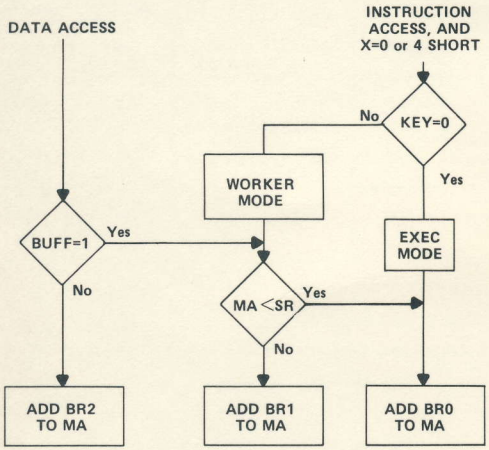
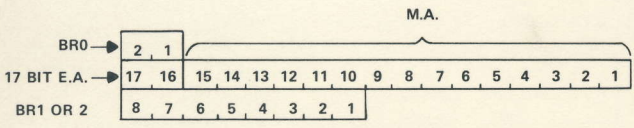
SPERRY UNIVAC

CUSTOMER ENGINEERS 6145 I/O PROGRAMMING REFERENCE CARD

MEMORY ADDRESSING



BASE REGISTER SELECTION



M.A. AND BASE REGISTER ALIGNMENT FOR ADDITION

I/O AND FUNCTION CODES

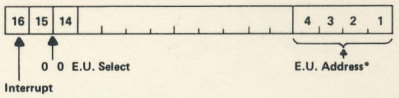
PIO DEVICES

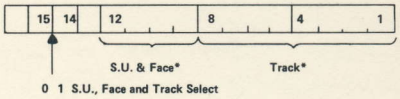
BITS						
10 9 8	PTP PTR TTY	CCS	CDP	Surveil-lance Unit	DMA Channel	Interrupts
0 0 0	Data Out	Data Out	Data Out	Send Interrupt	Load BM 16=BM 16=Next BM	Clear Os
0 0 1	N/U	Device Command	Device Command	Switch PIO	Load BL 16=BL 16=Next BL	Set Os
0 1 0	Test Ready	N/U	Stop	Set Alarm	Stop	Clear Allows
0 1 1	Skip if Interrupt Sent	N/U	Skip if Interrupt Sent	Service Watchdog	Load BA & Key BA=8-1 Key=15-12	Set Allows
1 0 0	Data In	Data In	N/U	Stop Watchdog	Read BM	Input Allows
1 0 1	N/U	N/U	Input Status	N/U	N/U	Input & Clear Allows
1 1 0	Turn Interrupts On	N/U	N/U	Timer On	N/U	Clear A
1 1 1	Turn Interrupts Off	N/U	N/U	Timer Off	Read BA & Key	Clear A

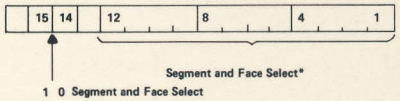
BUFFERED DEVICES

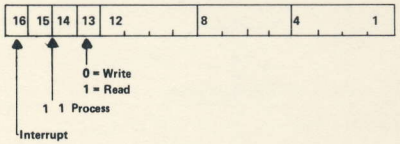
BITS					SPARE
10 9 8	MTU LPR CDR	Disc	GCI	MCLC	
0 0 0	N/U	N/U	Write Control Memory	Control Command 1	
0 0 1	Device Command	Device Command	Halt and Clear	Control Command 2	
0 1 0	Stop	Stop	Stop	Control Command 3	
0 1 1	Skip if Interrupt Sent	Skip if Interrupt Sent	Start	Skip if Interrupt Sent	
1 0 0	N/U	Read Segment Address	Input Status	Input LIU Status	
1 0 1	Input Status	Input Status	Skip if Interrupt Sent	Input MCLC Status	
1 1 0	N/U	N/U	Read Control Memory	N/U	
1 1 1	N/U	N/U	N/U	N/U	

DISC COMMAND WORDS



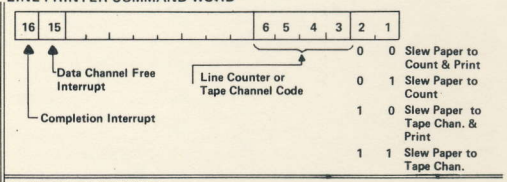




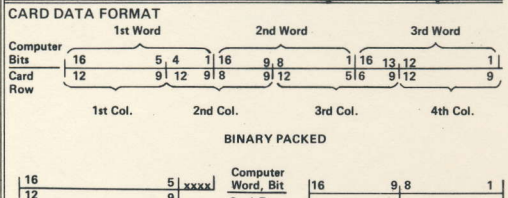


*ALL ADDRESSES ARE BCD CODE

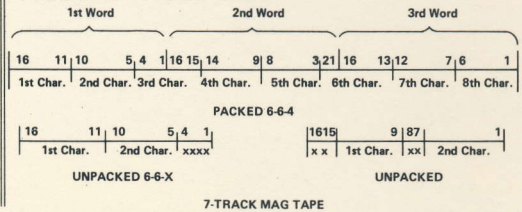
LINE PRINTER COMMAND WORD



CARD DATA FORMAT



7 TRACK MAG TAPE DATA FORMAT



CONTROL COMMANDS

OCTAL CODE BITS 4-1	MAG TAPE*	CARD READER	CARD PUNCH
0	Read Binary	Binary Packed	N/U
1	Read Alpha	Hollerith Packed	Binary Packed
2	N/U	Binary Unpacked	N/U
3	Write Alpha	Hollerith Unpacked	Binary Unpacked
4	Write Blank Tape	N/U	Space Remaining Columns
5	N/U		Hollerith (Packed Only)
6	Write File Mark		Punch and Feed
7	Write Binary		Hollerith with Printing
11	Space Reverse		N/U
12	Rewind		
13	Space Forward		
14	Reverse to File Mark		
16	Forward to File Mark		

