

**CONTROL DATA[®]
160-A PERIPHERAL
EQUIPMENT CODES**

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CONTENTS

Table of Instructions	1
Table of Instructions Arranged by Functions	5
Table of External Function Codes and Status Responses	10
1. 350 Paper Tape Reader	10
2. BRPE-11 Paper Tape Punch	10
3. 161 Input/Output Typewriter	10
4. 162 Magnetic Tape Synchronizer	11
5. 165 Plotter	12
6. 166-2 Line Printer	12
7. 167-1 Card Reader	13
8. 167-2 Card Reader	13
9. 168-1 Auxiliary Arithmetic Unit	14
10. 168-2 Auxiliary Arithmetic Unit	14
11. 169 Auxiliary Memory Unit	15
12. 170 Card Punch Control Unit	15
13. 177 Card Reader	16
14. 1610 Control Unit	16
15. 1612 High Speed Printer	17
16. 1614 Card Reader	17
17. 1615 Magnetic Tape Controller	18
18. 1619 Disk File Controller	20

TABLE OF INSTRUCTIONS

F	E	MNE- MONIC	NAME	TIMING
00	00	ERR	Error Stop	1
00	0X	NOP	No Operation	1
00	1X	SRJ	Set Relative Bank Control & Jump	1
00	2X	SIC	Set Indirect Bank Control	1
00	3X	IRJ	Set Indirect & Relative Bank Control & Jump	1
00	4X	SDC	Set Direct Bank Control	1
00	5Y	DRJ	Set Direct & Relative Bank Control & Jump	1
00	6X	SID	Set Indirect & Direct Bank Control	1
00	7X	ACJ	Set Direct, Indirect, & Relative Bank Control & Jump	1
01	00	BLS	Block Store	(no jump) 1+n (jump) 2
01	01	PTA	Transfer P to A	1
01	02	LS1	Left Shift One	1
01	03	LS2	Left Shift Two	1
01	04	CBC	Clear Buffer Controls	1
01	05	ATE	A to Buffer Entrance Register	(no jump) 1 (jump) 2
01	06	ATX	A to Buffer Exit Register	(no jump) 1 (jump) 2
01	07	ETA	Buffer Entrance Register to A	1
01	10	LS3	Left Shift Three	1
01	11	LS6	Left Shift Six	1
01	12	MUT	Multiply A by Ten	1
01	13	MUH	Multiply A by One Hundred	1
01	14	RS1	Right Shift One	1
01	15	RS2	Right Shift Two	1
01	20	CIL	Clear Interrupt Lockout	1
01	30	CTA	Bank Controls to A	1
01	4X	SBU	Set Buffer Bank Control	1
01	5X	STP	Store P at Location 5X	3
01	6Y	STE	Store Buffer Entrance Register at Location 6X & Transfer A to Buffer Entrance Register	3
02	XX	LPN	Logical Product No Address	1

TABLE OF INSTRUCTIONS (Cont'd)

<u>F</u>	<u>E</u>	<u>MNE- MONIC</u>	<u>NAME</u>	<u>TIMING</u>
03	XX	SCN	Selective Complement No Address	1
04	XX	LDN	Load No Address	1
05	XX	LCN	Load Complement No Address	1
06	XX	ADN	Add No Address	1
07	XX	SBN	Subtract No Address	1
10	YY	LPD	Logical Product Direct	2
11	00	LPM	Logical Product Memory	3
11	YY	LPI	Logical Product Indirect	3
12	00	LPC	Logical Product Constant	2
12	XX	LPF	Logical Product Forward	2
13	00	LPS	Logical Product Specific	2
13	XX	LPB	Logical Product Backward	2
14	YY	SCD	Selective Complement Direct	2
15	00	SCM	Selective Complement Memory	3
15	YY	SCI	Selective Complement Indirect	3
16	00	SCC	Selective Complement Constant	2
16	XX	SCF	Selective Complement Forward	2
17	00	SCS	Selective Complement Specific	2
17	XX	SCB	Selective Complement Backward	2
20	YY	LDD	Load Direct	2
21	00	LDM	Load Memory	3
21	YY	LDI	Load Indirect	3
22	00	LDC	Load Constant	2
22	XX	LDF	Load Forward	2
23	00	LDS	Load Specific	2
23	XX	LDB	Load Backward	2
24	YY	LCD	Load Complement Direct	2
25	00	LCM	Load Complement Memory	3
25	YY	LCI	Load Complement Indirect	3
26	00	LCC	Load Complement Constant	2
26	XX	LCF	Load Complement Forward	2
27	00	LCS	Load Complement Specific	2
27	XX	LCB	Load Complement Backward	2
30	YY	ADD	Add Direct	2
31	00	ADM	Add Memory	3
31	YY	ADI	Add Indirect	3

