

DANSK DATA ELEKTRONIK
ID-7038 REFRESH MODULE
for the
ID-7000 MICROPROCESSOR SYSTEM
November 1979

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ID-7038 REFRESH MODULE.

1. DESCRIPTION.

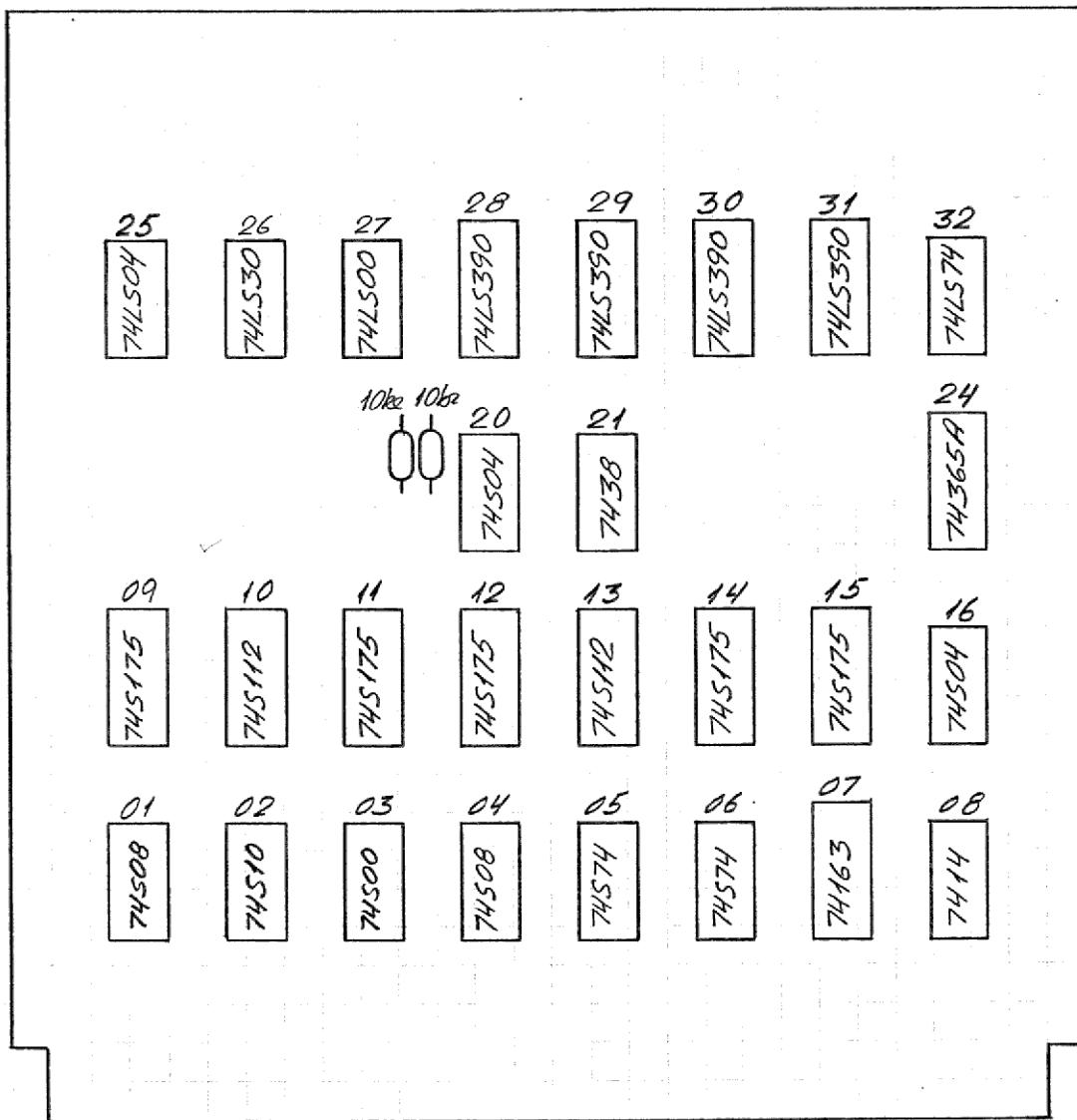
The ID-7038 refresh module refreshes ID-7037 dynamic RAM modules and generates all the necessary control signals for memory read and write cycles.

The refresh module is invisible to the programmer, but it should be noted that refresh occupies one CPU state, that is 0.5 microsecond, every 14 microsecond. The CPU is in the WAIT state while a refresh cycle is performed in the memory.

