

Industrial Micro Systems Model 400/430

Floppy Disk Controller Board

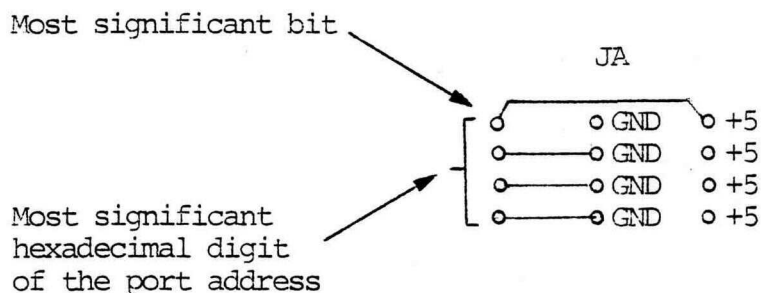
The Industrial Micro Systems Model 400 and 430 Floppy Disk Controllers for use with 8" and 5V floppy drives, respectively, are described in the following paragraphs.

The 400 and 430 are based on the NEC uPD765 Floppy Disk Controller chip providing **single and double-density and single and double-sided** operation. An on board 8257 provides DMA operation. Either board can control up to four floppy disk drives.

The Model 400 and 430 boards are used in the Industrial Micro Systems Series 8000 and 5000 systems, respectively.

Input/Output Port Address Range Selection

The Model 400/430 board is etched for the use of input/output ports 80H through 8FH. This is accomplished at JA near the center of the board. The twelve termination points of JA are as shown in the diagram below:



If it is necessary to change the port address for the board, cuts and jumpers in the JA block will be required.

Input/Output Port Assignment (Cont'd.)

80H through 88H - These ports are used by the 8257 programmable DMA controller on the board. (See the attached write-up on the DMA controller chip for more detail.)

80H - Channel 0 DMA Register

81H - Channel 0 Terminal Count Register

82H - Channel 1 DMA Register

83H - Channel 1 Terminal Count Register

84H - Channel 2 DMA Register

85H - Channel 2 Terminal Count Register

86H - Channel 3 DMA Register

87H - Channel 3 Terminal Count Register

88H - DMA Status and Commands

) Will be reserved for
) hard disk controller.

) Will be reserved for 2nd
) hard disk controller.

IN/CUT 89H - Not used.

IN 8AH - Not used.

COT 8AH - Drive select port. Data bits 0 and 1 binary weighted select one of four disk drives. All subsequent status and commands will pertain to the selected drive. These bits are latched on the board.

IN 8BH - Not used.

COT 8BH - Precisely the same significance as OUT 8AH described above.

IN 8CH - Board status port. This port provides status information on the drive select, 765 interrupt and drive select delay functions as follows:

Data Bit 0 - A logical one indicates that a 765 interrupt has occurred.

Input/Output Port Assignment (Cont.)

Data Bit 1 & 2 - Binary weighted to provide the information that Drive 0, 1, 2 or 3 is selected.

Data Bits 3-6 - Not used.

Data Bit 7 - A logical one indicates that the floppy disk drive motors are on and the motor-control time-out is complete. If the motors are off, or the time-out is not complete, this bit will be zero. Reading this port will start the motors and reset the thirty (30) second motor-off time-out to zero. After approx. one second this delay complete bit will be set to a logical one.

CUT 8CH - Board interrupt mask. The data bits will provide information as follows:

Data Bit 0 - A one in this position will enable a 765 interrupt on the selected vectored interrupt line. A zero disables the interrupt.

Data Bit 1 - A one in this position enables a delay complete interrupt on the selected vectored interrupt line. Both bit 0 and 1 are latched on the board.

Data Bits 2-7 Not used.

IN 8DH & OUT 8DH - Precisely the same significance as IN 8CH and OUT 8CH as described above.

8EH and 8FH - These ports are utilized by the 765 floppy disk controller chip as follows. (See the attached write-up on the floppy controller chip for more detail.)