TABLE OF INSTRUCTIONS (Cont'd)

<u>F</u>	<u>E</u>	<u>MNE- MONIC</u>	<u>NAME</u>	<u>TIMING</u>
32	00	ADC	Add Constant	2
32	XX	ADF	Add Forward	2
33	00	ADS	Add Specific	2
33	XX	ADB	Add Backward	2
34	YY	SBD	Subtract Direct	2
35	00	SBM	Subtract Memory	3
35	YY	SBI	Subtract Indirect	3
36	00	SBC	Subtract Constant	2
36	XX	SBF	Subtract Forward	2
37	00	SBS	Subtract Specific	2
37	XX	SBB	Subtract Backward	2
40	YY	STD	Store Direct	3.
41	00	STM	Store Memory	4
41	YY	STI	Store Indirect	4
42	00	STC	Store Constant	3
42	XX	STF	Store Forward	3
43	00	STS	Store Specific	3
43	XX	STB	Store Backward	3
44	YY	SRD	Shift Replace Direct	3
45	00	SRM	Shift Replace Memory	4
45	YY	SRI	Shift Replace Indirect	4
46	00	SRC	Shift Replace Constant	3
46	XX	SRF	Shift Replace Forward	3
47	00	SRS	Shift Replace Specific	3
47	XX	SRB	Shift Replace Backward	3
50	YY	RAD	Replace Add Direct	3
51	00	RAM	Replace Add Memory	4
51	YY	RAI	Replace Add Indirect	4
52	00	RAC	Replace Add Constant	3
52	XX	RAF	Replace Add Forward	3
53	00	RAS	Replace Add Specific	3
53	XX	RAB	Replace Add Backward	3
54	YY	AOD	Replace Add One Direct	3
55	00	AOM	Replace Add One Memory	4
55	YY	AOI	Replace Add One Indirect	4
56	00	AOC	Replace Add One Constant	3

TABLE OF INSTRUCTIONS (Cont'd)

<u>F</u>	<u>E</u>	<u>MNE- MONIC</u>	<u>NAME</u>	<u>TIMING</u>
56	XX	AOF	Replace Add One Forward	3
57	00	AOS	Replace Add One Specific	3
57	XX	AOB	Replace Add One Backward	3
60	XX	ZJF	Zero Jump Forward	1
61	XX	NZF	Non-Zero Jump Forward	1
62	XX	PJF	Positive Jump Forward	1
63	XX	NJF	Negative Jump Forward	1
64	XX	ZJB	Zero Jump Backward	1
65	XX	NZB	Non-Zero Jump Backward	1
66	XX	PJB	Positive Jump Backward	1
67	XX	NJB	Negative Jump Backward	1
70	YY	JPI	Jump Indirect	2
71	00	JPR	Return Jump	3
71	XX	JFI	Jump Forward Indirect	2
72	00	IBI	Initiate Buffer Input	(no jump) 1 (jump) 2
72	XX	INP	Normal Input	*
73	00	IBO	Initiate Buffer Output	(no jump) 1 (jump) 2
73	XX	OUT	Normal Output	*
74	XX	OTN	Output No Address	*
75	00	EXC	External Function Constant	2
75	XX	EXF	External Function Forward	2
76	00	INA	Input to A	*
76	YY	HWI	Half Write Indirect	4
76	77	OTA	Output from A	*
77	00	HLT	Halt	1
77	0X	SLS	Selective Stop	1
77	X0	SLJ	Selective Jump	(no jump) 1 (jump) 2
77	XX	SJS	Selective Stop & Jump	(no jump) 1 (jump) 2
77	77	HLT	Halt	1

NOTE: 1) All timings are given in memory cycles where 1 memory cycle equals 6.4 usec.