2. TIMER.

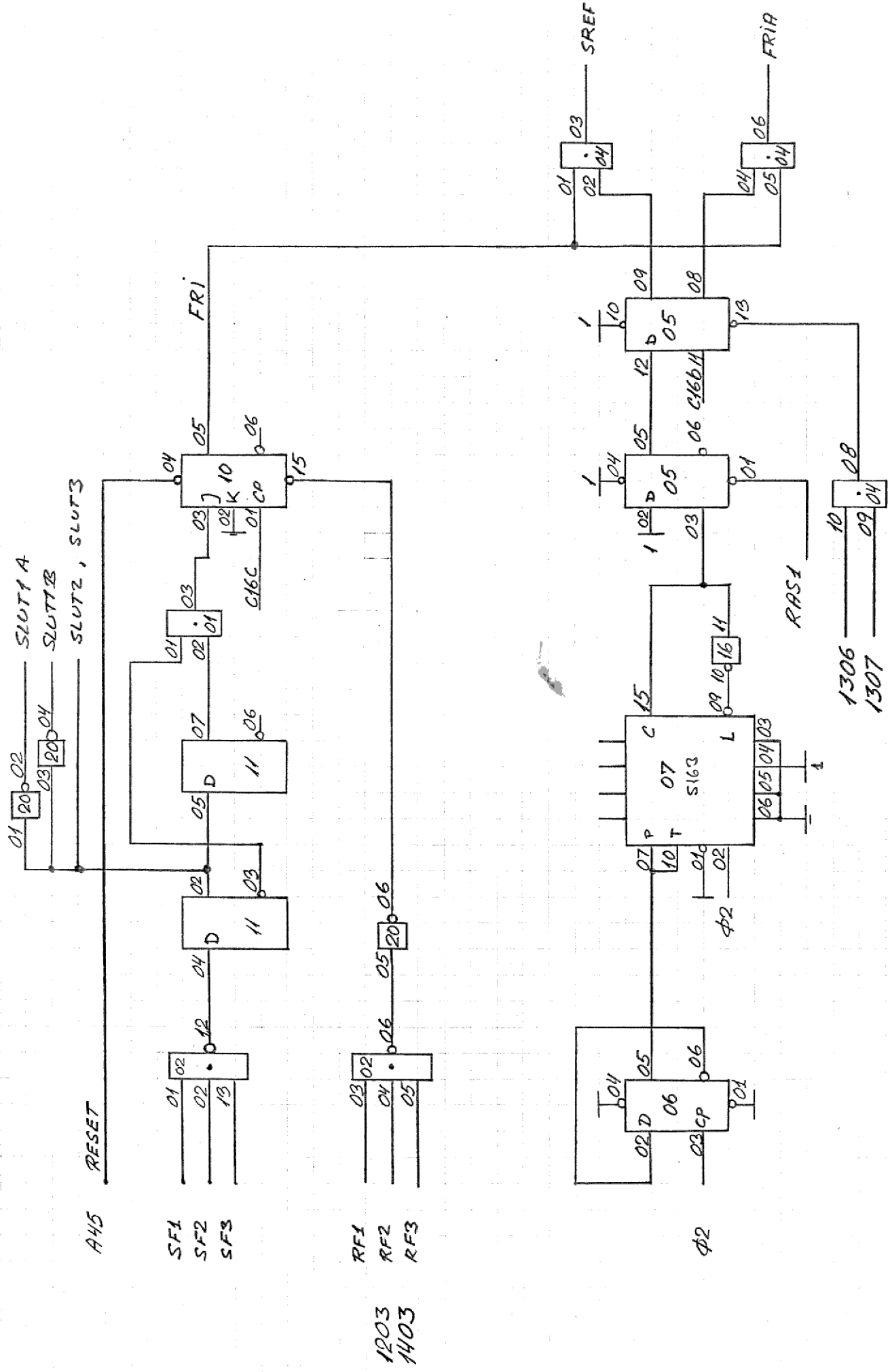
Some refresh modules contain a timer. A flip flop on the module is set every 5 second. This is done by dividing the crystal controlled 2 MHz clock by a factor of 10×10^7 . The content of the flip flop is read as the least significant bit by means of an IN instruction to address 1F hex. The flip flop is cleared when the CPU performs an OUT instruction to address 1F hex.

IN	1F	;READS THE CONTENT OF THE TIMER FLIP ;FLOP AS THE LEAST SIGNIFICANT BIT
OUT	1F	;CLEARS THE CONTENT OF THE TIMER ;FLIP FLOP.



