ADCCONT PAGE 1

1 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

2 ;

3 ; Author : ADI - Apps www.analog.com/MicroConverter

4 ;

5 ; Date : October 2003

6 ;

7 ; File : ADCcont.asm

8 ;

9 ; Hardware : ADuC841

10 ;

11 ; Description : Performs ADC conversions in continuous mode at a

12 ; rate of 138KSPS (assuming an 11.0592MHz Mclk).

13 ; Outputs ADC results on P0 & P2. Continuously

14 ; flashes LED (independently of ADC routine) at

15 ; approximately 5Hz.

16 ; All rate calculations assume an 11.0592MHz Mclk.

17 ;

18 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

19

20 $MOD841 ; Use 8052&ADuC841 predefined symbols

21

00B4 22 LED EQU P3.4 ; P3.4 drives red LED on eval board

0000 23 CHAN EQU 0 ; convert this ADC input channel..

24 ;

25 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

26 ; BEGINNING OF CODE

---- 27 CSEG

28

0000 29 ORG 0000h

30

0000 02004B 31 JMP MAIN ; jump to main program

32 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

33 ; INTERRUPT VECTOR SPACE

0033 34 ORG 0033H ; (ADC ISR)

35

0033 85D980 36 MOV P0,ADCDATAL ; ADC result low byte to Port0

0036 85DAA0 37 MOV P2,ADCDATAH ; high nibble and channel ID to Port2

0039 32 38 RETI

39

40 ;====================================================================

41 ; MAIN PROGRAM

004B 42 ORG 004Bh

43

004B 44 MAIN:

45

46 ; PRECONFIGURE...

47

004B 75EF9C 48 MOV ADCCON1,#09Ch ; power up ADC, ADC Clock = Mclk/4 7.2us conv+acq time

004E 75D800 49 MOV ADCCON2,#CHAN ; select channel to convert

50

51 ; LAUNCH CONTINUOUS CONVERSIONS...

52

0051 D2AF 53 SETB EA ; enable interrupts

0053 D2AE 54 SETB EADC ; enable ADC interrupt

0055 D2DD 55 SETB CCONV ; begin continuous conversions

56

57 ; CONTINUE WITH OTHER CODE...

0057 740A 58 MOV A,#010 ; set delay length

ADCCONT PAGE 2

0059 B2B4 59 AGAIN: CPL LED ; blink (complement) the LED

005B 120060 60 CALL DELAY ; delay 100ms

005E 80F9 61 JMP AGAIN ; repeat

62

63 ; the micro is free to continue with other tasks (flashing the LED in

64 ; this case) while the ADC is continuously converting, and results

65 ; are being handled by the ADC interrupt service routine.

66

67 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

68 ; SUBROUTINE

69

0060 70 DELAY: ; delay 10ms X A

0060 FD 71 MOV R5,A ; 1 clock

0061 7F90 72 DLY2: MOV R7,#090h ; 2

0063 7EFF 73 DLY1: MOV R6,#0FFh ; 2

0065 DEFE 74 DJNZ R6,$ ; 3

0067 DFFA 75 DJNZ R7,DLY1 ; 3

0069 DDF6 76 DJNZ R5,DLY2 ; 3

006B 22 77 RET

78

79 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

80

81 END

VERSION 1.2h ASSEMBLY COMPLETE, 0 ERRORS FOUND

ADCCONT PAGE 3

ADCCON1. . . . . . . . . . . . . D ADDR 00EFH PREDEFINED

ADCCON2. . . . . . . . . . . . . D ADDR 00D8H PREDEFINED

ADCDATAH . . . . . . . . . . . . D ADDR 00DAH PREDEFINED

ADCDATAL . . . . . . . . . . . . D ADDR 00D9H PREDEFINED

AGAIN. . . . . . . . . . . . . . C ADDR 0059H

CCONV. . . . . . . . . . . . . . B ADDR 00DDH PREDEFINED

CHAN . . . . . . . . . . . . . . NUMB 0000H

DELAY. . . . . . . . . . . . . . C ADDR 0060H

DLY1 . . . . . . . . . . . . . . C ADDR 0063H

DLY2 . . . . . . . . . . . . . . C ADDR 0061H

EA . . . . . . . . . . . . . . . B ADDR 00AFH PREDEFINED

EADC . . . . . . . . . . . . . . B ADDR 00AEH PREDEFINED

LED. . . . . . . . . . . . . . . NUMB 00B4H

MAIN . . . . . . . . . . . . . . C ADDR 004BH

P0 . . . . . . . . . . . . . . . D ADDR 0080H PREDEFINED

P2 . . . . . . . . . . . . . . . D ADDR 00A0H PREDEFINED

P3 . . . . . . . . . . . . . . . D ADDR 00B0H PREDEFINED