2) All numeric operation codes not listed in the above table will be executed as if they were a NOP instruction.

* Execution time varies with speed of external equipment in use.

TABLE OF INSTRUCTIONS

Arranged by Functions

<u>F</u>	<u>E</u>	<u>G</u>	<u>MNE-</u> <u>MONIC</u>	<u>NAME</u>		<u>TIMING</u>
STOP INSTRUCTIONS						
00	00		ERR	Error Stop		1
77	00		HLT	Halt		1
77	77		HLT	Halt		1
DATA TRANSMISSION INSTRUCTIONS						
01	00	YYYY	BLS	Block Store	(no jump)	1
					(jump)	2
01	01		PTA	Transfer P to A		1
01	05	YYYY	ATE	A to Buffer Entrance Register	(no jump)	1
					(jump)	2
01	06	YYYY	ATX	A to Buffer Exit Register	(no jump)	1
					(jump)	2
01	07		ETA	Buffer Entrance Register to A		1
01	30		CTA	Bank Controls to A		1
01	5Y		STP	Store P at Location 5X		3
01	6Y		STE	Store Buffer Entrance Register at Location 6X & Transfer A to Buffer Entrance Register		3
04	XX		LDN	Load No Address		1
20	YY		LDD	Load Direct		2
21	00	YYYY	LDM	Load Memory		3
21	YY		LDI	Load Indirect		3
22	00	XXXX	LDC	Load Constant		2
22	XX		LDF	Load Forward		2
23	00		LDS	Load Specific		2
23	XX		LDB	Load Backward		2
05	XX		LCN	Load Complement No Address		1
24	YY		LCD	Load Complement Direct		2
25	00	YYYY	LCM	Load Complement Memory		3
25	YY		LCI	Load Complement Indirect		3
26	00	XXXX	LCC	Load Complement Constant		2
26	XX		LCF	Load Complement Forward		2
27	00		LCS	Load Complement Specific		2
27	XX		LCB	Load Complement Backward		2
40	YY		STD	Store Direct		3

TABLE OF INSTRUCTIONS
Arranged by Functions (Cont'd)

<u>F</u>	<u>E</u>	<u>G</u>	<u>MNE-</u> <u>MONIC</u>	<u>NAME</u>	<u>TIMING</u>
41	00	YYYY	STM	Store Memory	4
41	YY		STI	Store Indirect	4
42	00	XXXX	STC	Store Constant	3
42	XX		STF	Store Forward	3
43	00		STS	Store Specific	3
43	XX		STB	Store Backward	3
76	YY		HWI	Half Write Indirect	4

ARITHMETIC INSTRUCTIONS

01	12		MUT	Multiply A by 10	1
01	13		MUH	Multiply A by One Hundred	1
07	XX		SBN	Subtract No Address	1
34	YY		SBD	Subtract Direct	2
35	00	YYYY	SBM	Subtract Memory	3
35	YY		SBI	Subtract Indirect	3
36	00	XXXX	SBC	Subtract Constant	2
36	XX		SBF	Subtract Forward	2
37	00		SBS	Subtract Specific	2
37	XX		SBB	Subtract Backward	2
06	XX		ADN	Add No Address	1
30	YY		ADD	Add Direct	2
31	00	YYYY	ADM	Add Memory	3
31	YY		ADI	Add Indirect	3
32	00	XXXX	ADC	Add Constant	2
32	XX		ADF	Add Forward	2
33	00		ADS	Add Specific	2
33	XX		ADB	Add Backward	2
50	YY		RAD	Replace Add Direct	3
51	00	YYYY	RAM	Replace Add Memory	4
51	YY		RAI	Replace Add Indirect	4
52	00	XXXX	RAC	Replace Add Constant	3
52	XX		RAF	Replace Add Forward	3
53	00		RAS	Replace Add Specific	3
53	XX		RAB	Replace Add Backward	3
54	YY		AOD	Replace Add One Direct	3
55	00	YYYY	AOM	Replace Add One Memory	4

