

ELLIOTT

9000

Volume 2: PROGRAMMING INFORMATION

Part 7: MAGNETIC TAPE ROUTINES

Section 3: QMWRITE

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Chapter 1: INTRODUCTION

1.1 Function

This program is a SIR coded subroutine which writes a block from store onto magnetic tape.

1.2 Form of Distribution

The routine is distributed on a SIR mnemonic tape, part of the MTBLOCK tape.

1.3 Method of Use

The program is assembled and entered as a SIR subroutine.

1.4 Configuration

The minimum configuration for running this program is a 903 central processor with 8192 words of store, a magnetic tape controller and at least one magnetic tape handler.

Chapter 2: FUNCTIONS

2.1 Write a Block

```
Enter by: 11 QMT
          8  QMWRITE
          0  FT
          8  ERROR
```

Where 0 FT points to the file table, and ERROR refers to the error routine.

2.2 Data Written

The block written onto tape will be the block specified in the file table. Words 0; to 4; of the file table must be set up correctly (see Volume 2.7.1).

If a label block is to be written, Word 2; of the file table must hold the length of the block, and bit 18 set to one, e.g. for a 20 word label block, location 2; of the file table must hold /0 20

Two words, at the beginning of the block to be written, must be reserved. QMWRITE will set these words to hold the number and length of the block written.

The length specified in 2; of the file table must include these two reserved words. This length must not be less than 5 words or greater than 2047 words. A block must not consist entirely of zero words.

Before entering QMWRITE, the tape must be positioned correctly, as the block is written immediately without repositioning the tapes.

2.3 Exit

Normal exit is to the third location after entry, with the number of the block written held in bits 1 to 17 of the A-register.

If the A-register is negative on this exit, the block has been written correctly but the end of tape warning marker has been detected.

2.4 Error Exit

The error exit is to the second location after entry. The contents of the A-register indicate the nature of the error according to the list below. If the appropriate bit is set to one, then the meaning implied is as follows:

- Bit 18 End of tape detected - block not written.
- Bit 16 Handler not available - other status bits have no significance.
- Bit 15 An instruction has been treated as "do nothing" by the controller (may be due to pressing Manual while a block is being written)
- Bit 14 File not open for reading.
- Bit 13 File not open for writing.
- Bit 10 Zero character - false end of block, repeated hardware error.
- Bit 7 Write permit - if zero writing is not permitted.
- Bit 4 Parity failure - repeated hardware error.
- Bit 3 Missed transfer; repeated hardware error.
- Bit 2 Handler in Manual or not available, bits 3 to 10 are undefined.

All other bits are undefined and their values be ignored.

When a hardware error occurs during the writing of a block, the corrupt block is backspaced over, an erase instruction is issued and another attempt at writing the block is made.

At least 10 attempts are made to write the specified block, before the error exit is taken. The error indicated, is that detected during the last attempt to write the block.

Chapter 3: METHOD USED

The standard version of the routine uses block transfer for writing on to tape. It does not use interrupts from the magnetic tape controller - these are suppressed.

Before writing a block, the block number of the previous block either read or written, is incremented by one, and the new block number is stored in the location reserved for it. A check character is formed (from the block number and block length) and this is stored along with the length in the 2nd location at the head of the block to be written.

Because of the check character, there is a restriction on the length of a block able to be written.

Maximum length of block = 2047 words.

Chapter 4: STORE USED

QMWRITE occupies 135 locations.

Chapter 5: STORE LOCATIONS AFFECTED

QMWRITE alters locations

QMT,4; of the file table,

the two locations at the beginning of the block to be written;

and the workspace used internally by the magnetic tape software.