reference

Computng Services
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MTS Reference

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Introductory Matter

Note to the Reader

This document is a quick reference guide to the Michigan Terminal System (MTS) and some of the command language subsystems and applications programs supported by the Department of Computing Services at the University of Alberta. If you want additional information or instructions, consult the write-ups or manuals mentioned throughout this guide.

The basic guide contains the MTS command language, the file editor, the message system, and use of terminals and the printers. As supplements on other aspects of the computing system are completed, they will be announced in the *Bulletin* and made available in the Users' Room.

Your comments on this and all Computing Services publications are welcome. Run INFO:COMMENT to make your comments on-line or phone the Information Coordinator at 432-2463.

Computing Services Telephone Numbers

Consultants	432-5105
General Office	432-2261
Computer Center (emergency only)	432-3982
Tape Librarian	432-2889
Terminal Problems	432-3625
Dial-up (300 baud)	432-4811
Dial-up (1200 baud)	432-2266
Datapac †	423-1271
Datapac address	6010 0010
Telenet address	C 0302060100010
Tymnet address	DPAC; 3020 60100010

†See *Terminal User* **O**01 and *Datapac Access* **O**133 for details.

Hours of Operation

MTS operating hours are 8:00 am to 4:00 am Monday through Saturday and 12:00 noon to 8:00 pm Sunday. Extensions to Sunday hours are announced with a signon message beginning Friday afternoons. The General Services Building is open during MTS operating hours.

Terminal Rooms

Terminals in public lab rooms may be used when the room is not booked (check the schedule posted):

MTS Terminals

327 GSB	- 18 Courier terminals
351 GSB	- 18 DECwriter terminals
357 GSB	- 18 AJ510 terminals
B-39 Tory	- 28 AJ510 terminals
531 ElectEng	- 35 AJ510 terminals
453 CAB	- 14 DECwriter terminals
102, 120, 126, 150 Assiniboia Hall	- 105 AJ510 terminals

PLATO Terminals

361 GSB	- 20 terminals
110 Corbett	- 10 terminals
2-111 Educ N	- 11 AV learning stations
2-49 MedSci	- 20 AV learning stations
CW-213 Biological Sciences Center	- 29 Viking terminals

Microcomputers

564 GSB	- 12 IBM PCs

Documentation

Computing Services provides a variety of documents for users—write-ups and brochures, manuals, books, and a monthly news magazine, the *Bulletin*. Copies of the *Bulletin* are placed in all public terminal rooms. Write-ups and brochures are available in the Users' Room, 207 General Services Building. Manuals and books can be purchased in the University Bookstore located in the Students' Union Building. *Computing Services Documentation Index* **O**116 will help you find the documents you need. Copies can be obtained in the Users' Room. An index is also available on-line by giving the MTS command:

```
source info:documents
```

You may print your own copies of most Computing Services documents from your terminal by giving the MTS command:

```
run *docprint
```

Current information about system changes can be obtained by running *CHANGES.

System Prefixes

In order to help you interpret system activity, each mode of operation has a prefix character associated with it. Prefix characters are printed at the beginning of input and output lines. The table below lists them.

#	MTS Command Mode
>	Copying, Listing
•	Loading
?	Prompting
:	Edit Mode
?	Fast Insertion
+	Debug Mode
?	Command Insertion
	Calc Mode
?	Input
=	Output
-	Systemstatus Mode
?	Accounting Mode
@	Messagesystem Mode
blank	Execution Mode

Syntax Conventions

Commands are listed in alphabetical order in a form that presents all the possibilities. The following conventions are used in command prototype notations:

1. Items in UPPERCASE must be entered as shown.
2. Items in lowercase are to be replaced appropriately.
3. Abbreviations, if allowed, appear in **bold**.
4. Default (initial) values are underlined.
5. [ ] (square brackets) enclose optional fields which are not necessary to the correct completion of the command.
6. { } (brace brackets) enclose required fields.
7. | (vertical bar) separates alternate forms; choose one.
8. ••• (bullets) indicate that the immediately preceding field may be repeated.
9. Keyboard keys are in boxes.