Input/Output Port Assignment (Cont.)

8EH - Floppy disk controller main status register.

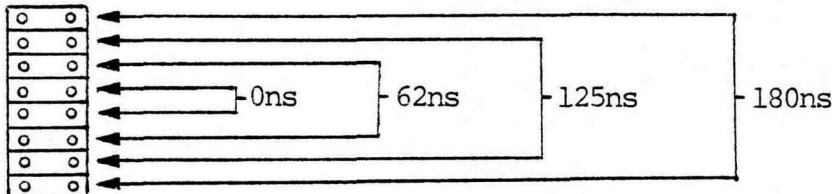
8FH - Disk data register.

Vectored Interrupt Jumper

The JB area consisting of eight shunt positions (located in the lower Left hand portion of the board) is used to select one of the eight vectored interrupt levels to be triggered when a floppy disk controller interrupt or a delay complete interrupt occur depending upon the status of the interrupt mask port (OUT 8CH).

Write Pre-Compensation Jumpers (Model 400 Only)

The JC shunt block in the upper left hand corner of the Model 400 board is used to select the amount of write pre-comp employed. Two shunts are utilized with pre-comp selection as shown below:



The standard selection is 125 nanoseconds for operation with Shugart 03: Remex floppy disk drives.

Double-sided Drive Selection Shunt (Model 430 Only)

The JC shunt position in the bottom center portion of the 430 board is used to select single-sided (no shunt) or double-sided (shunt installed) operation. Single-sided/double-sided operation is selected through a drive signal in the 50-pin cable on the Model 400 board.

Motor Control Shunt (Model 400 Only)

The JD shunt located in the upper right hand corner of the 400 board pertains

Motor Control Shunt (Model 400 Only) (Cont.)

to the disk drive motor control. With a shunt installed the motor control option is disabled, and with no shunt motor control is enabled. Thus when the shunt is on JD, the delay complete bit (DB7, IN8CH) is always true.