7038

Initialer/dato KRN 12/10	Side 1
Revideret	Projekt REFRESH



7038

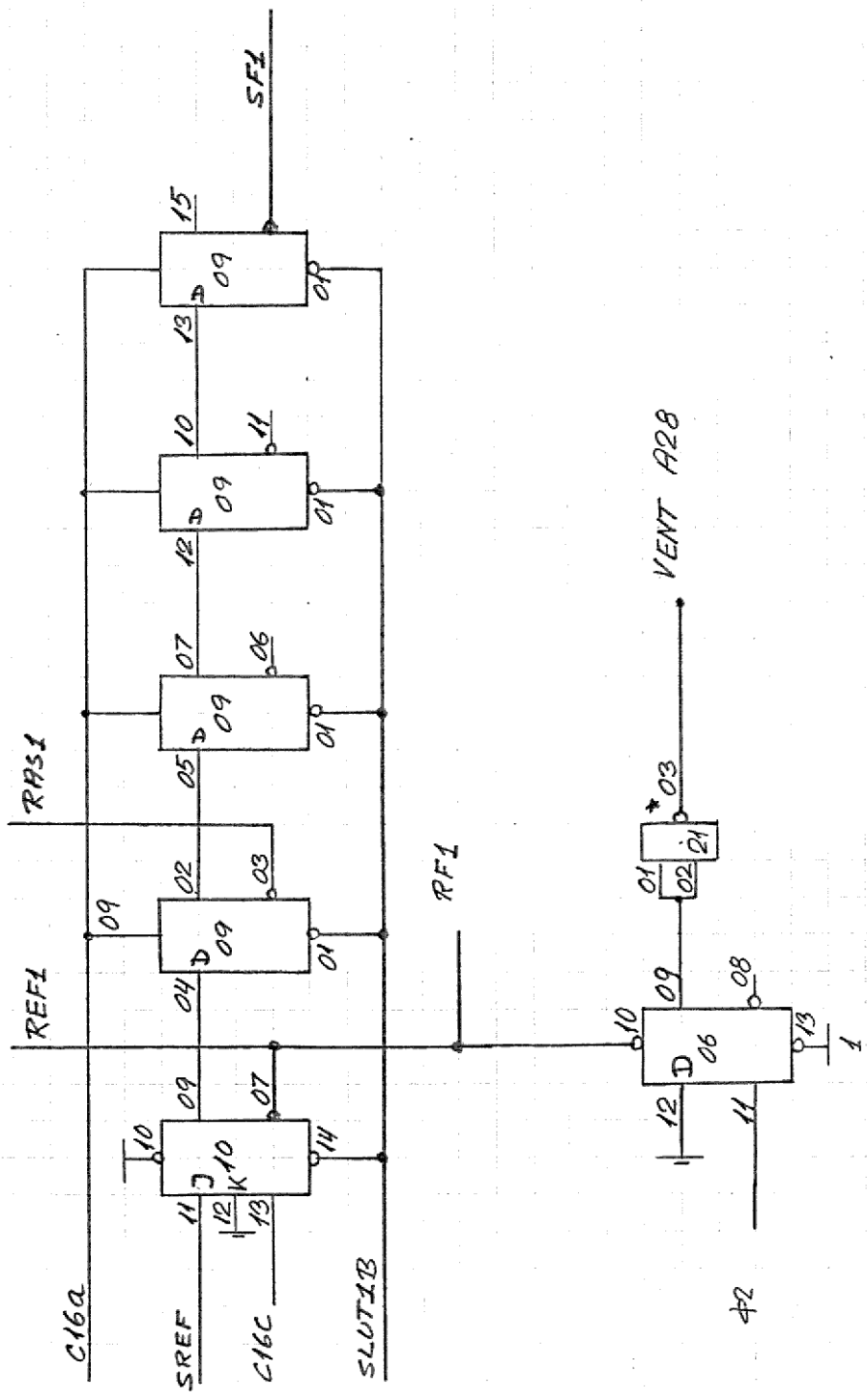
Initialer/dato
KAN 12/10

Side
2

Revideret

Projekt
REFRESH

Refresh timing



7038

Initialer/dato

KAN 12/10

Side

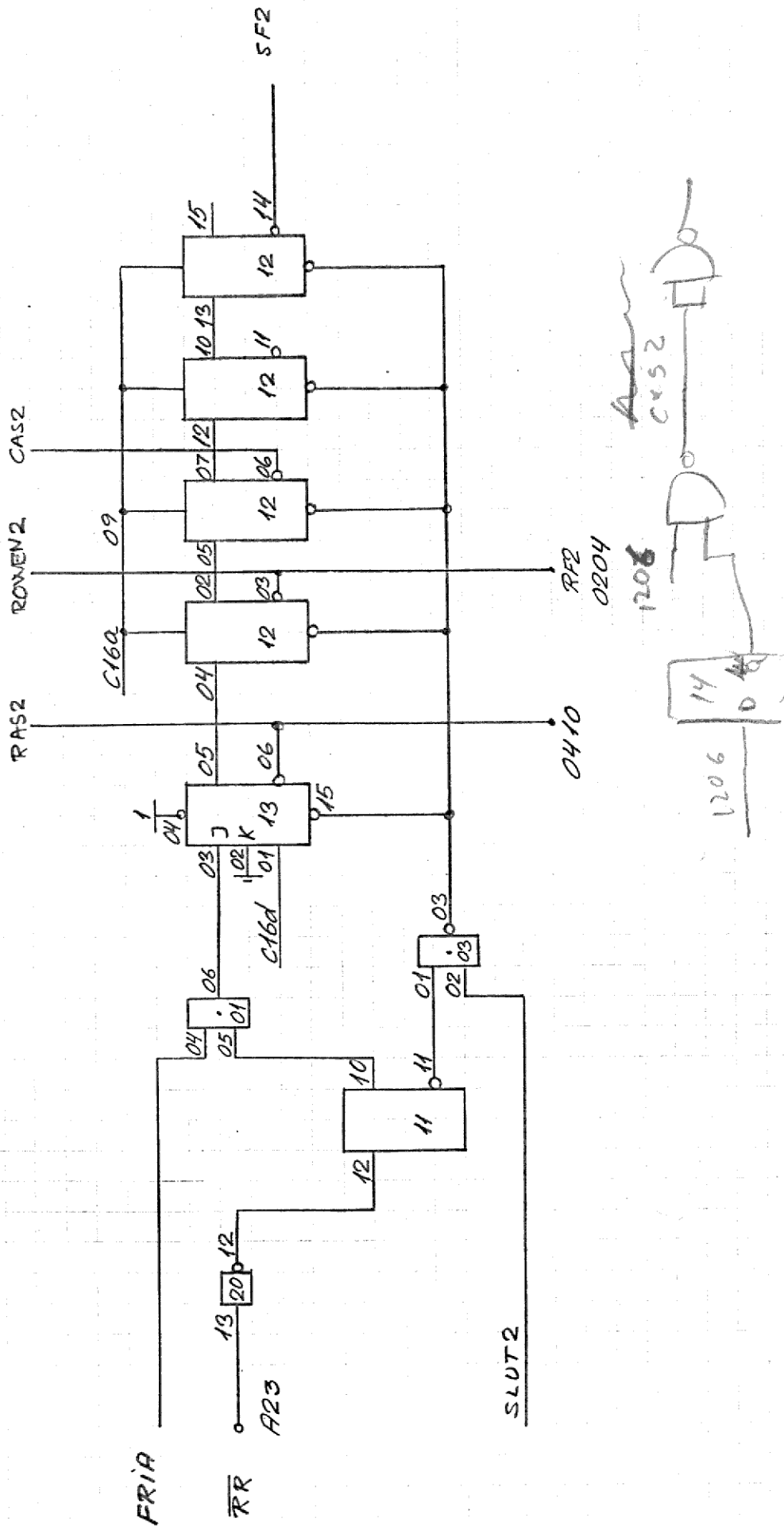
3

