**ICS
ELECTRONICS**
division of Systems West Inc.

IEEE 488

APPLICATION BULLETIN

ALTERATION INSTRUCTIONS FOR THE 4823A'S CONFIGURATION TABLE

Introduction

The 4823A's operation is controlled by a configuration table stored in the program memory (EPROM). For standard units, the table is set to the default values shown on page 3 and 4. The purpose of this application note is to provide the user with sufficient directions so he or she can alter 4823A's configuration table to match a specific application.

General Instructions

The user can change the configuration stored in the program memory by changing the appropriate field in this table and by recalculating the EPROM check-sum. The different field name and bit assignments are defined in Table 1 on page 3.

1. By toggling the appropriate bit in the POLARITY field (address 308) the user can alter the polarity of individual handshaking signals.

2. The user can add LF (Linefeed) option to the BCD talk messages by toggling the least significant bit of OPTION field (address 309).

3. The TALK CONVERSATION TABLE can be altered by changing the content of address 30A to 319 with the desired conversion values.

4. The RSV field is reserved for SRQ masking. By unmasking a bit field, (set 1) the corresponding Serial Poll Response bit will be enabled and the 4823A will generate an SRQ on the next occurrence of an unmasked bit. Please refer to 4823A manual for complete descriptions of Serial Poll Responses.

5. To change the nibble assignments or alignments, the user has to answer the following questions:

    1. Number of channels to be assigned (1 or 2): _____

        If the answer is 1, change the content of NOFCHN (address 31A) to 0F hex. On the other hand, if the answer is 2, you change the content of NOFCHN to 0Dhex.

    2. Number of nibbles assigned to Ch. 1 Listen port: ____   =   LN1
    3. Number of nibbles assigned to Ch. 1 Talk port: ____   =   TN1
    4. Number of nibbles assigned to Ch. 2 Listen port: ____   =   LN2
    5. Number of nibbles assigned to Ch. 2 Talk port: ____   =   TN2

Note: The total number of nibbles used (LN1+TN1+LN2+TN2) must be less than or equal to 20.

Now, change the current nibble counts (bit 0-4) in LF1, LF2, TF1, TF2 (addresses 300, 301, 304, 305 respectively) to the respective values LN1, LN2, TN1, TN2.

6.   Before we can assign nibbles, three rules must be observed:

    a.   The nibbles must be aligned in a way such that all assigned Talk and Listen ports fit.
    b.   There is not any port overlap.
    c.   All nibbles are numbered from 0 to 19.

6.1   Start nibble number of Listen Port 1:   ____   = LSTRN1
6.2   Start nibble number of Talk Port 1:   ____   = TSTRN1
6.3   Start nibble number of Listen Port 2:   ____   = LSTRN2
6.4   Start nibble number of Talk Port 2:   ____   = TSTRN2

Now, change the starting nibble number in LFSTR1, LFSTR2, TFSTR1, TFSTR2 (addresses 302, 303, 306, 307 respectively) to the values for new LSTRN1, LSTRN2, TSTRN1, and TSTRN2.

Example Changes

Suppose, we want to assign a 2 channel 4823A with the following port assignments:

Channel 1:   4 Listen nibbles (starting from 0)
                4 Talk nibbles   (starting from 4)
Channel 2:   6 Listen nibbles (starting from 8)
                6 Talk nibbles   (starting from 14)

Therefore we alter the following fields:

NOFCHN   (addr. 31A) = 0Dhex
LF1   (addr. 300) = 01000100bin = 44hex
LF2   (addr. 301) = 01000100bin = 44 hex
LFSTR1   (addr. 302) = 00hex
LFSTR2   (addr. 303) = 08hex
TFSTR1   (addr. 306) = 04hex
TFSTR2   (addr. 307) = 0Ehex

Programming Instructions

Copy the object code from the original 4823A EPROM into the PROM Programmer's memory. Change only the locations listed in Table 1. Calculate the PROM check-sum with your EPROM programmer. Set byte 07FF so that the sum of the PROM is 00. The PROM Programmer should show the sum of all of the bytes in the EPROM as XX00 in which the last 2 digits should be 00. Copy the modified object code to a new EPROM and insert the new EPROM in the 4823A. **Do not erase the 4823A's original EPROM.**

If the 4823A PWR LED blinks when power is turned on, it indicates that there was a EPROM check-sum error. Fix the check-sum and reprogram the EPROM.