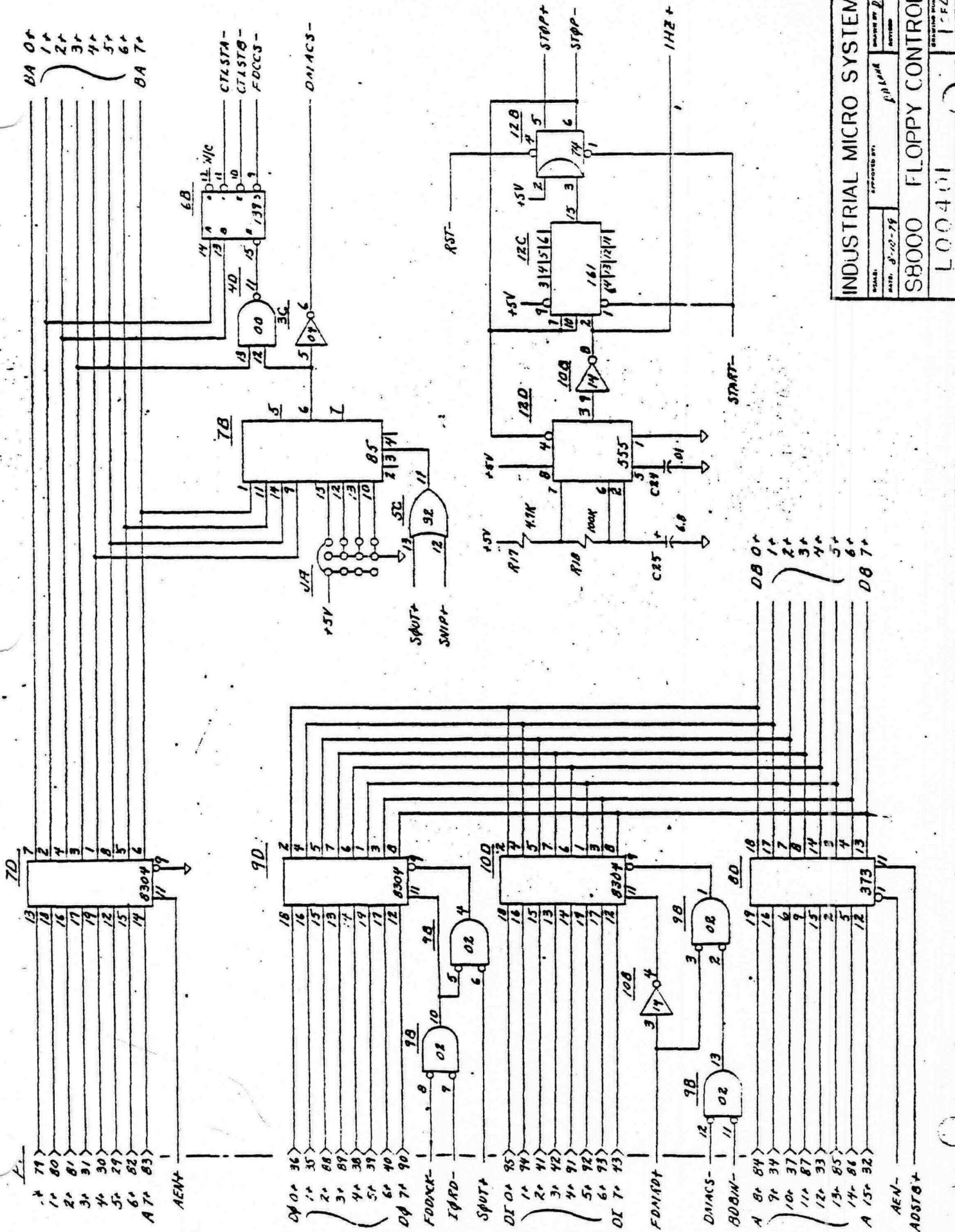
Ribbon Cable Pin Assignments

The ribbon cable pin assignments for the Model 400 and Model 430 (J1 Connector) are Shugart compatible as listed below:

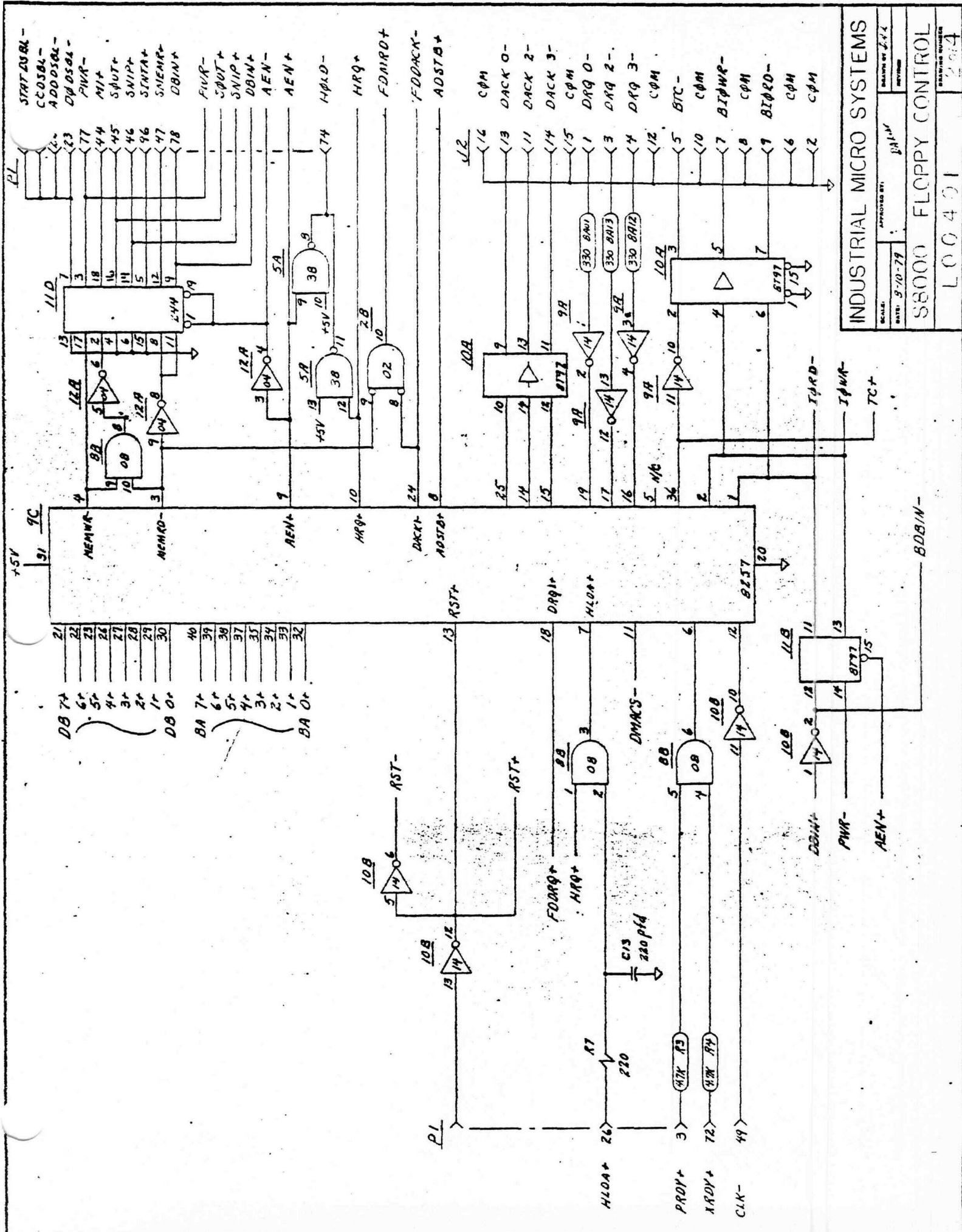
<u>Pin</u>	<u>Model 400 (50-pin)</u>	<u>Model 430 (34-pin)</u>
2	LOWCUR	SPARE
4	-	IN USE
6	-	SEL 4
8	-	INDX
10	2SIDE	SEL 1
12	DSCHG	SEL 2
14	SDE1	SEL 3
16	-	MON
18	HDLOAD	IN
20	INDX	STP
22	RDY	WDAT
24	-	WGAT
26	SEL 1	TRACK0
28	SEL 2	WPROT
30	SEL 3	RDATA
32	SEL 4	SDE1
34	IN	SEPDAT
36	STP	-
38	WDAT	-
40	WGAT	-
42	TRACK0	-
44	WPROT	-
46	RDATA	-
48	-	-
50	-	-
All Odd	Ground	Ground

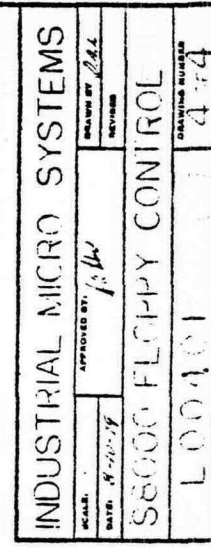
Motor Control Relay (Model 400 Only)

