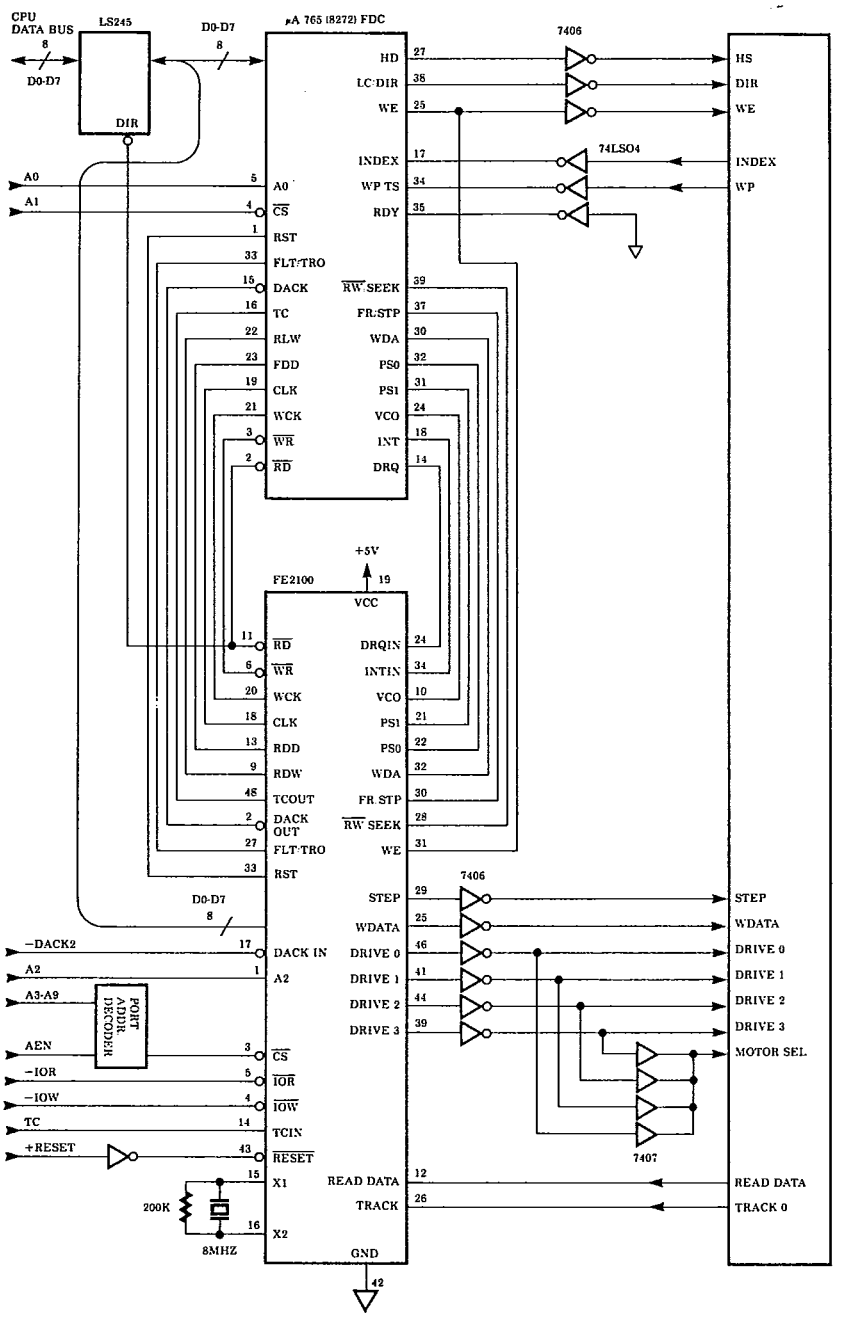
FE2100 APPLICATION

The Faraday Floppy Disk Controller (FE2100) is a CMOS integrated circuit designed to complement the NEC 765 or Intel 8272 floppy disk controller and to provide complete IBM compatibility. The FE2100 operates from a +5 volts supply and simply requires that an 8MHz crystal or TTL-level clock be connected to X1 TIN. All inputs and outputs are TTL compatible.



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FARADAY

The FE2100 is a floppy disk controller chip designed to complement an NEC 765 or INTEL 8272 to provide complete IBM PC compatible floppy disk adapter. The chip replaces the following components.