TABLE 1   4823A CONFIGURATION TABLE

```
23TABLES ORG 0300H
*
INITBL EQU $
*
*  LISTEN FLAGS STORE CHANNEL LISTEN CONTROL INFO
*  LF1 = FLAG FOR CH #1
*  LF2 = FLAG FOR CH #2
*
*  LISTEN FLAGS CHANNEL1/2
*    BIT     MEANING
*     7      1   =  BINARY, 0  =  BCD DATA
*     6      1   =  HI,   0  = LO TRUE DATA
*     5      1   =  LISTEN HANDSHAKE WITH STAT A
*    4-0     NUMBER OF NIBBLES ASSIGNED
*
LF1  DB    01001010B      10  NIBBLES      4A
LF2  DB    01000000B                       4O
*
*LISTEN CHANNEL STARTING ADDRESS
*  LFSTR1  = STARTING NIBBLE NUMBER FOR CH #1
*  LFSTR2  = STARTING NIBBLE NUMBER FOR CH #2
*  THERE ARE 20 NIBBLES, NUMBER 1 TO 19 IN BINARY
*
LFSTR1      DB   00000000B               O
LFSTR2      DB   00000000B               O
*
*  TALK FLAGS STORE CHANNEL TALK CONTROL INFO
*  TF1  = FLAG FOR CH #1
*  TF2  = FLAG FOR CH #2
*
*  TALK FLAGS CHANNEL 1/2
*    BIT     MEANING
*     7      1   =  BINARY, 0  =  BCD DATA
*     6      1   =  HI,   0  = LO TRUE DATA
*     5      1   =  TALK HANDSHAKE WITH EDR
*    4-0     NUMBER OF NIBBLES ASSIGNED
*
TF1  DB    01101010B                     6A
TF2  DB    01100000B
*
*  TALK CHANNEL STARTING ADDRESS
*  TFSTR1  = STARTING NIBBLE NUMBER FOR CH #1
*  TFSTR2  = STARTING NIBBLE NUMBER FOR CH #2
*
TFSTR1      DB 00001010B
TFSTR2      DB 00000000B
*
*  POLARITY BYTE SETS CHANNEL SIGNAL AND DATA POLARITIES FOR BOTH CHANNELS
*
*  POLARITIES CHANNEL 1/2
*    BIT     MEANING  1 = HI,   0 = LO TRUE/ACTIVE
*     7      DATA STROBE POLARITY
*     6      CLEAR STROBE POLARITY
*     5      REM SIGNAL POLARITY
*     4      RESET SIGNAL POLARITY
*     3      STAT B POLARITY
*     2      STAT A POLARITY
```

total 20 nibbles,   10 nib talk
10 nib listen

Listen

- **# of Listen Channel = 1**
- **BCD data**
- **10 nibbles**
- **Starts from nibble #0 (the first nibble)**
- **No Listen handshake**

Talk

- **# of Talk Channel = 1**
- **BCD data**
- **Talk handshake w/EDR**
- **10 nibbles**
- **Starts from nibble #10 (th eleventh nibble)**
- **Talk conversion table channel 1**
  0 1 2 3 4 5 6 7 8 9 + - . , E space

TABLE 1   4823A CONFIGURATION TABLE (CONTINUED)

```
*      1        INH SIGNAL POLARITY
*      0        EDR STROBE POLARITY
*
POL1 DB     00001000B
*
*  OPTION BYTE CONTROL ADDITION OF LF TO TALK MSG TERMINATOR
*
*  OPTIONS CHANNEL 1/2
*      BIT     MEANING  1  =  OPTION IN EFFECT
*      7-1     UNASSIGNED        MUST BE 0
*      0       LF OPTION (LF ADDED TO BCD TALK MSG)
*
OPT1 DB     00000001B
*
*  TALK CONVERSION TABLE
*  # # # N.B.   - TABLE ORGANIZED IN REVERSE ORDER ! ! ! # # #
TCT1 DB      '  E,.-+9876543210'
*
*  NUMBER BYTE CONTROLS NUMBER OF 4823A CHANNELS
*  N.B. A SINGLE CHANNEL CAN BE BOTH A TALKER AND A LISTENER
*
*  NUMBER OF CHANNELS
*  0F  = SINGLE CHANNEL
*  0D  = TWO CHANNELS
NOFCHN              DB     0FH
*  RSV BIT MASK;  1  ENABLES SRQ ON TRUE STATE OF CORRESPONDING
*  SERIAL POLL RESPONSE BYTE
*
*RSV DB     10001001B
*
*  TABLE ORGANIZATION
ADDRESS     BYTE
0300  LF1
0301  LF2
0302  LFSTR1
0303  LFSTR2
0304  TF1
0305  TF2
0306  TFSTR1
0307  TFSTR2
0308  POL1
0309  OPT1
030A  TCT1   (MSB)
  •
  •                       }   16 byte Talk Conversion Table
  •
0309  TCT16  (LSB)
031A  NOFCHN
031B  RSV
```

1/00