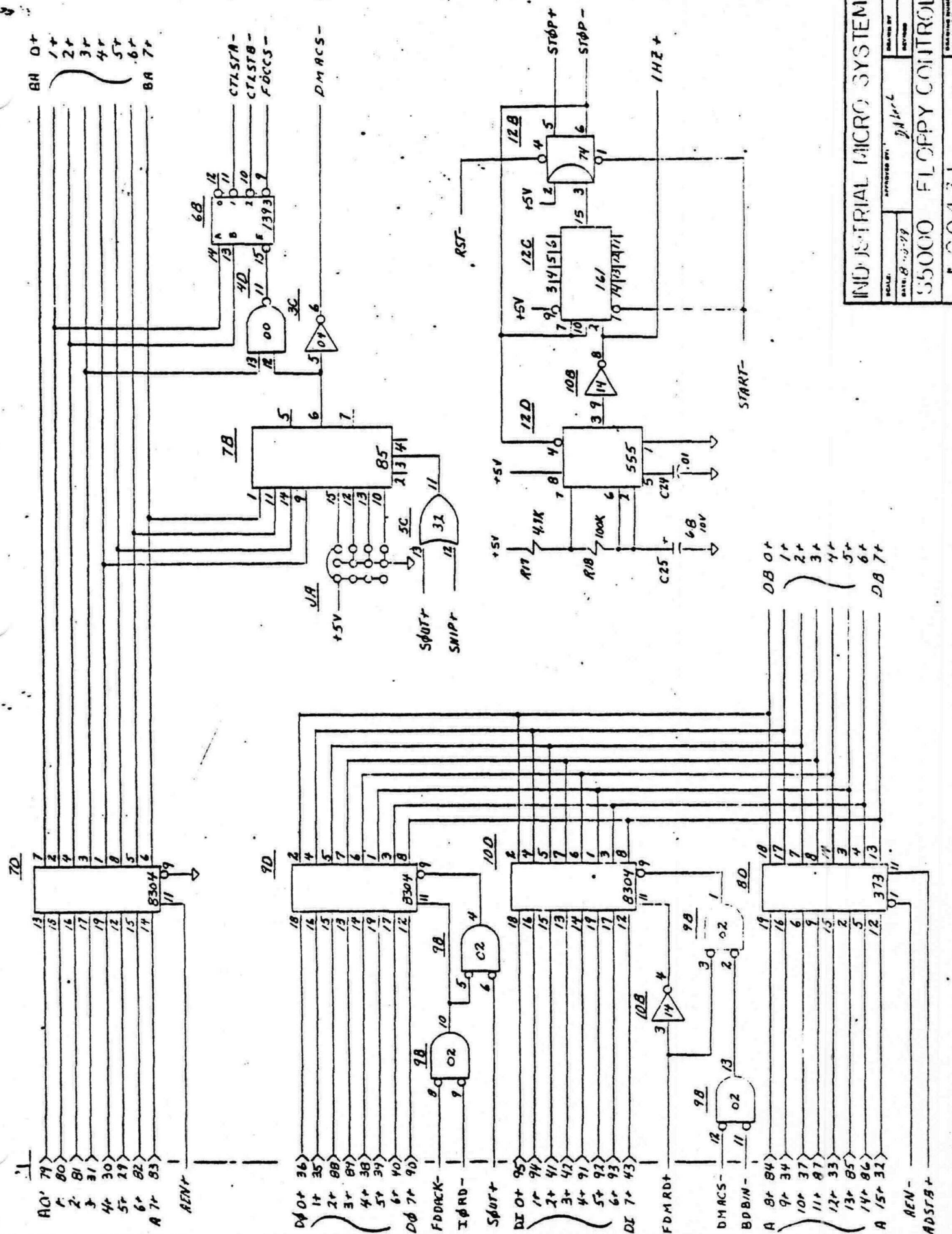
The connector at J3 in the upper left hand corner of the Model 400 board is to provide control to the solid-state relay used for the motor control option.



