected to output pin 17 of a BX-35, with a 100 kΩ potentiometer connected to analog input pin 40.

Note that the analog reference (AREF), analog ground (AGND) and AVCC pins must be connected. Otherwise none of the 8 ADC pins will work at all, even in digital I/O mode. Note also that connections shown will function for simple demonstrations, but are not suitable if low noise is required.

Source code for an example program is provided as a separate file. The filename is ADCexample.bas.

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