DUALDPTR PAGE 1

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

2 ;

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

4 ;

5 ; Date : 5 November 2001

6 ;

7 ; File : DualDPTR.asm

8 ;

9 ; Hardware : ADuC836

10 ;

11 ; Description : Sample Program to show the new ADuC836 features

12 ; of dual DPTRs.

13 ;

14 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

15

16 $MOD836 ; Use 8052&ADuC836 predefined symbols

00B4 17 LED EQU P3.4 ; P3.4 drives red LED on eval board

18

19 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20 ; BEGINNING OF CODE

---- 21 CSEG

22

0000 23 ORG 0000h

24 ; highest speed

0000 75D700 25 MOV PLLCON, #0

26

27 ; CONFIGURE UART....

28

0003 759E85 29 MOV T3CON,#85h

0006 759D12 30 MOV T3FD,#12h

0009 759852 31 MOV SCON,#52h

32

33 ; enable the intenal On-Chip XRAM

34

000C 75AF01 35 MOV CFG836, #01h

36

37 ; move 512 bytes from code memory (adress 1000h -> 1200h) into

38 ; data XRAM (address 0000h -> 0200h)

39 ; configure the datapointer

000F 900000 40 MOV DPTR, #0

0012 75A755 41 MOV DPCON, #55h ; auto toggle between DPTRs

42 ; auto increment shadow DPTR

43 ; auto increment main DPTR

44 ; select shadow DPTR

0015 901000 45 MOV DPTR, #1000h

46

0018 47 COPYDATALOOP:

48 ; read Code Memory using Shadow DPTR

0018 E4 49 CLR A

0019 93 50 MOVC A, @A+DPTR ; read code memory

51 ; auto increment shadow DPTR

52 ; swap to main DPTR

53 ; write to XRAM using main DPTR

001A F0 54 MOVX @DPTR, A ; write to XRAM

55 ; auto increment main DPTR

56 ; swap to shadow DPTR

57 ; check if at end of loop

58 ; NOTE: shadow DPTR selected (not main)

DUALDPTR PAGE 2

001B E583 59 MOV A, DPH

001D B412F8 60 CJNE A, #12h, COPYDATALOOP

61

62

0020 00 63 NOP ; <----NOTE: Set a breakpoint in the debugger here

64 ; This will show that the values in code memory

65 ; at addresses 1000h thru 1200h has been mapped

66 ; into XRAM at address 0000h thru 0200h.

67 ; The debugger will not run the nextpiece of

68 ; code as this requires the use of the serial port

69

70

71

72

73 ; transmit XRAM up UART

0021 75A704 74 MOV DPCON, #4 ; select main DPTR

75 ; auto increment DPTR

76 ; do not toggle DPTR

0024 900000 77 MOV DPTR, #0

0027 7810 78 MOV R0, #16

0029 79 SENDXRAM:

0029 E0 80 MOVX A, @DPTR

002A 120042 81 CALL SENDVAL

002D D8FA 82 DJNZ R0, SENDXRAM

83 ; send a newline

002F 740A 84 MOV A, #10

0031 120058 85 CALL SENDCHAR

0034 740D 86 MOV A, #13

0036 120058 87 CALL SENDCHAR

0039 7810 88 MOV R0, #16

003B E583 89 MOV A, DPH

003D B402E9 90 CJNE A, #2, SENDXRAM

91

0040 80FE 92 JMP $

93

94

95 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

96 ; SENDVAL

97

0042 98 SENDVAL: ; converts the hex value of A into two ASCII chars,

99 ; and then spits these two characters up the UART.

100 ; does not change the value of A.

101

0042 C0E0 102 PUSH ACC

0044 C4 103 SWAP A

0045 120060 104 CALL HEX2ASCII

0048 120058 105 CALL SENDCHAR ; send high nibble

004B D0E0 106 POP ACC

004D C0E0 107 PUSH ACC

004F 120060 108 CALL HEX2ASCII

0052 120058 109 CALL SENDCHAR ; send low nibble

0055 D0E0 110 POP ACC

111

0057 22 112 RET

113 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

114 ; SENDCHAR

115

0058 116 SENDCHAR: ; sends ASCII value contained in A to UART

DUALDPTR PAGE 3

117

0058 3099FD 118 JNB TI,$ ; wait til present char gone

005B C299 119 CLR TI ; must clear TI

005D F599 120 MOV SBUF,A

121

005F 22 122 RET

123 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

124 ; HEX2ASCII

125

0060 126 HEX2ASCII: ; converts A into the hex character representing the

127 ; value of A's least significant nibble

128

0060 540F 129 ANL A,#00Fh

0062 B40A00 130 CJNE A,#00Ah,$+3

0065 4002 131 JC IO0030

0067 2407 132 ADD A,#007h

0069 2430 133 IO0030: ADD A,#'0'