The RENAME command, for example, appears as follows:

RENAME currentfilename [AS] newfilename [OK | **Y**ES | !]

'Translated', this means that you must enter at least RENA, then the current name of your file, followed, optionally, by the word AS, then the new file name, and then, optionally, OK, YES (or just Y), or !. Here are some valid forms of the RENAME command using FRED as the current file name and GEORGE as the new:

```
rename fred as george
rename fred george ok
renam fred george
rena fred george y
```

The program in HELP:PROTOTYPE will list at your terminal all the valid forms arising from a prototype.

MTS Command Language

Note: Most MTS commands can be abbreviated. The means by which MTS recognizes commands is governed by the CMDSCAN option of the SET command. The default setting is CMDSCAN=UNAMBIGUOUS; i.e., all abbreviations are required to be unambiguous. (For example, UNL would be unacceptable because it could be a short form for UNLOCK or UNLOAD.) However, certain frequently-used commands are allowed to have 'ambiguous' abbreviations:

C for COPY
D for DISPLAY
L for LIST
R for RUN
SIG for SIGNON and SIGNOFF (depending on the context)

If you give the MTS command SET CMDSCAN=AMBIGUOUS, the following abbreviations will be accepted:

A for ALTER
CA for CALC
DE for DESTROY
E for EMPTY
LO for LOAD
M for MODIFY
REN for RENAME
RE for RESTART
S for SET
SI for SINK
UNL for UNLOAD

In the following list of commands, the abbreviations shown in **bold** are for the default setting CMDSCAN=UNAMBIGUOUS.

ACCOUNTING
See the write-up Accounting System for Project Leaders **R***419 for details.*

ALTER {location value}•••

location	FRx
	GRx
	[RF={hhhhhh | GRx}] xxxxxx
value	hhhh | X'hhhh'
	C'xxxx'
	F'yyyy'
	H'yyyy'

CALC [expression]

CANCEL {*...* | [*...*] [JOB] receipt} [{ID | CSID}=signon-id]

...	*BATCH* | *PRINT* | *PUNCH*

COMMENT [text]

CONTROL fdname [option]•••
See page 17 for more detail.

COPY [FROM] fdname1 [[TO] fdname2]

CREATE filename [keyword]•••

keyword MAXSIZE=\{n|nP\}
SIZE=\{n|nP\}
TYPE=\{LINE|SEQ\}
VOLUME=MTSnnn

DEBUG
Same parameters as the RUN command.

DESTROY filelist [OK|**YES**|!|ALLOK|PROMPT]
where filelist *is a simple filename, a filename pattern containing a ? (question mark), or a parenthesized list of either.*

DISPLAY [ON fdname] [format] \{location|item\}•••

format BCD|NOBCD|EBCD|NOEBCD
HEX|NOHEX
MNEM|NOMNEM
ORL=\{S|L\}
SP1|SSPC|SGLS|SP2|DSPC|DBLS

location FRx|FRS
GRx|GRS
PSW
[RF=\{hhhhhh|GRx\}] xxxxxx[...xxxxxx]

item *BATCH*
BOTH$
COST|$
DATE
HARD$
INITFILE(cls)
LOGSTATUS
MACHINE
MAP
NAME
NAMELIB
pdn
PDNS
PRINT
PRINTCOMMENT
PRINTPRIO
PROJECT
PUNCH
RECEIPTS
RERUN
SIGFILE
SINK
SOFT$
SOURCE

[] – not necessary \{\} – required
| – separates alternate forms ••• – preceding field may be repeated

SYSTEM | MODEL
TIME
TIMEDATE
USERID | CSID
VMSIZE
...

DUMP [ON fdname] [format]•••
format BCD | NOBCD | EBCD | NOEBCD
HEX | NOHEX
LIB | NOLIB
MNEM | NOMNEN
ORL = {S | L}
SP1 | SSPC | SGLS | SP2 | DSPC | DBLS

DUPLICATE currentfilename [AS | TO] newfilename [OK | ALLOK | **Y**ES | ! | PROMPT]

EDIT [filename] [[:] edit-command]
Note: The : (colon) is not optional if filename *is omitted.*
See the section "The File Editor" for more detail.