TABLE OF INSTRUCTIONS
Arranged by Functions (Cont'd)

<u>F</u>	<u>E</u>	<u>G</u>	<u>MNE-</u> <u>MONIC</u>	<u>NAME</u>	<u>TIMING</u>
55	YY		AOI	Replace Add One Indirect	4
56	00	XXXX	AOC	Replace Add One Constant	3
56	XX		AOF	Replace Add One Forward	3
57	00		AOS	Replace Add One Specific	3
57	XX		AOB	Replace Add One Backward	3

SHIFT INSTRUCTIONS

01	02		LS1	Left Shift One	1
01	03		LS2	Left Shift Two	1
01	10		LS3	Left Shift Three	1
01	11		LS6	Left Shift Six	1
01	14		RS1	Right Shift One	1
01	15		RS2	Right Shift Two	1
44	YY		SRD	Shift Replace Direct	3
45	00	YYYY	SRM	Shift Replace Memory	4
45	YY		SRI	Shift Replace Indirect	4
46	00	XXXX	SRC	Shift Replace Constant	3
46	XX		SRF	Shift Replace Forward	3
47	00		SRS	Shift Replace Specific	3
47	XX		SRB	Shift Replace Backward	3

LOGICAL INSTRUCTIONS

02	XX		LPN	Logical Product No Address	1
10	YY		LPD	Logical Product Direct	2
11	00	YYYY	LPM	Logical Product Memory	3
11	YY		LPI	Logical Product Indirect	3
12	00	XXXX	LPC	Logical Product Constant	2
12	XX		LPF	Logical Product Forward	2
13	00		LPS	Logical Product Specific	2
13	XX		LPB	Logical Product Backward	2
03	XX		SCN	Selective Complement No Address	1
14	YY		SCD	Selective Complement Direct	2
15	00	YYYY	SCM	Selective Complement Memory	3
15	YY		SCI	Selective Complement Indirect	3
16	00	XXXX	SCC	Selective Complement Constant	2

TABLE OF INSTRUCTIONS
Arranged by Functions (Cont'd)

<u>F</u>	<u>E</u>	<u>G</u>	<u>MNE-</u> <u>MONIC</u>	<u>NAME</u>	<u>TIMING</u>
16	XX		SCF	Selective Complement Forward	2
17	00		SCS	Selective Complement Specific	2
17	XX		SCB	Selective Complement Backward	2

STORAGE BANK CONTROL INSTRUCTIONS

00	1X		SRJ	Set Relative Bank Control & Jump	1
00	2X		SIC	Set Indirect Bank Control	1
00	3X		IRJ	Set Indirect & Relative Bank Control & Jump	1
00	4X		SDC	Set Direct Bank Control	1
00	5X		DRJ	Set Direct & Relative Bank Control & Jump	1
00	6X		SID	Set Indirect & Direct Bank Control	1
00	7X		ACJ	Set Direct, Indirect, & Relative Bank Control & Jump	1
01	4X		SBU	Set Buffer Bank Control	1

JUMP INSTRUCTIONS

60	XX		ZJF	Zero Jump Forward	1
61	XX		NZF	Non-Zero Jump Forward	1
62	XX		PJF	Positive Jump Forward	1
63	XX		NJF	Negative Jump Forward	1
64	XX		ZJB	Zero Jump Backward	1
65	XX		NZB	Non-Zero Jump Backward	1
66	XX		PJB	Positive Jump Backward	1
67	XX		NJB	Negative Jump Backward	1
70	YY		JPI	Jump Indirect	2
71	00	YYYY	JPR	Return Jump	3
71	XX		JFI	Jump Forward Indirect	2

INPUT/OUTPUT INSTRUCTIONS

01	04		CBC	Clear Buffer Controls	1
01	20		CIL	Clear Interrupt Lockout	1

TABLE OF INSTRUCTIONS
Arranged by Functions (Cont'd)

