

Raabe.



REGNECENTRALEN

SCANDINAVIAN INFORMATION PROCESSING SYSTEMS

SYSTEM
LIBRARY

RCSL NO: 55-D53

AUTHOR : Tom Sandvang

EDITION: Sep. 1969

RC 4000 PERIPHERAL DEVICES

RC 4320 MAGNETIC DRUM

REFERENCE MANUAL

ABSTRACT

This report describes the logical structure of the RC 4320 magnetic drum when used in connection with the RC 4000 computer.

CONTENTS

Main characteristics.....page 1

Commands.....page 1

Control commands.....page 1

Input and output.....page 2

Sense command.....page 2



INFORMATION DEPARTMENT

MAIN CHARACTERISTICS

The minimum drum capacity is 64 k words of 24 bits each. The capacity can be extended in modules of 64 k words up to a maximum of 512 k words. The drum is divided into segments of 256 words each. It can transfer a data block consisting of a variable number of segments directly to or from the internal store. The average transfer time in milliseconds is:

$$10.5 + 5.2 * \text{number of segments}$$

The drum operates on the high-speed data channel but uses the low-speed data channel to transfer commands and control parameters to or from the working registers.

COMMANDS

The drum controller accepts sense and control commands, the latter with four modifications.

In the input/output instruction specifying the sense command the value of the modifier field i.e. bits 18 - 21 in the effective address is irrelevant.

The use of read commands, write commands and other modifications of the control command than specified have no effect at all.

CONTROL COMMANDS

The following control commands are available:

5	transfer first	<first segment>
9	transfer size	<number of segments>
13	input	<first storage address>
17	output	<first storage address>

The integers denote the values of bits 18 - 23 in the effective address of the input/output instruction. The parameters in the brackets < and > denote the contents of the working register selected by the input/output instruction.

The parameters first segment, number of segments and first storage address are interpreted modulo 2048, 512 and 262 144 respectively. The rightmost bit in the parameter first storage address is ignored. Thus it is irrelevant whether the parameter refers to the left or right half of the storage word.

INPUT AND OUTPUT

The input or output of a block requires three control commands:

Two transfer commands are used to define the first segment and the number of segments on the drum.

One input or output command initiates the transfer defining the first address of the storage buffer.

After the initiation of input or output the drum is busy until the operation is either completed successfully or terminated by an error condition. The drum delivers an interrupt signal when it becomes available.

SENSE COMMAND

When the drum is available a status word can be transferred to a working register by means of a sense command:

status	zero
0 3 4	23

The status bits have the following meaning:

- 0 (not used = 0)
- 1 parity error
- 2 synchronization error
- 3 data overrun

Parity error indicates a parity error in one or more data words during the transfer.

Synchronization error indicates a parity error on the clock track of the drum. This is a serious hardware malfunction.

Data overrun indicates overloading of the high-speed data channel due to which the block transfer immediately has been stopped.