EMPTY filelist [OK | **Y**ES | ! | ALLOK | PROMPT]
where filelist *is a simple filename, a filename pattern containing a ? (question mark), or a parenthesized list of either.*

FILESTATUS [name] [format] [information]
See page 11 for more detail.

GOTO label

IF RUN**RC** condition integer[,] mts-command

LIST fdname1 [[ON] fdname2]

LOAD
Same parameters as the RUN command.

LOCK filename [how] [option]•••
how CHANGE
DESTROY | D
EMPTY
MODIFY | M
NONE | OFF
PERMIT
READ
RENAME | RNA
RENUMBER | RNU
TRUNCATE
WRITE
option WAIT | NOWAIT
QUIT | NOQUIT

{**LOCKS**TATUS | **LS**TATUS} [filename | JOB taskno]

LOG [fdname1] {[ON] fdname2 [format] [option]••• | OFF}

Note: ON *must be specified if* fdname1 *is omitted.*

format ASIS | SYMBOLIC

option READS
WRITES
CONTROL

MESSAGESYSTEM [messagesystem-command]
See the section "Messagesystem Command Mode" for more detail.

MODIFY
Same as the ALTER command.

MOUNT [request [;request] •••]
See page 21 for more detail.

MTS

PERMIT filename how who
PERMIT filename1 LIKE filename2 [EXCEPT how who]

filename filename | (filename [{blank | ,}filename] •••)

how access-type | (access-type [{blank | ,}access-type] •••)

access-type **R**EAD
WRITEXP | WE | W | APPEND | WA | EXPAND
WRITCHG | WC | **CH**ANGE | **E**MPTY
TRUNCATE | T | RENUMBER | RNU
DESTROY | D | RENAME | RNA
PERMIT
WRITE
RWCHG
RWEXP
RW
FULL
UNLIMIT | UNL | U
DEFAULT
NONE | NO
RUN
EDIT

who accesssor | (accessor [{blank | ,}accessor] •••)

accessor ALL
ME
OTHERS
OWNER
signon-id
{CSID | ID} = signon-id
{**P**ROJECT | PRJNO} = project
PKEY = programkey
signon-id&**PKE**Y = programkey
{CSID | ID} = signon-id&**PKE**Y = programkey
{**P**ROJECT | PRJNO} = project&**PKE**Y = programkey

RELEASE {*BATCH* | *PRINT* | *PUNCH* | *pdn*}

[] – not necessary { } – required
| – separates alternate forms ••• – preceding field may be repeated

RENAME currentfilename [AS] newfilename [OK | **Y**ES | ! | ALLOK | PROMPT]
Note: currentfilename *and* newfilename *may be simple file names or filename patterns containing ? (question marks), or a parenthesized list of either.*

RENUMBER filename [first [last [beginning [increment]]]]
RENUMBER filename [[[first], last] [TO [beginning], increment]]

RERUN [ECHO | NOECHO] [i/o-unit]••• [option]••• [PAR=parameter(s)]
See the RUN command.

RESTART [[AT] [RF={hhhhhh | GRx}] location] [i/o-unit]••• [option]•••
See the RUN command.

RUN [objectfilename] [i/o-unit]••• [option]••• [PAR=parameter(s)]

i/o-unit
SCARDS=fdname
*The default is *SOURCE*.*
SPRINT=fdname
*The default is *SINK*.*
SPUNCH=fdname
*The default is *PUNCH* in batch if card limit > 0.*
GUSER=fdname
*The default is *MSOURCE*.*
SERCOM=fdname
*The default is *MSINK*.*
n=fdname
where n is 0 to 99.

option
MAP[=mapfdname] | NOMAP
XREF
UXREF
EXEC**PKEY**={key | OFF}
TIME={t | tS | tM}
PAGES=p
CARDS=c

SDS [debug-command]
The Symbolic Debugging System (SDS) is explained in SDS Supplement to MTS Reference **R***470, available in the Users' Room (207 GSB).*

SET option•••
See page 13 for a list of SET options.

