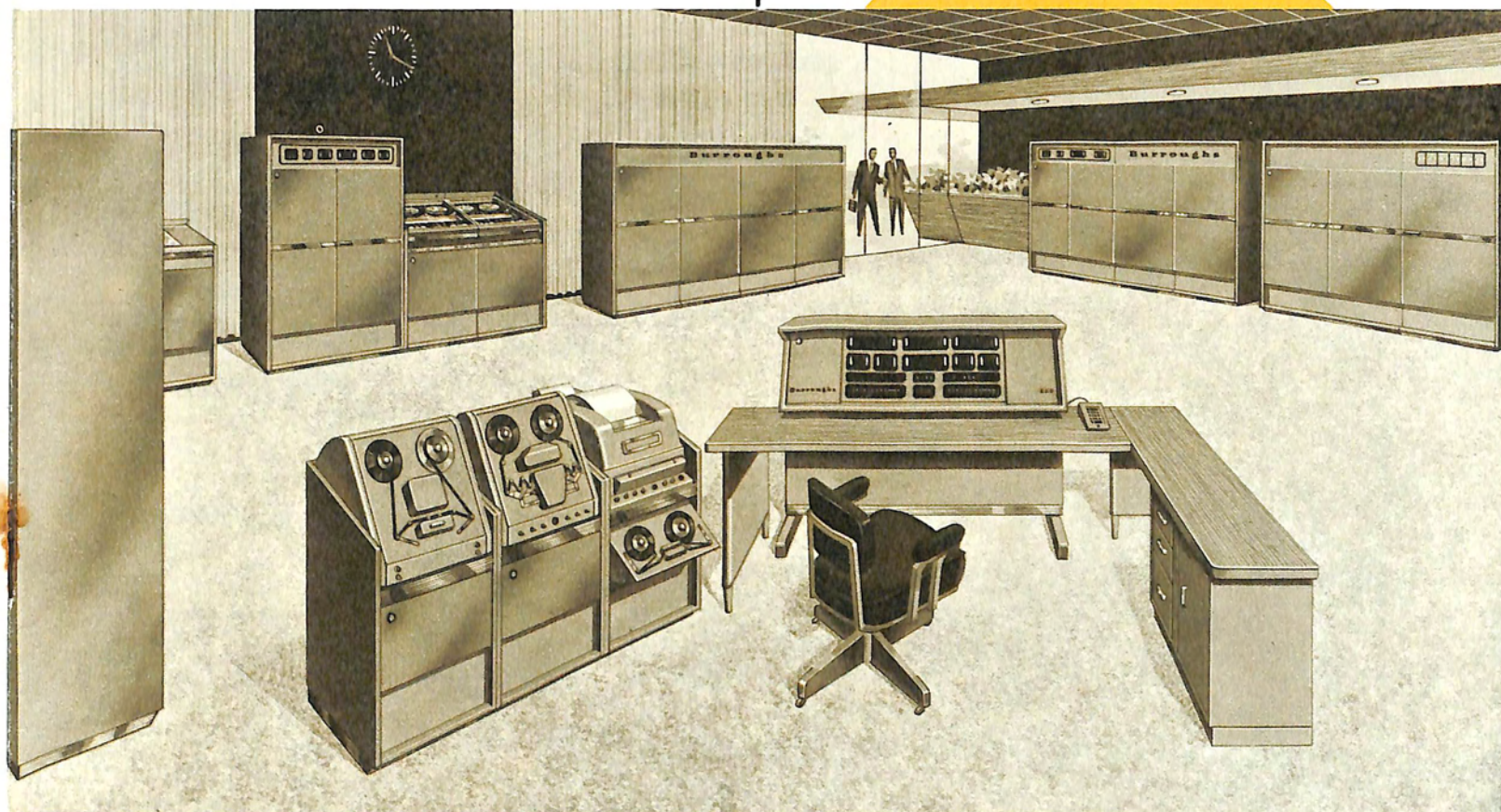


220 Burroughs

INSTRUCTIONS

a brief description



Electronic Data Processing Systems

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Burroughs Corporation

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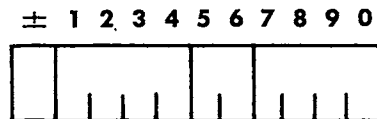
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INSTRUCTION FORMAT:



Digit positions 1, 2, 3 and 4 comprise what are called control digits; these specify different modes of execution, as defined in the summary. The operation code occupies digit positions 5 and 6. Digit positions 7, 8, 9 and 0 usually represent an address in storage; but they are sometimes used for other purposes.