<u>F</u>	<u>E</u>	<u>G</u>	<u>MNE-</u> <u>MONIC</u>	<u>NAME</u>	<u>TIMING</u>
72	00	YYYY	IBI	Initiate Buffer Input	
					(no jump) 1
					(jump) 2
73	00	YYYY	IBO	Initiate Buffer Output	
					(no jump) 1
					(jump) 2
72	XX	YYYY	INP	Normal Input	*
73	XX	YYYY	OUT	Normal Output	*
74	XX		OTN	Output No Address	*
76	00		INA	Input to A	*
76	77		OTA	Output from A	*
75	00	XXXX	EXC	External Function Constant	2
75	XX		EXF	External Function Forward	2

SELECTIVE STOP AND JUMP INSTRUCTIONS

00	0X		NOP	No Operation	1
77	0X		SLS	Selective Stop	1
77	X0	YYYY	SLJ	Selective Jump	(no jump) 1
					(jump) 2
77	XX	YYYY	SJS	Selective Stop & Jump	(no jump) 1
					(jump) 2

* Execution time varies with speed of external equipment in use.

Table of External Function Codes and Status Responses

1. 350 PAPER TAPE READER

A. External Function Codes

4102 Select Reader

NOTE: There are no status responses for this equipment.

2. BRPE-11 PAPER TAPE PUNCH

A. External Function Codes

4104 Select Paper Tape Punch

NOTE: There are no status responses for this equipment.

3. 161 INPUT/OUTPUT TYPEWRITER

A. External Function Codes

4210 Select typewriter output

4220 Select typewriter input

4240 Request typewriter status

B. Status Response Codes

0000 Typewriter ready

0004 Typewriter power off

0010 Typewriter not in computer status

0020 Input character ready

0040 Output in use

NOTE: If a second typewriter is added, the master bits will be 43.

4. 162 MAGNETIC TAPE SYNCHRONIZER

A. External Function Codes

- Y11X Write if OUT is given
- Y11X Write End-of-File mark if no OUT is given
- Y12X Backspace one record if INA is given
- Y12X Search backward to End-of-File mark if no INA is given
- Y13X Read forward if INPUT is given
- Y13X Search forward to End-of-File mark if no INPUT is given
- Y14X Request status
- Y15X Rewind unload
- Y16X Rewind load
- Y171 Set tapes to odd parity
- Y172 Set tapes to even parity
- 210X High density
- 110X Low density

B. Status Response Codes

- 0000 Odd parity selected - no errors
- 0001 Even parity selected - no errors
- 0002 Tape X not ready
- 0004 Parity error
- 0015 Illegal BCD detected on Write
- 0020 End-of-File mark read
- 0040 End-of-Tape or Load Point sensed
- 0100 High density
- 0200 Tape X busy

NOTES: Y = 1: 6-bit mode.

Y = 2: 12-bit mode.

X = (0 to 7): designates one of the four (eight) 60X's. The master bits 12, 13, 22, and 23 are used for second and third tape control. If the tape transport is a 606, a 6-bit, high density selection is illegal (a programmer consideration).

5. 165 PLOTTER

A. External Function Codes

4401 Select Plotter for Write operation

4440 Select Plotter for Read operation

B. Follow 4401 with Output instruction and transmit one of these:

0001 Move carriage and pen .01" in +X direction

0002 Move carriage and pen .01" in -X direction

0004 Rotate drum .01" in -Y direction

0005 Carriage and pen move .01" in +X direction, drum rotates in -Y direction .01"

0006 Carriage and pen move .01" in -X direction, drum rotates in -Y direction .01"

0010 Rotate drum .01" in +Y direction

0011 Carriage and pen move .01" in +X direction, drum rotates in +Y direction .01"

0012 Carriage and pen move .01" in -X direction, drum rotates in +Y direction .01"

0020 Move pen down to paper

0040 Move pen away from paper

C. Status Response Codes

Status is obtained by selecting the unit for reading. The obtained status is the value of the 12 switches on the unit.

