

DANSK DATA ELEKTRONIK ApS
ID-7006 READER/PUNCH interface
module for the
ID-7000 MICROPROCESSOR SYSTEM

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1. General description. This module contains logic to interface the ID-7000 high speed papertape reader and the ID-7000 high speed papertape punch to the ID-7000 microprocessor system. The module plugs into any position in the bus system. The reader/punch device is connected to the module via the top connector.

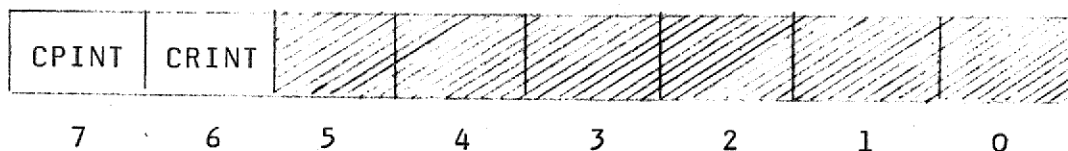
Programs can drive the module by utilising the contents of the module's status word, or by means of interrupts. Separate interrupt flip-flops are provided for reader and punch operations.

Appendix 1 contains the detailed logic diagram of the module.

2. Programming description.

2.1 Addressing. The module uses two consecutive I/O addresses. A switch register on the module is used to select the module's base address, which must be an even address. Input from the even address of the module reads a character from the reader buffer register and initiates a new read operation. Output to the even address of the module loads the punch buffer register with the contents of the CPU accumulator register and initiates a punch operation. Input from the odd address of the module reads the module status word and output to the odd address of the module loads the module control word.

2.2 Control word.



Bit 7: CPINT When a control word is sent with bit 7 activated (1), the punch interrupt flip-flop is cleared.

Bit 6: CRINT When a control word is sent with bit 6 activated (1), the reader interrupt flip-flop is cleared.

Bits 5:0 Not used.

The control word is used, when deactivation of the reader/punch interrupt flip-flop is wanted, without initiating a new read/punch operation.

2.3 Status word.

PINT	o	o	RINT	o	o	o	o
7	6	5	4	3	2	1	o

Bit 4: RINT The content of the read interrupt flip-flop. Logical 1 indicates that the reader interface is ready with a character in the reader buffer register.

Bit 7: PINT The content of the punch interrupt flip-flop. Logical 1 indicates that the punch interface is ready to receive a new character in the punch buffer register for initiating a new punch operation.

The status word is used, when the module is used without use of interrupts, or when interrupts are used and several interrupt sources share common interrupt request lines.

2.4 Data word.

DATA 7	DATA 6	DATA 5	DATA 4	DATA 3	DATA 2	DATA 1	DATA o
7	6	5	4	3	2	1	o

The input data word is the contents of the reader buffer register. Input of the data word, automatically initiates a new read operation.

The output data word, loads the punch buffer register, and initiates a punch operation.

2.5 Interrupts. The module contains two separate interrupt flip-flops for reader and punch operations (RINT, PINT). By means of a strap socket on the module these interrupt flip-flops can be connected to any of the 8 interrupt request lines on the bus. The output buffers from the flip-flops are open collector, to allow several interrupt flip-flops to share common interrupt request lines.

The reader interrupt flip-flop is set, when a new character from the reader becomes ready in the reader buffer register. It is cleared when the contents of the reader buffer register is transferred to the accumulator of the CPU by means of an IN-instruction. It is also cleared when specified by a control word (section 2.2).

The punch interrupt flip-flop is set, when a punch operation is terminated and the punch buffer register is ready to receive a new character. It is cleared when a new character is loaded into the punch buffer register. It is also cleared when specified by a control word.

The connections to the strap socket is shown in fig. 1.

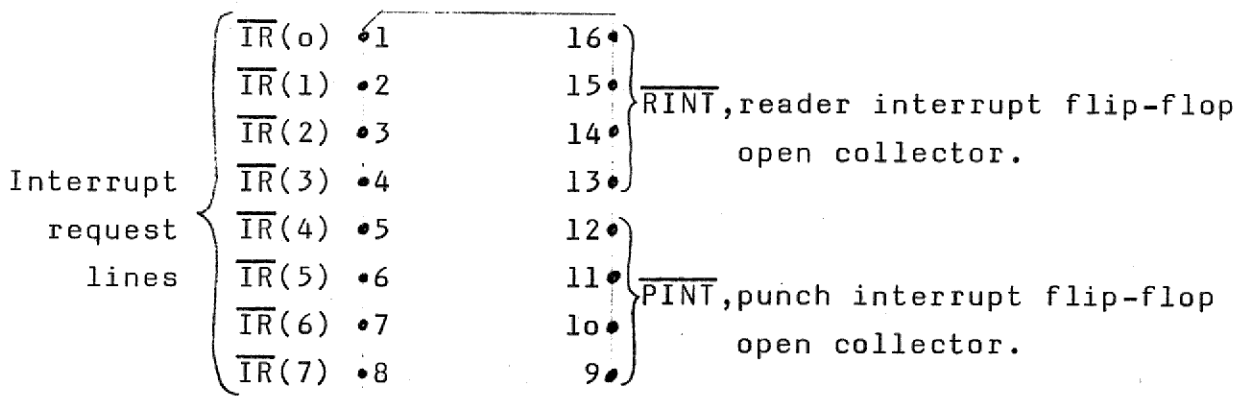


Fig. 1.

2.6 READER/PUNCH interface. The reader device used by the module is the ID-7000 high speed reader, based on a GNT-26, 500 char/sec optical reader unit.

The punch device is a FACIT 4070 or a GNT 3424 (or compatibel) 70 char/sec paper tape punch. Other punch devices can be used with small modifications.

Table 1 specifies the connections in the top connector of the module.

TABLE 1. READER/PUNCH

INTERFACE

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Signal name	pin. nr.	description.
$\overline{rch}1$	\bar{e}	reader output ch 1
$\overline{rch}2$	\bar{d}	" 2
$\overline{rch}3$	\bar{c}	" 3
$\overline{rch}4$	\bar{f}	" 4
$\overline{rch}5$	\bar{h}	" 5
$\overline{rch}6$	\bar{j}	" 6
$\overline{rch}7$	\bar{k}	" 7
$\overline{rch}8$	\bar{l}	" 8
feed	\bar{m}	" feed
ro1	P	reader optocoupler, pull up
ro2	N	" , collector
ro3	M	" , emitter
pch1	S	punch input ch 1
pch2	T	" 2
pch3	U	" 3
pch4	V	" 4
pch5	W	" 5
pch6	X	" 6
pch7	Y	" 7
pch8	Z	" 8
po1	E	punch optocoupler, anode
po2	F	" , cathode
\overline{astart}	\bar{a}	alternative punch start (not used by 4070)
Vcc	A ₁₃₆	+5V
gnd	\bar{r} , 1	0V