DEFINITIONS OF TERMS AND SYMBOLS:

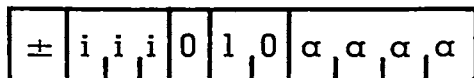
- \pm : sign digit. If the sign digit is an odd integer, automatic B-register address-modification will occur.
- sL: define the boundaries of a partial-word field: s designates the digit position of the low-order digit; L designates the number of digits in the partial-word field.
- f: partial-word designator. If $f=0$, the entire word is specified; if $f=1$, the partial-word field defined by sL is specified.
- aaaa: address of storage location.
- i: not relevant to the execution of the instruction.
- v: variation designator.

ARITHMETIC

CAD

10

CLEAR, ADD

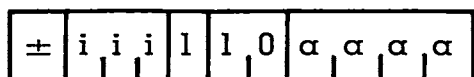


Replace the contents of the A register by the contents of aaaa.

CAA

10

CLEAR, ADD ABSOLUTE

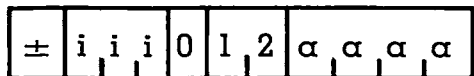


Replace the contents of the A register by the absolute value of the contents of aaaa.

ADD

12

ADD

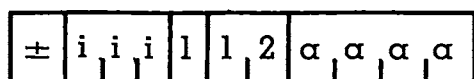


Add the contents of aaaa to the contents of the A register. The sum appears in the A register.

ADA

12

ADD ABSOLUTE

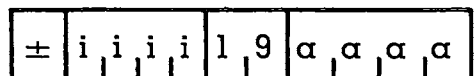


Add the absolute value of the contents of aaaa to the contents of the A register. The sum appears in the A register.

ADL

19

ADD TO LOCATION



Add the contents of the A register to the contents of aaaa. The sum appears in aaaa.

CSU

11

CLEAR, SUBTRACT

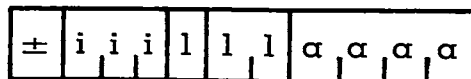


Replace the contents of the A register by the negative of the contents of aaaa.

CSA

11

CLEAR, SUBTRACT ABSOLUTE

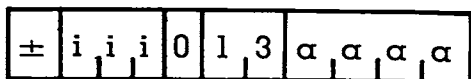


Replace the contents of the A register by the negative of the absolute value of the contents of aaaa.

SUB

13

SUBTRACT

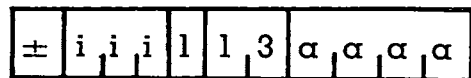


Subtract the contents of aaaa from the contents of the A register. The difference appears in the A register.

SUA

13

SUBTRACT ABSOLUTE

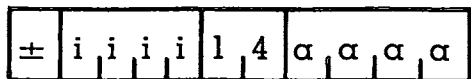


Subtract the absolute value of the contents of aaaa from the contents of the A register. The difference appears in the A register.

MUL

14

MULTIPLY



Multiply the contents of aaaa by the contents of the A register. The ten low-order digits of the product appear in the R register; the high-order digits are in the A register.

DIV

15

DIVIDE

±	i	i	i	i	1	5	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

The contents of the R register are the ten low-order digits of the dividend; the contents of the A register are the high-order digits of the dividend. Divide the dividend by the contents of aaaa. The quotient appears in the A register, the remainder in the R register.

RND

16

ROUND

±	i	i	i	i	1	6	i	i	i	i
---	---	---	---	---	---	---	---	---	---	---

If the high-order digit in the R register is greater than or equal to 5, add 1 to the contents of the A register, then clear the R register.

FAD

22

FLOATING ADD

±	n	i	i	0	2	2	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Add the floating-point number in aaaa to the floating-point number in the A register. The floating-point sum appears in the A register. Normalizing limiter is specified by n.

FAA

22

FLOATING ADD ABSOLUTE

±	n	i	i	1	2	2	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Add the absolute value of the floating-point number in aaaa to the floating-point number in the A register. The floating-point sum appears in the A register. Normalizing limiter is specified by n.

FSU

23

FLOATING SUBTRACT

±	n	i	i	0	2	3	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Subtract the floating-point number in aaaa from the floating-point number in the A register. The floating-point difference appears in the A register. Normalizing limiter is specified by n.

FSA

23

FLOATING SUBTRACT ABSOLUTE

±	n	i	i	1	2	3	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Subtract the absolute value of the floating-point number in aaaa from the floating-point number in the A register. The floating-point difference appears in the A register. Normalizing limiter is specified by n.