BITS 6-5	Mag Tape 7-track Data Mode Select
0 0	Packed 6-6-4
0 1	Unpacked 6-6-2
1 0	Unpacked X-6-X-6
1 1	Unpacked X-6-X-6

X = 0's on input
Ignored on Output

*Bit 16 on requests completion interrupts

STATUS BITS

BIT	MAG TAPE	DISC	LINE PRINTER	CARD READER	CARD PUNCH
16	Channel Busy				N/C
15	Ready				
14	Device Busy	Controller Busy			N/U
13	Successful Completion		N/U	Successful Completion	N/U
12	End of Block		N/U	N/U	N/U
11	Parity Fail		N/U	N/U	N/U
10	End of Tape	Overflow	N/U	N/U	N/U
9	Load Point	Disc Busy	N/U	Transport Fail	Off Line
8	Write Lockout		N/U	N/U	N/U
7	Channel Fail				N/U
6	File Mark	E.U. Available	N/U	N/U	N/U
5	7-track	Illegal Address	4000 Series	N/U	N/U
4	N/U	Command Seq. Error	N/U	N/U	N/U

BIT	CCS
7	Data Parity Error
6	Lost Data
5	Carrier On
4	Clear to Send
3	Data Set Ready
2	Output
1	Input

MCLC COMMAND AND STATUS WORDS

A BIT	CONTROL COMMAND 1	CONTROL COMMAND 2	CONTROL COMMAND 3
1	Activate Input 1	Activate Input 2	N/U
2	Activate Output 1	Activate Output 2	N/U
3	N/U	Stop LIU	N/U
4	Clear Dual MCLC	Terminate Call	Enable Low Speed
5	Load LCW	Answer Phone	Disable Low Speed
6	N/U	System Clear	MCLC Clear
7	Initialize Cont. Storage Test	RTS Off	Rev. Channel Off
8	Read Cont. Storage Test	Hold RTS	Rev. Channel On
9	Allow Time Out	Allow Time Out	N/U
10	Initialize Cont. Storage System	Set Line Status Address	N/U

MCLC STATUS

BIT	MCLC	LIU WORD 1	LIU WORD 2
1		Input	Zero
2		Output	Data Byte Count = 0 Changed Buffer
3		Data Set Ready	Zero
4		Clear to Send	Zero
5		Carrier Fail/ Reverse Channel	Spare 2
6		Lost Data	Spare 1
7		Parity Fail CRC or LRC	WABT
8		LIU Dependent	ITB
9		Fail During Mem. Access	ACK 1
10		Time Out Occurred	ACK 0
11	Initialization Error	LIU Address On Stored Status Words. Undefined On PIO Status Words.	ENQ
12	Read of Cont. Storage Complete		EOT
13	Cont. Storage Initialized		ETB
14	Mem. Fail Cn. Status Word		ETX
15	Status Word Buffer 1 Being Used		NAK
16	Status Word Buffer Switched		ACK

NOTES

DEDICATED MEMORY LOCATIONS

000, 1	Auto Restart
2	Floating Point exception trap pointer
3	Memory Protect, Address exception trap pointer
4	Illegal Instruction trap pointer
5	SMM trap pointer
6	ESS Stack Overflow trap pointer
7	Privileged Instruction trap pointer
10	Executive Mode Stack Pointer
11	Executive Mode Stack Limit
20	Parity Fail Interrupt
21	Hardware Check Interrupt
22	Branch Check

STANDARD E.D. ADDRESSES

0	Disc	30
1	DMA	
2	DMA	
3	TTY	
4	Paper Tape Reader	
5	Paper Tape Punch	
6	Plotter	
7	Line Printer	
10	Card Reader	40 MCLC
11	Card Punch	
12	Mag Tape	
13	Mag Tape	
14	Disc #2	
15	Surveillance Unit	
16		
17		
20		60 GC1 Control
↓	Mag Tapes	61 GC1 Adaptor
27		

INTERRUPT PROGRAMMING

	Priority Interrupt Line No. = Priority				Common Level Interrupts Priority Level 33				
	Line	Interrupt Location	A Control Bit	Unit	Line	Interrupt Location	A Control Bit	Unit	* Control Address
Basic Interrupts Cards 1 & 2	1	20	1		33	60	9		174
	2	21	2		34	61	10		
	3	22	3		35	62	11		
	4	23	4		36	63	12		
	5	24	5		37	64	13		
	6	25	6		38	65	14		
	7	26	7		39	66	15		
	8	27	8		40	67	16		
1st Interrupt Option Card 3 Slot 6	9	30	1		41	70	9		175
	10	31	2		42	71	10		
	11	32	3		43	72	11		
	12	33	4		44	73	12		
	13	34	5		45	74	13		
	14	35	6		46	75	14		
	15	36	7		47	76	15		
	16	37	8		48	77	16		
	17	40	1		49	100	9		176
	18	41	2		50	101	10		
	19	42	3		51	102	11		
	20	43	4		52	103	12		
2nd Interrupt Option Card 3 Slot 5	21	44	5		53	104	13		
	22	45	6		54	105	14		
	23	46	7		55	106	15		
	24	47	8		56	107	16		
	25	50	1		57	110	9		177
	26	51	2		58	111	10		
	27	52	3		59	112	11		
	28	53	4		60	113	12		
	29	54	5		61	114	13		
	30	55	6		62	115	14		
	31	56	7		63	116	15		
	32	57	8		64	117	16		

*Master Allow Address is 173