6. 166-2 LINE PRINTER

A. External Function Codes

0700 Asynchronous print

0710 Synchronous print

0740 Check status

072X Advance forms

B. Status Response Codes

0000 166-2 ready

0001 Buffer busy

0002 Out of paper

0004 Paper moving

0010 Drum stationary

0020 Off-line

7. 167-1 CARD READER

A. External Function Codes

- 4500 EF clear
- 4501 Free run read
- 4502 Single cycle read
- 4540 Check status

B. Status Response Codes

- 0000 Card Reader ready
- 0001 Hopper empty
- 0002 Stacker full
- 0004 Feed failure
- 0010 Program error
- 0020 Amplifier failure
- 0040 Motor power off

8. 167-2 CARD READER (Hollerith Facility)

A. External Function Codes

- 4500 EF clear
- 4501 Free run read
- 4502 Single cycle read
- 4504 Negate translate, H→BCD
- 4505 FRR, H→BCD and pack
- 4506 SCR, H→BCD and pack
- 4540 Check status

B. Status Response Codes

- 0000 Card Reader ready
- 0001 Hopper empty
- 0002 Stacker full
- 0004 Feed failure
- 0010 Program error
- 0020 Amplifier failure
- 0040 Motor power off

9. 168-1 AUXILIARY ARITHMETIC UNIT

A. External Function Codes

- 3300 Short divide
- 3301 Short multiply
- 3302 Long divide
- 3303 Long multiply
- 3304 Status request
- 3310 Reselect*
- 3323 Addition
- 3363 Subtraction

B. Status Response Codes

- 0000 Unit ready
- 0004 Add/Subtract overflow
- 0010 Divide fault
- 0020 Unload not completed
- 0040 Busy computing

10. 168-2 AUXILIARY ARITHMETIC UNIT

A. External Function Codes

- | | |
|---------------------|---------------------------|
| 3300 Divide | 3314 Divide result |
| 3301 Multiply | 3315 Multiply result |
| 3302 Left shift | 3316 Left shift result |
| 3303 Right shift | 3317 Right shift result |
| 3304 Status request | |
| 3310 Reselect* | |
| 3321 Addition | 3335 Add to result |
| 3342 Norm. & Count | 3356 Norm. result & count |
| 3361 Subtraction | 3375 Subt. from result |

B. Status Response Codes

- 0000 Unit ready
- 0010 Add/Subtract overflow
- 0020 Unload not completed
- 0040 Busy computing
- 4000 Divide fault**

*Reselect is used if another external equipment has been selected prior to receiving the result of a selected 168 operation. It cannot be used to initially select the unit.

**A divide fault occurs when the divisor is equal to or smaller than the most significant 27 bits of the dividend.

11. 169 AUXILIARY MEMORY UNIT

A. External Buffer Select Codes

- 4701 Select external buffer mode
- 4702 Clear external buffer controls
- 4704 Select BER read
- 4710 Select channel extension mode
- 4720 Clear channel extension mode
- 4740 Select external buffer status

B. External Buffer Status Responses

- 1XXX Interrupt from other computer
- 2XXX Interrupt from peripheral equipment
- 4XXX Buffer interrupt
- X1XX This CHX active
- X2XX Other CHX active
- X4XX Illegal bank selection
- XX0X OBA-T
- XX1X IBA-T
- XX2X OBA-NT
- XX3X IBA-NT
- XX4X Buffer initiation
- XXX2-7 External bank selection
- 0000 External buffer ready

12. 170 CARD PUNCH CONTROL UNIT

A. External Function Codes

- 3002 Punch
- 3040 Check status

B. Status Response Codes

- 0000 170 ready
- 0200 MS in 1604 position
- 2000 Punch not ready

13. 177 CARD READER

A. External Function Codes

- 4500 EF clear
- 4501 Free run read
- 4502 Single cycle read
- 4505 Negate translate, H → BCD, free run read
- 4506 Negate translate, H → BCD, single cycle read
- 4510 Gate card
- 4540 Status request

B. Status Response Codes

- 0001 Input tray empty
- 0002 Primary or secondary stacker full
- 0004 Feed failure
- 0010 Late input request
- 0020 Pre-read error
- 0040 Manual on or motor power off
- 0100 Read comparison error
- 0200 End of file
- 0400 Ready

14. 1610 CONTROL UNIT

A. External Function Codes

- 0301 Read from primary read
- 0302 Read from secondary read
- 0340 Request status of input
- 3001 Print
- 3002 Punch
- 3040 Request status of output