FMU

24

FLOATING MULTIPLY

±	i	i	i	i	2	4	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Multiply the floating-point number in aaaa by the floating-point number in the A register. The low-order digits of the floating-point product appear in the R register; the high-order digits are in the A register.

FDV

25

FLOATING DIVIDE

±	i	i	i	i	2	5	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

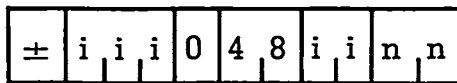
The contents of the R register are the low-order digits of the floating-point dividend; the high-order digits are in the A register. Divide the floating-point dividend by the floating-point number in aaaa. The floating-point quotient appears in the A register.

MANIPULATION, INFORMATION TRANSFER

SRA

48

SHIFT RIGHT A

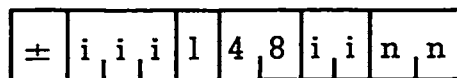


Shift the contents of the A register, excluding the sign digit, nn positions to the right. Digits shifted out of the A register are lost; as each digit is shifted out, a high-order zero is entered in the A register.

SRT

48

SHIFT RIGHT A AND R

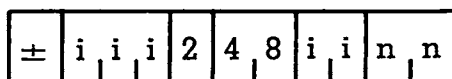


Shift the contents of the A and R registers, together, but excluding the sign digits, nn positions to the right. Digits shifted out of the low-order position of the R register are lost; as each digit is shifted out, a high-order zero is entered in the A register. The sign of the R register is changed to the sign of the A register.

SRS

48

SHIFT RIGHT A WITH SIGN

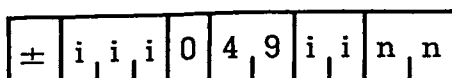


Shift the contents of the A register, including the sign digit, nn positions to the right. Digits shifted out of the low-order position of the A register are lost; as each digit is shifted out, a zero is entered in the sign-digit position.

SLA

49

SHIFT LEFT A

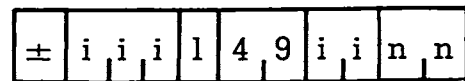


Shift the contents of the A register, excluding the sign digit, nn positions to the left. This is a circulating shift: as each digit is shifted out of the high-order position, it enters the low-order position of the A register.

SLT

49

SHIFT LEFT A AND R

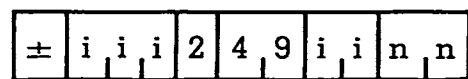


Shift the contents of the A and R registers, together, but excluding the sign digits, nn positions to the left. This is a circulating shift: as each digit is shifted out of the high-order position of the A register, it enters the low-order position of the R register. The sign of the A register is changed to the sign of the R register.

SLS

49

SHIFT LEFT A WITH SIGN

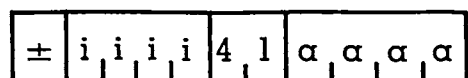


Shift the contents of the A register, including the sign digit, nn positions to the left. This is a circulating shift: as each digit is shifted out of the sign-digit position, it enters the low-order position of the A register.

LDR

41

LOAD R

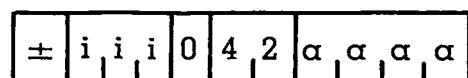


Replace the contents of the R register by the contents of aaaa.

LDB

42

LOAD B

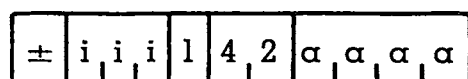


Replace the contents of the B register by the four low-order digits of aaaa.

LBC

42

LOAD B COMPLEMENT

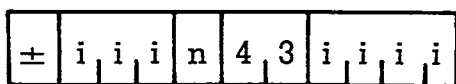


Replace the contents of the B register by the 10's complement of the number which is the content of the four low-order digit positions of aaaa.

LSA

43

LOAD SIGN A

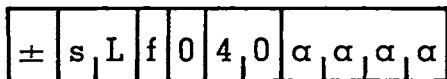


Replace the sign digit of the A register by n.

STA

40

STORE A

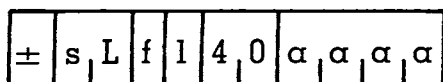


Replace the contents of the specified partial-word field in aaaa, or the contents of the entire word, by the contents of the corresponding field in the A register.

STR

40

STORE R

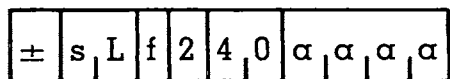


Replace the contents of the specified partial-word field in aaaa, or the contents of the entire word, by the contents of the corresponding field in the R register.