Qty.	Type	Description	
1	74LS244	20 pin	Octal Non Inv Buffer
1	74LS161	16 pin	4 bit Counter
1	74LS174	16 pin	Hex D - flipflops
4	74LS175	16 pin	Quad D - flipflops
1	74S288	16 pin	32 x 8 PROM
1	74LS139	16 pin	Dual 2 to 4 Decoder
1	74LS153	16 pin	Dual 4 to 1 Mux
1	74LS393	14 pin	Dual 4 bit Counters
1	74LS74	14 pin	Dual D - flipflops
1	74LS32	14 pin	Quad 2 input OR Gates
2	74LS08	14 pin	Quad 2 input AND Gates
2	74LS04	14 pin	Hex Inverters
1	74LS00	14 pin	Quad 2 input NAND Gates

1 - 20 pin chip
9 - 16 pin chips
8 - 14 pin chips

Total Components Replaced 18

By utilizing the FE2100 you will:

1) lower assembly cost during manufacture
2) lower power requirements on the resultant board
3) attain higher quality and reliability due to having less total I. C. 's
4) reduce the size of a densley populated 4 layer board by at least 5 square inches.

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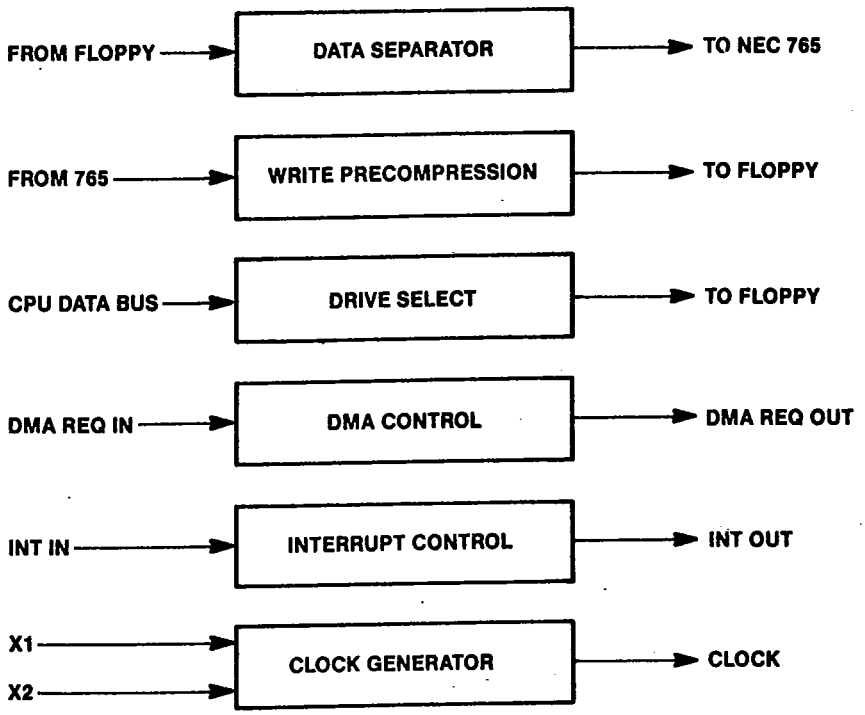
Faraday Floppy Disk Controller—FE2100

Features:

- CMOS
- IBM Format Compatible
- Single 5 Volts Supply
- TTL Compatible
- 48 Pin Dip
- Digital Data Separator—Complete Data Separator for FM and MFM Encoded Data
- Variable Write Precompensation
- Integral Crystal Oscillator Circuit
- Track Selectable Write Precompensation

Block Diagram:



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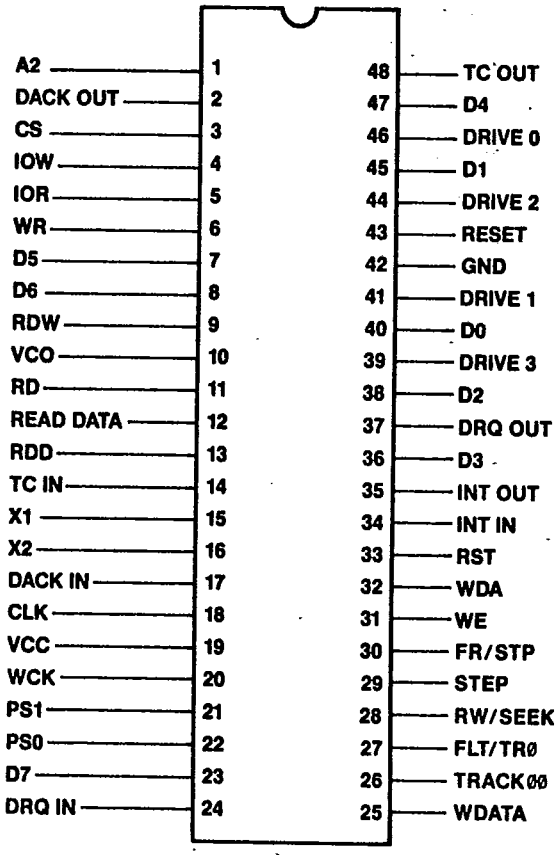
Pin Configuration:



Functional Description

The FARADAY FLOPPY DISK CONTROLLER (FE2100) is a CMOS integrated circuit designed to complement the NEC 765 or INTEL 8272 type of Floppy Disk Controller Chip to provide a complete IBM compatible Floppy Disk Adapter. The FFDC operates from a +5 volts supply and simply requires that an 8MHz crystal or TTL-level clock be connected to X1 pin. All inputs and outputs are TTL compatible.