B. Status Response Codes

- 0000 All units ready
- 0001 Reader not ready
- 0020 1604 selected on input
- 0200 1604 selected on output
- 2000 Punch not ready
- 4000 Printer not ready

15. 1612 HIGH SPEED PRINTER

A. External Function Codes

- 0600 Select printer and do not interrupt on ready
- 0601 Space paper one line
- 0602 Space paper two lines
- 0603 Skip to format channel 7
- 0604 Skip to format channel 8
- 0605 Print information and advance paper
- 0606 Do not advance paper after next print
- 0607 Select printer and interrupt on ready
- 0610 Clear monitor channels 1-6
- 0611 Select monitor channel 1
- 0612 Select monitor channel 2
- 0613 Select monitor channel 3
- 0614 Select monitor channel 4
- 0615 Select monitor channel 5
- 0616 Select monitor channel 6

B. Status Response Codes

- 0000 Printer not ready
- 4000 Printer ready

NOTE: Status is always available on the 1612.
No request is necessary.

16. 1614 CARD READER

EF and Status Codes same as 177 card reader.

17. 1615 MAGNETIC TAPE CONTROLLER

A. 160 External Function Codes

(N = 1→7)

Write Operations

- 60N1 Select tape N to write binary
- 60N2 Select tape N to write coded
- 6001 Prepare selected tape to write binary
- 6002 Prepare selected tape to write coded
- 6003 Write End-of-File on selected tape
- 6005 Rewind selected write tape
- 6006 Backspace selected write tape
- 6007 Rewind-unload selected write tape
- 6010 Set Low Density on selected write tape
- 6020 Set High Density on selected write tape
- 6030 Skip bad spot on selected write tape
- 6053 Request status

Read Operations

- 50N1 Select tape N to read binary one record
- 50N2 Select tape N to read coded one record
- 52N1 Select tape N to read binary one file
- 52N2 Select tape N to read coded one file
- 5001 Prepare selected tape to read binary one record
- 5002 Prepare selected tape to read coded one record
- 5201 Prepare selected tape to read binary one file
- 5202 Prepare selected tape to read coded one file
- 5003 Move selected read tape forward one record
- 5203 Search file mark forward
- 5005 Rewind selected read tape
- 5006 Backspace selected read tape
- 5206 Search file mark backward
- 5007 Rewind-unload selected read tape
- 5010 Set Low Density on selected read tape
- 5020 Set High Density on selected read tape

17. 1615 MAGNETIC TAPE CONTROLLER (Cont'd)

B. Status Response Codes

- X2XX Ready to read
- X1XX Ready to write
- XX4X Read parity error
- XX2X Write reply parity error
- XX1X End-of-File mark
- XXX4 End-of-Tape mark

The following additional select and status codes are available under the program control mode of operation:

A. External Function Codes

Write Operations

- 6052 Release write control to 1604
- 6050 Release action request
- 5051 Set communication flag I
- 6055 Clear communication flag I
- 6051 Set communication flag II
- 6056 Clear communication flag II

Read Operations

- 5052 Release read control to 1604
- 5053 Select interrupt

B. Status Response Codes

Write Operations

- 2XXX Write control available
- XXX1 Communication flag I set

Read Operations

- 4XXX Read control available
- 1XXX Direct 160 to 1604
- X4XX Direct 1604 to 160
- XXX2 160 action request

18. 1619 DISK FILE CONTROLLER

A. Select Codes

- 7000 Select disc file - positioner power on
- 7001 Select clear disc file - positioner power off
- 7002 Select check mode type I - no buffer
Select check mode type II - input buffer activated
- 7003 Select checkword check
- 7004* Select interrupt on next available
- 7005* Clear interrupt on next available
- 7006* Select interrupt on next ready
- 7007* Clear interrupt on next ready
- 7010* Select interrupt on next fault
- 7011* Clear interrupt on next fault
- 7020 Request status

B. Status Response Codes

- XXX0 Ready
- XXX1 Not ready
- XXX2 160 not selected
- XXX4 1604 selected
- XX1X Lost data
- XX2X Checkword error
- XX4X Internal fault
- 1XXX File off-line
- 2XXX File warning
- 4XXX Write lockout

* 160-A only