STB

40

STORE B

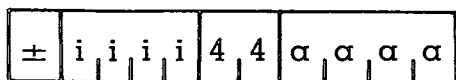


Replace the contents of the specified partial-word field in aaaa by the contents of the corresponding field in the B register.

STP

44

STORE P

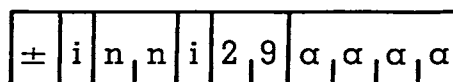


Replace the address portion of aaaa by the contents of the P register, increased by 1.

RTF

29

RECORD TRANSFER

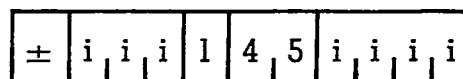


Transfer the contents of nn consecutively-addressed locations, beginning with the one whose address is aaaa, to the nn consecutively-addressed locations beginning with the one whose address is in the B register.

CLA

45

CLEAR A

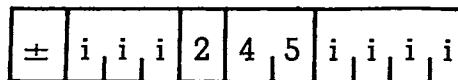


Replace every digit in the A register by 0 when the 1 bit of sL:41 of this instruction is on.

CLR

45

CLEAR R

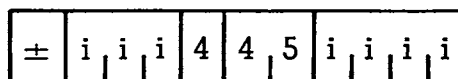


Replace every digit in the R register by 0 when the 2 bit of sL:41 of this instruction is on.

CLB

45

CLEAR B

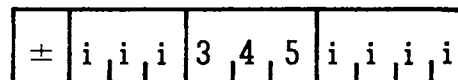


Replace every digit in the B register by 0 when the 4 bit of sL:41 of this instruction is on.

CAR

45

CLEAR A AND R

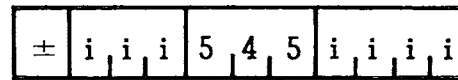


Replace every digit in the A and R registers by 0, when the 1 and 2 bit of sL: 41 of this instruction is on.

CAB

45

CLEAR A AND B

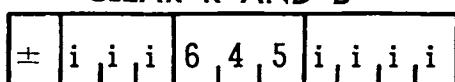


Replace every digit in the A and B registers by 0, when the 1 and 4 bit of sL: 41 of this instruction is on.

CRB

45

CLEAR R AND B

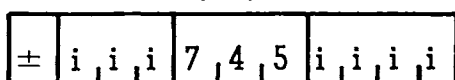


Replace every digit in the R and B registers by 0, when the 2 and 4 bit of sL: 41 of this instruction is on.

CLT

45

CLEAR A, R, AND B

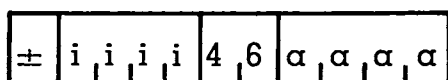


Replace every digit in the A, R, and B registers by 0, when the 1, 2 and 4 bit of sL: 41 of this instruction is on.

CLL

46

CLEAR LOCATION

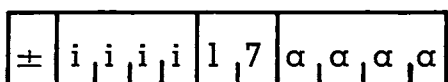


Replace every digit in aaaa by 0.

EXT

17

EXTRACT

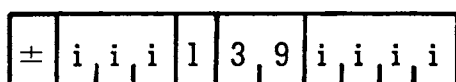


For each digit in aaaa that is an even integer, the corresponding digit in the A register is replaced by zero.

SOH

39

SET OVERFLOW HALT

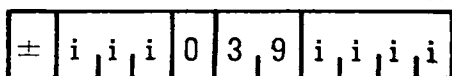


Set the Data Processor in the overflow-halt mode. An overflow condition turns the OVERFLOW indicator on and causes the Data Processor to halt unless the next command is a BOF.

SOR

39

SET OVERFLOW REMEMBER



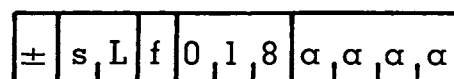
Set the Data Processor in the overflow-remember mode. An overflow condition turns the OVERFLOW indicator on but does not cause the Data Processor to halt. The OVERFLOW indicator remains on until tested by a BOF command.

DECISION MAKING

CFA

18

COMPARE FIELD A

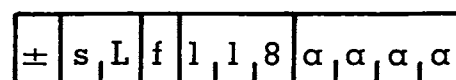


Compare the contents of the specified partial-word field in aaaa, or the contents of the entire word, with the corresponding field in the A register. According as the contents of the field in the A register are greater than, equal to, or less than the contents of the corresponding field in aaaa, set the COMPARISON Indicator to HIGH, EQUAL, or LOW.