Pin Function Table:

PIN	TYPE	SYMBOL	FUNCTION
1	I	+A2	CPU I/O address A2
2	O	-DACK OUT	DMA cycle active to FDC
3	I	-CS	FDC and FFDC chip select
4	I	-IOW	I/O write from CPU
5	I	-IOR	I/O read from CPU
6	O	-WR	Control signal to transfer data from data bus to FDC
7	I	+D5	CPU data bus bit 5
8	I	+D6	CPU data bus bit 6
9	O	+RDW	Generated by PLL to sample data from floppy disk drive
10	I	+VCO	Enables VCO in PLL
11	O	-RD	Control signal to transfer data from FDC to data bus
12	I	-READ DATA	Raw read data from disk drive

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Pin Function Table *(continued)*

PIN	TYPE	SYMBOL	FUNCTION
13	O	+RDD	Read data containing clock and data to FDC
14	I	+TC IN	End of DMA cycle
15	I	+X1	Crystal clock input
16	O	+X2	Crystal clock output
17	I	-DACK IN	DMA acknowledge from CPU I/O bus
18	O	+CLK	4 MHz clock to FDC
19	—	VCC	+5 volts D.C. power
20	O	+WCK	Write data rate to disk drive
21	I	+PS1	Pre compensation select in MFM mode from FDC
22	I	+PS0	Pre compensation select in MFM mode from FDC
23	I	+D7	CPU data bus bit 7
24	I	+DRQ IN	DMA request from FDC.
25	O	+W DATA	Serial CLK and data to disk drive
26	O	-TRACK 00	Track 0 condition from disk drive
27	O	+FLT/TR0	Indicates disk drive fault condition in RD/WR mode or track 0 in seek mode
28	O	-RW/SEEK	Select RD/WR mode or seek mode
29	O	+STEP	Step signal to disk drive
30	I	+FR/STP	Step signal from FDC
31	I	+WE	Enables WR data to disk drive
32	I	+WDA	Serial CLK and data from FDC
33	O	+RST	Reset to FDC
34	I	+INT IN	INT request from FDC
35	O	+INT OUT	INT request to CPU
36	I	+D3	CPU data bus bit 3
37	O	+DRQ OUT	DMA request to CPU
38	I	+D2	CPU data bus bit 2
39	O	+DRIVE 3	Disk drive select 3
40	I	+D0	CPU data bus bit 0
41	O	+DRIVE 1	Disk drive select 1
42	—	GROUND	
43	I	-RESET	Initialize data separator and drive select register
44	O	+DRIVE 2	Disk drive select 2
45	I	+D1	CPU data bus bit 1
46	O	+DRIVE 0	Disk drive select 0
47	O	+D4	CPU data bus bit 4
48	O	+TC OUT	End of DMA transfer to FDC

Faraday Floppy Disk Controller—FE2100

Programming

Write FFDC Command:

-CS	A2	IOW	DATA BUS							
0	0	0	D7	D6	D5	D4	D3	D2	D1	D0

D1 D0
0 0 = Drive SEL 0
0 1 = Drive SEL 1
1 0 = Drive SEL 2
1 1 = Drive SEL 3

D2
0 = Disable FDC reset
1 = Enable FDC reset

D3
0 = Disable DMA and INT REQ
1 = Enable DMA and INT REQ

D4
0 = Disable drive select 0
1 = Enable drive select 0

D5
0 = Disable drive select 1
1 = Enable drive select 1

D6
0 = Disable drive select 2
1 = Enable drive select 2

D7
0 = Disable drive select 3
1 = Enable drive select 3

Faraday Floppy Disk Controller—FE2100

Temperature 0C to 70C

Supply Voltage

Minimum	Nominal	Maximum
4.75 V	5.00 V	6.00 V

All inputs and outputs are TTL compatible.

Timings

Signals	Minimum nsec	Typical nsec	Maximum nsec
IOR to RD			91
IOW to WR			86
DACK IN to DACK OUT			101
CLK period		250	

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