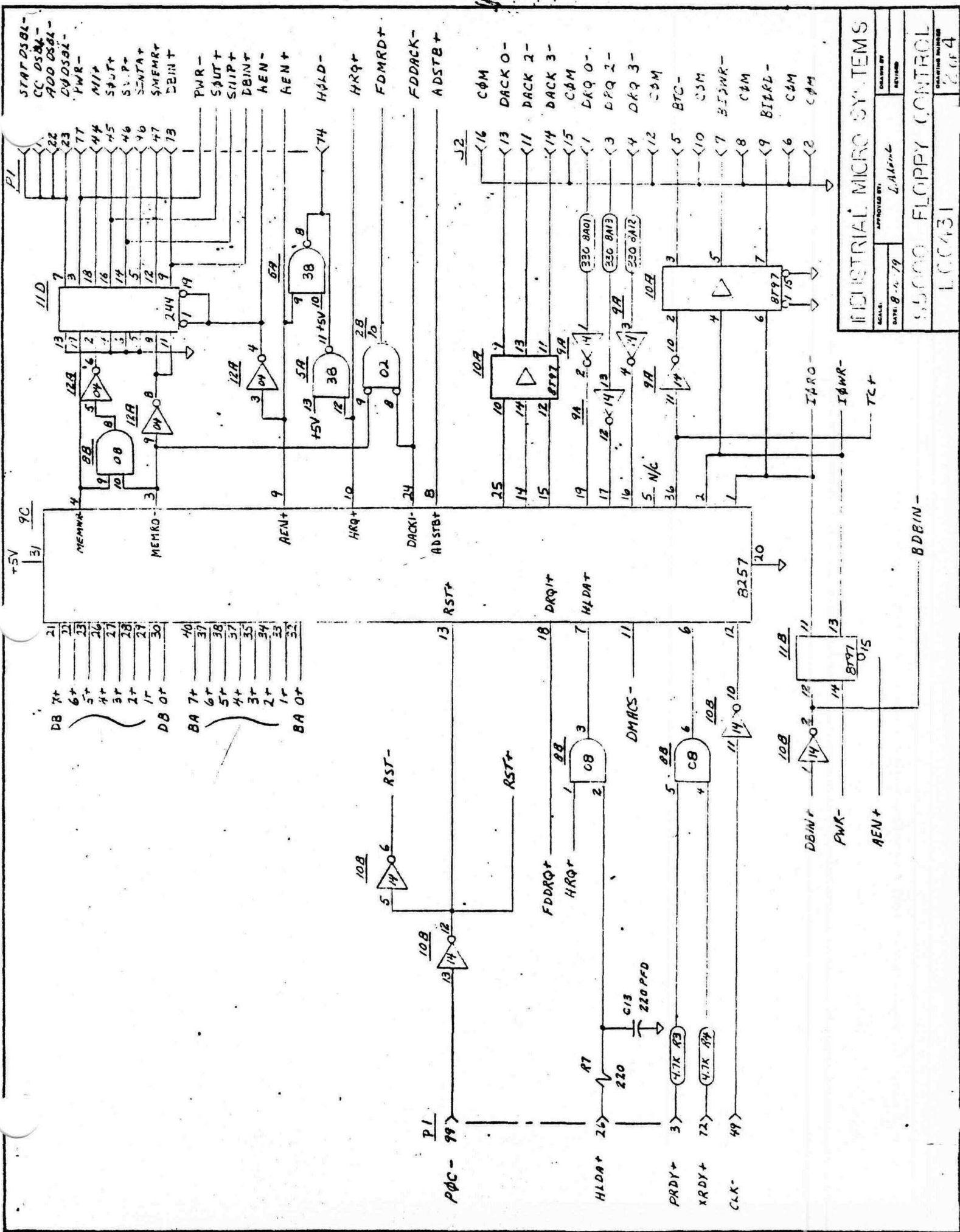
INDUSTRIAL MICRO SYSTEMS	
SCALE: 1/8"=1"	DATE: 8-10-78
S8000 FLOPPY CONTROL	
L00401	