CFR

18

COMPARE FIELD R

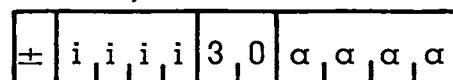


Compare the contents of the specified partial-word field in aaaa, or the contents of the entire word, with the corresponding field in the R register. According as the contents of the field in the R register are greater than, equal to, or less than the contents of the corresponding field in aaaa, set the COMPARISON Indicator to HIGH, EQUAL, or LOW.

BUN

30

BRANCH, UNCONDITIONALLY

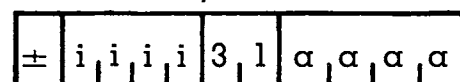


Transfer control to the instruction in aaaa.

BOF

31

BRANCH, OVERFLOW

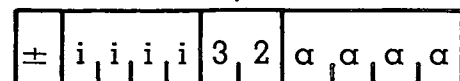


If the OVERFLOW Indicator is on, transfer control to the instruction in aaaa and turn off the OVERFLOW indicator; if not, control continues in sequence.

BRP

32

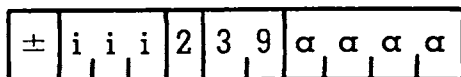
BRANCH, REPEAT



If the REPEAT Indicator is on, transfer control to the instruction in aaaa; if not, control continues in sequence.

BSA	33	<div>BRANCH, SIGN A</div> <table><tr><td>±</td><td>i</td><td>i</td><td>i</td><td>n</td><td>3</td><td>3</td><td>α</td><td>α</td><td>α</td><td>α</td></tr></table> <p>If the sign digit in the A register equals n, transfer control to the instruction in aaaa; if not, control continues in sequence.</p>	±	i	i	i	n	3	3	α	α	α	α	BFA	36	<div>BRANCH, FIELD A</div> <table><tr><td>±</td><td>s</td><td>L</td><td>n</td><td>n</td><td>3</td><td>6</td><td>α</td><td>α</td><td>α</td><td>α</td></tr></table> <p>Beginning with the low-order digit of the specified partial-word field in the A register, successively higher-order digits are compared alternately with the low-order and high-order digit of nn. If equality is found, transfer control to the instruction in aaaa; if not, control continues in sequence.</p>	±	s	L	n	n	3	6	α	α	α	α
±	i	i	i	n	3	3	α	α	α	α																	
±	s	L	n	n	3	6	α	α	α	α																	
BCH	34	<div>BRANCH, COMPARISON HIGH</div> <table><tr><td>±</td><td>i</td><td>i</td><td>i</td><td>0</td><td>3</td><td>4</td><td>α</td><td>α</td><td>α</td><td>α</td></tr></table> <p>If the COMPARISON Indicator is HIGH, transfer control to the instruction in aaaa; if not, control continues in sequence.</p>	±	i	i	i	0	3	4	α	α	α	α	BFR	37	<div>BRANCH, FIELD R</div> <table><tr><td>±</td><td>s</td><td>L</td><td>n</td><td>n</td><td>3</td><td>7</td><td>α</td><td>α</td><td>α</td><td>α</td></tr></table> <p>Beginning with the low-order digit of the specified partial-word field in the R register, successively higher-order digits are compared alternately with the low-order and high-order digit of nn. If equality is found, transfer control to the instruction in aaaa; if not, control continues in sequence.</p>	±	s	L	n	n	3	7	α	α	α	α
±	i	i	i	0	3	4	α	α	α	α																	
±	s	L	n	n	3	7	α	α	α	α																	
BCL	34	<div>BRANCH, COMPARISON LOW</div> <table><tr><td>±</td><td>i</td><td>i</td><td>i</td><td>1</td><td>3</td><td>4</td><td>α</td><td>α</td><td>α</td><td>α</td></tr></table> <p>If the COMPARISON Indicator is LOW, transfer control to the instruction in aaaa; if not, control continues in sequence.</p>	±	i	i	i	1	3	4	α	α	α	α	BCS	38	<div>BRANCH, CONTROL SWITCH</div> <table><tr><td>±</td><td>u</td><td>i</td><td>i</td><td>i</td><td>3</td><td>8</td><td>α</td><td>α</td><td>α</td><td>α</td></tr></table> <p>If PROGRAM CONTROL SWITCH u is on, transfer control to the instruction in aaaa; if not, control continues in sequence.</p>	±	u	i	i	i	3	8	α	α	α	α
±	i	i	i	1	3	4	α	α	α	α																	
±	u	i	i	i	3	8	α	α	α	α																	
BCE	35	<div>BRANCH, COMPARISON EQUAL</div> <table><tr><td>±</td><td>i</td><td>i</td><td>i</td><td>0</td><td>3</td><td>5</td><td>α</td><td>α</td><td>α</td><td>α</td></tr></table> <p>If the COMPARISON Indicator is EQUAL, transfer control to the instruction in aaaa; if not, control continues in sequence.</p>	±	i	i	i	0	3	5	α	α	α	α	HLT	00	<div>HALT</div> <table><tr><td>±</td><td>i</td><td>i</td><td>i</td><td>i</td><td>0</td><td>0</td><td>i</td><td>i</td><td>i</td><td>i</td></tr></table> <p>Stop all operation.</p>	±	i	i	i	i	0	0	i	i	i	i
±	i	i	i	0	3	5	α	α	α	α																	
±	i	i	i	i	0	0	i	i	i	i																	
BCU	35	<div>BRANCH, COMPARISON UNEQUAL</div> <table><tr><td>±</td><td>i</td><td>i</td><td>i</td><td>1</td><td>3</td><td>5</td><td>α</td><td>α</td><td>α</td><td>α</td></tr></table> <p>If the COMPARISON Indicator is HIGH or LOW, transfer control to the instruction in aaaa; if not, control continues in sequence.</p>	±	i	i	i	1	3	5	α	α	α	α	NOP	01	<div>NO OPERATION</div> <table><tr><td>±</td><td>i</td><td>i</td><td>i</td><td>i</td><td>0</td><td>1</td><td>i</td><td>i</td><td>i</td><td>i</td></tr></table> <p>Do nothing: proceed immediately to the next instruction in sequence.</p>	±	i	i	i	i	0	1	i	i	i	i
±	i	i	i	1	3	5	α	α	α	α																	
±	i	i	i	i	0	1	i	i	i	i																	