134

006B 22 135 RET

136 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1000 137 ORG 1000h

138

1000 00010203 139 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1004 04050607

1008 08090A0B

100C 0C0D0E0F

1010 10111213 140 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1014 14151617

1018 18191A1B

101C 1C1D1E1F

1020 20212223 141 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

1024 24252627

1028 28292A2B

102C 2C2D2E2F

1030 30313233 142 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1034 34353637

1038 38393A3B

103C 3C3D3E3F

1040 00010203 143 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1044 04050607

1048 08090A0B

104C 0C0D0E0F

1050 10111213 144 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1054 14151617

1058 18191A1B

105C 1C1D1E1F

1060 20212223 145 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

1064 24252627

1068 28292A2B

106C 2C2D2E2F

1070 30313233 146 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1074 34353637

1078 38393A3B

107C 3C3D3E3F

1080 00010203 147 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1084 04050607

1088 08090A0B

108C 0C0D0E0F

DUALDPTR PAGE 4

1090 10111213 148 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1094 14151617

1098 18191A1B

109C 1C1D1E1F

10A0 20212223 149 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

10A4 24252627

10A8 28292A2B

10AC 2C2D2E2F

10B0 30313233 150 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

10B4 34353637

10B8 38393A3B

10BC 3C3D3E3F

10C0 00010203 151 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

10C4 04050607

10C8 08090A0B

10CC 0C0D0E0F

10D0 10111213 152 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

10D4 14151617

10D8 18191A1B

10DC 1C1D1E1F

10E0 20212223 153 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

10E4 24252627

10E8 28292A2B

10EC 2C2D2E2F

10F0 30313233 154 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

10F4 34353637

10F8 38393A3B

10FC 3C3D3E3F

1100 00010203 155 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1104 04050607

1108 08090A0B

110C 0C0D0E0F

1110 10111213 156 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1114 14151617

1118 18191A1B

111C 1C1D1E1F

1120 20212223 157 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

1124 24252627

1128 28292A2B

112C 2C2D2E2F

1130 30313233 158 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1134 34353637

1138 38393A3B

113C 3C3D3E3F

1140 00010203 159 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1144 04050607

1148 08090A0B

114C 0C0D0E0F

1150 10111213 160 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1154 14151617

1158 18191A1B

115C 1C1D1E1F

1160 20212223 161 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

1164 24252627

1168 28292A2B

116C 2C2D2E2F

1170 30313233 162 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1174 34353637

DUALDPTR PAGE 5

1178 38393A3B

117C 3C3D3E3F

1180 00010203 163 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1184 04050607

1188 08090A0B

118C 0C0D0E0F

1190 10111213 164 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1194 14151617

1198 18191A1B

119C 1C1D1E1F

11A0 20212223 165 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

11A4 24252627

11A8 28292A2B

11AC 2C2D2E2F

11B0 30313233 166 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

11B4 34353637

11B8 38393A3B

11BC 3C3D3E3F

11C0 00010203 167 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

11C4 04050607

11C8 08090A0B

11CC 0C0D0E0F

11D0 10111213 168 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

11D4 14151617

11D8 18191A1B

11DC 1C1D1E1F

11E0 20212223 169 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

11E4 24252627

11E8 28292A2B

11EC 2C2D2E2F

11F0 30313233 170 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

11F4 34353637

11F8 38393A3B

11FC 3C3D3E3F

171

172

173 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

174

175 END

VERSION 1.2h ASSEMBLY COMPLETE, 0 ERRORS FOUND

DUALDPTR PAGE 6

ACC. . . . . . . . . . . . . . . D ADDR 00E0H PREDEFINED

CFG836 . . . . . . . . . . . . . D ADDR 00AFH PREDEFINED

COPYDATALOOP . . . . . . . . . . C ADDR 0018H

DPCON. . . . . . . . . . . . . . D ADDR 00A7H PREDEFINED

DPH. . . . . . . . . . . . . . . D ADDR 0083H PREDEFINED

HEX2ASCII. . . . . . . . . . . . C ADDR 0060H

IO0030 . . . . . . . . . . . . . C ADDR 0069H

LED. . . . . . . . . . . . . . . NUMB 00B4H NOT USED

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

PLLCON . . . . . . . . . . . . . D ADDR 00D7H PREDEFINED

SBUF . . . . . . . . . . . . . . D ADDR 0099H PREDEFINED

SCON . . . . . . . . . . . . . . D ADDR 0098H PREDEFINED

SENDCHAR . . . . . . . . . . . . C ADDR 0058H

SENDVAL. . . . . . . . . . . . . C ADDR 0042H

SENDXRAM . . . . . . . . . . . . C ADDR 0029H

T3CON. . . . . . . . . . . . . . D ADDR 009EH PREDEFINED

T3FD . . . . . . . . . . . . . . D ADDR 009DH PREDEFINED

TI . . . . . . . . . . . . . . . B ADDR 0099H PREDEFINED