Revideret

Projekt

REFRESH

Read timing



7038

Initialer/dato

WAN 12/10

Side

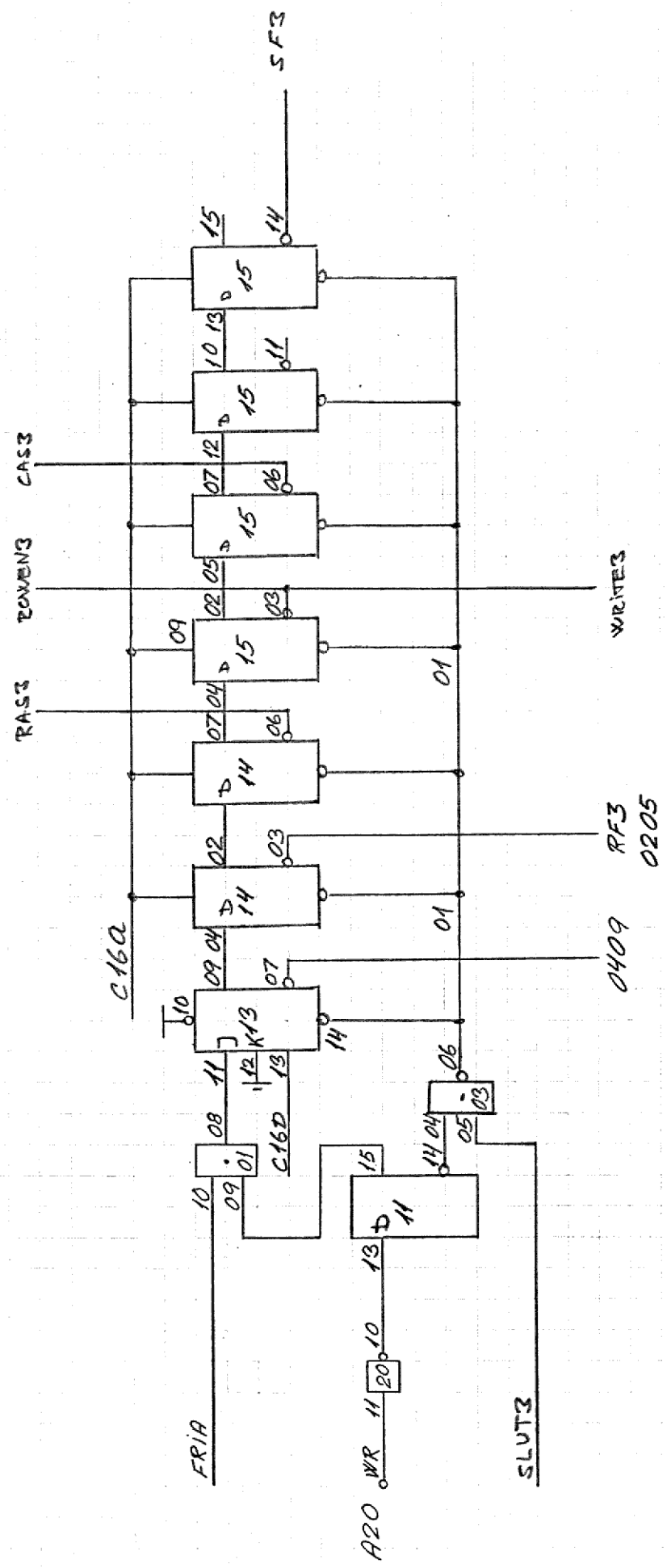
4

Revideret

Projekt

REFRESH

Write timing



7038

Initialer/dato

KAN 12/10

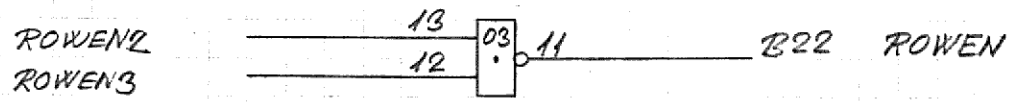
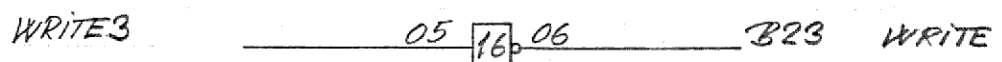
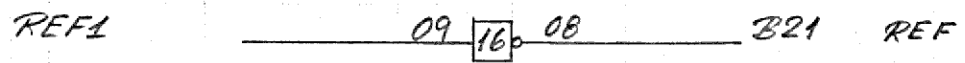
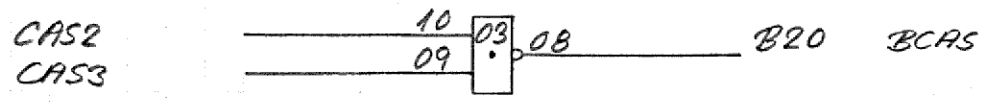
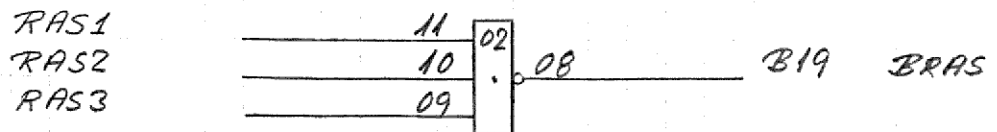
Side

5

Revideret

Projekt

REFRESH



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Initialer/dato
MAN 12/10

Side
6

Revideret

Projekt
REFRESH