INTERROGATE OVERFLOW MODE



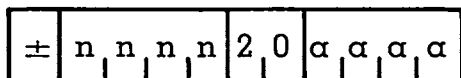
If the Data Processor is in the overflow-halt mode, transfer control to the instruction in aaaa; control continues in sequence in the overflow-remember mode.

INSTRUCTION MODIFICATION, TALLYING

IBB

20

INCREASE B, BRANCH

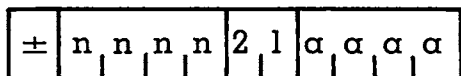


Increase the contents of the B register by nnnn. If overflow occurs, control continues in sequence; if not, transfer control to the instruction in aaaa.

DBB

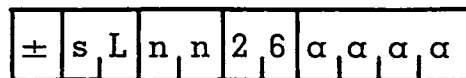
21

DECREASE B, BRANCH



Decrease the contents of the B register by nnnn. If underflow occurs, control continues in sequence; if not, transfer control to the instruction in aaaa.

INCREASE FIELD LOCATION

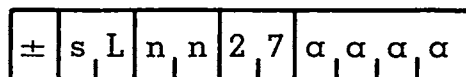


Increase the contents of the specified partial-word field in aaaa by nn. If overflow occurs, set the OVERFLOW Indicator on.

DFL

27

DECREASE FIELD LOCATION

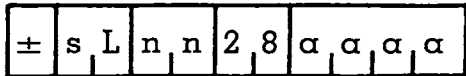


Decrease the contents of the specified partial-word field in aaaa by nn. If underflow occurs, set the REPEAT Indicator off; if not, set the REPEAT Indicator on.

DLB

28

DECREASE FIELD LOCATION, LOAD B



Decrease the contents of the specified partial-word field in aaaa by nn. If underflow occurs, set the REPEAT Indicator off; if not, set the REPEAT Indicator on. In either case, clear then load the B register with the modified partial-word field. If $L \leq 4$, the partial-word field appears in the high-order positions of the B register. If $L > 4$, the four high-order digits of the partial-word field are loaded in the B register.

INPUT-OUTPUT

MAGNETIC TAPE

MTS 50

MAGNETIC-TAPE SEARCH

±	u	h	h	0	5	0	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

± = 0 or 1:

Search on unit u, lane hh, for the block whose first word is identical with the word in aaaa.

Searching is done independently of Data Processor control.

MFS 50

MAGNETIC-TAPE FIELD SEARCH

±	u	h	h	0	5	0	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

± = 4 or 5:

The boundaries of a partial-word field are specified in the B register. Search on unit u, lane hh, for the block the specified part of whose first word is identical with the corresponding part of the word in aaaa.

Searching is done independently of Data Processor control.