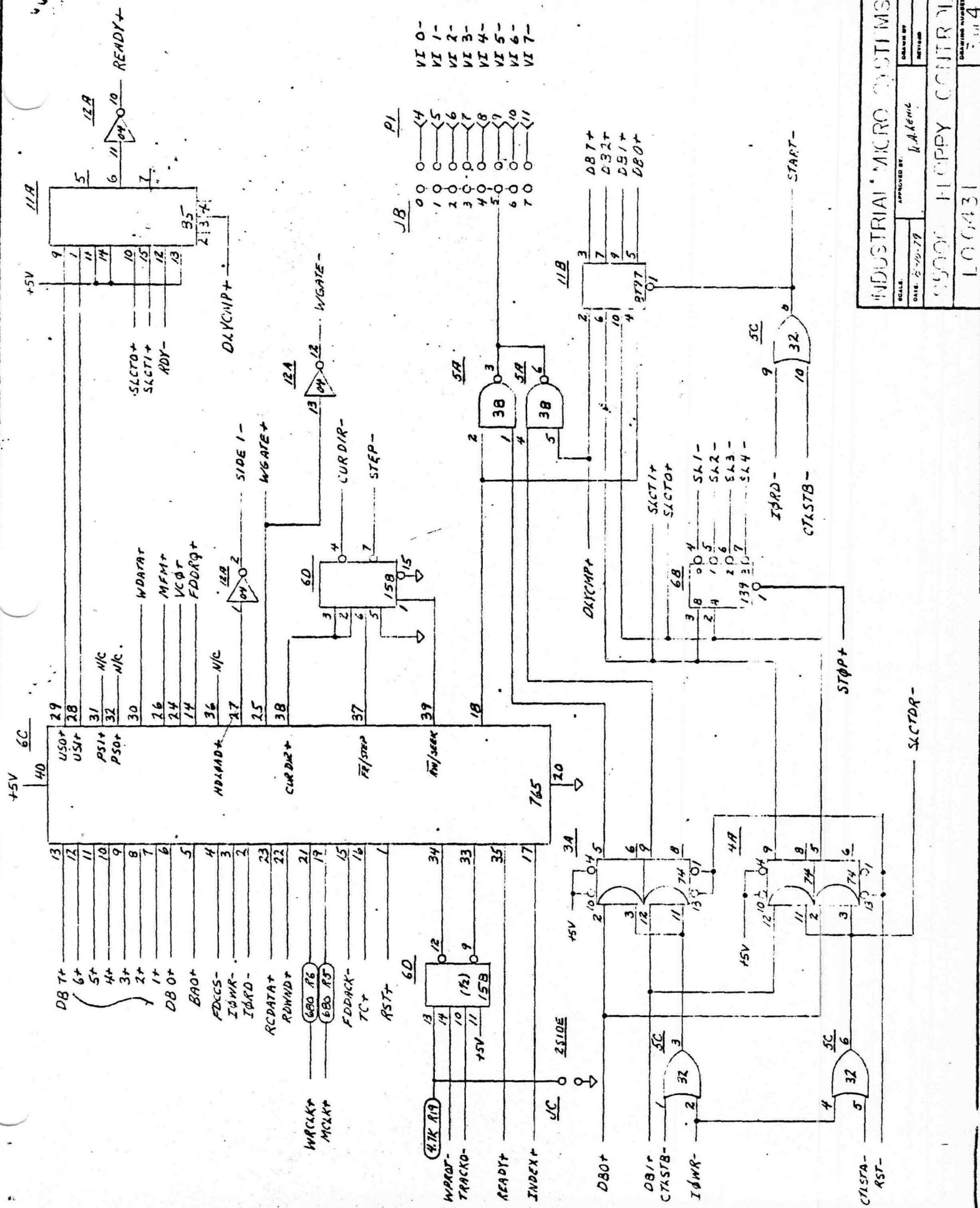




INDUSTRIAL MICRO SYSTEMS	
SCALE: 1/8" = 1"	APPROVED BY: <i>g. h. e.</i>
DATE: 8-2-79	DESIGNED BY: <i>g. h. e.</i>
55000 FLOPPY CONTROL	
LOC 431	ISSUED: 13F4



INDUSTRIAL MICRO SYSTEMS	
SCALE:	APPROVED BY:
DATE: 8-1-79	L. A. G. L.
5500 FLOPPY CONTROL	
LCC431	
REVISION NUMBER	
2 OF 4	



INDUSTRIAL MICRO SYSTEMS	
SCALE	APPROVED BY
DATE 5-10-79	NAME
5500 FLOPPY CONTROL	
DRAWING NUMBER	
106431	