MTC 51

MAGNETIC-TAPE SCAN

±	u	h	h	k	5	1	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

± = 0 or 1:

Select unit u, lane hh. Scan in the forward direction for the block whose kth word is identical with the word in aaaa.

Scanning is done independently of Data Processor control.

MFC 51

MAGNETIC-TAPE FIELD SCAN

±	u	h	h	k	5	1	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

± = 4 or 5:

The boundaries of a partial-word field are specified in the B register. Select unit u, lane hh. Scan in the forward direction for the block the specified part of whose kth word is identical with the corresponding part of the word in aaaa.

Scanning is done independently of Data Processor control.

MRD

52

MAGNETIC-TAPE READ

±	u	n	i	v	5	2	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Read n blocks from unit u into consecutively-addressed locations beginning with aaaa. B-register address-modification of designated input can be programmed. Automatic transfer of control occurs when an end-of-file control block is sensed. Parity is checked with automatic re-trial if an error is detected.

MRR 53

MAGNETIC-TAPE READ, RECORD

±	u	n	i	v	5	3	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Read n blocks—including prefaces—from unit u into consecutively-addressed locations beginning with aaaa. B-register address-modification of designated input can be programmed. Automatic transfer of control occurs when an end-of-file control block is sensed. Parity is checked with automatic re-trial if an error is detected.

MIW 54

MAGNETIC-TAPE INITIAL WRITE

±	u	n	k	k	5	4	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Write on "clean" (i.e., just edited) tape on unit u. Write n blocks, each kk words long, from consecutively-addressed locations beginning with the word in aaaa. The preface word, which contains the number kk, is written just before the first data word of the block.

If magnetic end-of-tape is sensed, turn on END-OF-TAPE Indicator.

MIR 55

MAGNETIC-TAPE INITIAL WRITE, RECORD

±	u	n	i	i	5	5	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Write on "clean" tape on unit u; write n blocks—with preface words—beginning with the preface word in location aaaa; take words from consecutively-addressed locations thereafter.

If magnetic end-of-tape is sensed, turn on END-OF-TAPE Indicator.

MOW

56

MAGNETIC-TAPE OVERWRITE

±	u	n	k	k	5	6	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Overwrite n blocks on unit u, each block kk words long; take words from consecutively-addressed locations beginning with the word in aaaa.

MOR

57

MAGNETIC-TAPE OVERWRITE, RECORD

±	u	n	i	i	5	7	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Overwrite n blocks on unit u beginning with the preface word in location aaaa; take words from consecutively-addressed locations thereafter.

MPF

58

MAGNETIC-TAPE POSITION, FORWARD

±	u	n	i	0	5	8	i	i	i	i
---	---	---	---	---	---	---	---	---	---	---

Move tape on unit u, in the forward direction, past n blocks.

This operation is executed independently of Data Processor control.

MPB

58

MAGNETIC-TAPE POSITION, BACKWARD

±	u	n	i	1	5	8	i	i	i	i
---	---	---	---	---	---	---	---	---	---	---

Move tape on unit u, in the backward direction, past n blocks.

This operation is executed independently of Data Processor control.

MPE

58

MAGNETIC-TAPE POSITION AT
END OF INFORMATION

±	u	i	i	2	5	8	i	i	i	i
---	---	---	---	---	---	---	---	---	---	---

Move tape on unit u to the "end of information." Stop prepared to (initial) write the next block.

This operation is executed independently of Data Processor control.

MLS

50

MAGNETIC-TAPE LANE SELECT

±	u	h	h	4	5	0	i	i	i	i
---	---	---	---	---	---	---	---	---	---	---

On unit u, select the read-write head specified by hh. There is no tape movement.

This operation is executed independently of Data Processor control.

MRW

50

MAGNETIC-TAPE REWIND

±	u	h	h	8	5	0	i	i	i	i
---	---	---	---	---	---	---	---	---	---	---

Rewind unit u. Select lane hh at completion of rewind.

Rewinding occurs independently of Data Processor and Magnetic-Tape Control Unit control.

MDA

50

MAGNETIC-TAPE REWIND, DE-ACTIVATE

±	u	h	h	9	5	0	i	i	i	i
---	---	---	---	---	---	---	---	---	---	---

Rewind unit u. Select lane hh at completion of rewind and set interlocks which cause alarm if unit is referred to before interlocks are reset manually.

Rewinding occurs independently of Data Processor and Magnetic-Tape Control Unit control.

MIB

59

MAGNETIC-TAPE INTERROGATE, BRANCH

±	u	i	i	0	5	9	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

If unit u is ready, transfer control to the instruction in aaaa; otherwise, control continues in sequence.

MIE

59

MAGNETIC-TAPE INTERROGATE
END-OF-TAPE, BRANCH

±	u	i	i	1	5	9	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

If the END-OF-TAPE Indicator on unit u is on, transfer control to the instruction in aaaa; otherwise, control continues in sequence.

PAPER TAPE

PRD

03

PAPER-TAPE READ

±	u	n	n	v	0	3	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Read nn words, from unit u, into consecutively-addressed locations beginning with aaaa. Automatic alphanumeric translation is provided. B-register address-modification of designated input can be programmed. A control word in paper tape permits overriding of nn.

PRB

04

PAPER-TAPE READ, BRANCH

±	u	i	i	v	0	4	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Read from unit u, the words from paper tape going into consecutively-addressed locations beginning with aaaa. Continue reading until a control word in paper tape is encountered: execute the instruction which is the control word. Automatic alphanumeric translation is provided. B-register address-modification of designated input can be programmed.

PRI

05

PAPER-TAPE READ, INVERSE FORMAT

±	u	n	n	v	0	5	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

(Certain business machines punch sign digit last: this is "inverse format.")

Read from unit u; read nn words into consecutively-addressed locations beginning with aaaa. B-register address-modification of designated input can be programmed. A control word in paper tape permits overriding of nn.

PWR

06

PAPER-TAPE WRITE

±	u	n	n	i	0	6	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Punch, or print, nn words from consecutively-addressed locations, beginning with the contents of aaaa, using punch or printer u, respectively.

PWI

07

PAPER-TAPE WRITE INTERROGATE, BRANCH

±	u	i	i	i	0	7	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

If punch or printer unit u is ready, transfer control to the instruction in aaaa; otherwise, control continues in sequence.

CARDATRON

CRD

60

CARD READ

±	u	i	v	r	6	0	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Transfer the contents of the buffer of input unit u into consecutively-addressed locations, ending with aaaa. The information is edited automatically by the format band selected by a punch in the card whose contents are in the buffer. B-register address-modification of designated input can be programmed. If r is odd, the next card is not read into the buffer.

Transfer of information from the next card to the buffer is independent of Data Processor control. That is, reloading of the buffer is accomplished automatically under Cardatron control.

CWR

61

CARD WRITE

±	u	i	c	f	6	1	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Transfer to the buffer of output unit u, words from consecutively-addressed locations ending with aaaa. Edit the information using format band f.

Print one line, or punch one card, with the contents of the buffer, controlling the punch or printer as specified by c.

Printing or punching is independent of Data Processor control.

CRF

62

CARD READ, FORMAT LOAD

±	u	i	i	f	6	2	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Load format band f, input unit u, with the editing control-stream occupying the 29 consecutively-addressed locations beginning with aaaa.

CWF

63

CARD WRITE, FORMAT LOAD

±	u	i	i	f	6	3	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Load format band f, output unit u, with the editing control-stream occupying the 29 consecutively-addressed locations beginning with aaaa.

CRI

64

CARD READ INTERROGATE, BRANCH

±	u	i	i	i	6	4	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

If input unit u is ready, transfer control to the instruction in aaaa; otherwise, control continues in sequence.

CWI

65

CARD WRITE INTERROGATE, BRANCH

±	u	i	i	i	6	5	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

If output unit u is ready, transfer control to the instruction in aaaa; otherwise, control continues in sequence.

HPW

66

HIGH-SPEED PRINTER WRITE

±	i	n	n	i	6	6	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Load the High Speed Printer buffer with nn words beginning with aaaa.

HPI

67

HIGH-SPEED PRINTER INTERROGATE

±	i	i	i	i	6	7	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

If the High-Speed Printer is ready, transfer control to the instruction in aaaa; otherwise, control continues in sequence.

CONTROL CONSOLE

KAD

08

KEYBOARD ADD

±	i	i	i	i	0	8	i	i	i	i
---	---	---	---	---	---	---	---	---	---	---

Halt the Data Processor. The number manually entered on the keyboard is added to the contents of the A register by means of depressing the ADD key and control continues in sequence.

SPO

09

SUPERVISORY PRINT-OUT

±	i	d	n	v	0	9	α	α	α	α
---	---	---	---	---	---	---	---	---	---	---

Print, on the Supervisory Printer, nn words from consecutively-addressed locations beginning with the contents of aaaa. Alphanumeric translation is automatic. If v = 1, a decimal point will be inserted d digit positions to the left of the least-significant digit of the words printed.



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ELECTRODATA DIVISION
PASADENA, CALIFORNIA