SIGNOFF [**S**HORT | LONG | $] [**REC**EIPTS | **NOREC**EIPTS]

SIGNON signon-id [option†]••• ['comment']

option
CARDS=c
The default is 0.
COPIES=n
The default is 1.
CROUTE=station-code
DELIVERY=delivery-station
The default is CNTR (the I/O Room, 240 GSB).
{**FORM**S | PAPER}={form-type-code | DEFAULT}
PAGES=p
The default is 50.

PRINT=[PN | TN | APL | ALA | ANY]
PRINTER=[PAGE | LINE | ANY | NONE]
PRIORITY=[**R**USH | **H**IGH | NORMAL | **L**OW | **D**EFERRED | DEFER]
PROUTE=station-code
ROUTE=station-code
RIBBON=ribbon-type-code
SHORT | LONG
Valid on batch or terminal jobs.
SIGFILE=[ON | OFF]
Valid on batch or terminal jobs.
TIME=[t | tS | tM]
Valid on batch or terminal jobs.
The default is 5S (5 seconds).
7TP=n
The default is 0.
9TP=n
The default is 0.

†*The above options are valid in batch only unless otherwise indicated. See* MTS Commands **R***06 for details.*

SINK [fdname | PREVIOUS]

SOURCE [fdname | PREVIOUS]

START
Same parameters as the RESTART command.

SYSTEMSTATUS [systemstatus-command]
systemstatus-command
DISPLAY xxxxxx[+xxxxxx]••• [count]
LOAD [tasknumber]
MCMD mts-command
MTS
QUEUE [receipt | ALL | LCL | station | RMTn]•••
REPEAT [**T**IME=n]
RETURN
SCREEN [ALL | LCL | station | RMTn]
STOP
TASKS [descriptor]
descriptor tasknumber
B
F
M
N [non-mts-jobname]
D devicename
T devicetype
U signon-id
P project
USERS

TRUNCATE filelist [ALLOK | PROMPT]
where filelist *is a simple filename, a filename pattern containing a ? (question mark), or a parenthesized list of either.*

UNLOAD

{**UNLOC**K | UNLK} filename

FILESTATUS Command

FILESTATUS [name] [format] [information]

name [NAME=] {filename | ? | -? | signon-id:?}

filename filename | (filename [{blank | ,} filename]•••)

You can specify a partial file name by putting a ? (question mark) anywhere in filename. *The ? stands for zero or more arbitrary characters to be matched in the file name.*

format **HEAD**ING [=ON | OFF] | **NOHEAD**ING

INDENT=n

where 0≤n≤20.

The default is 1.

[OUTFORM=] {**COL**UMNS | **KEY**WORD | **LABEL**ED | **PACK**ED}

{OUTPUT= | ON} fdname

The default is *SINK*.

SPACING={1 | 2 | 3}

TERSE [=ON | OFF] | VERBOSE

information 1. item [{blank | ,} item]•••

2. INFO={item | (item [,item]•••)}•••

Note: INFO= *may precede additional items or item lists.*

Catalog Items

CREDATE [*{mmmdd/yy | mm/dd/yy}]

*where * in this and the following items stands for any relational operator (=, ~=, <, <=, >, >=), mmm stands for the first three letters of the month, and mm stands for the numeric value of the month.*

IDLEDAYS [*n]

{LASTCHANGE | LASTCHG} [*{mmmdd/yy | mm/dd/yy}]

LASTREFERENCE [*{mmmdd/yy | mm/dd/yy}]

LOC [*n]

NOSAVE [*{ON | OFF}]

OWNER [*signon-id]

PKEY [*program-key]

PROT [*{ON | OFF}]

RPM [*n]

TYPE [*{LINE | SEQ}]

{USECOUNT | USECNT} [*n]

VOLUME [*MTSnnn]

Access Items

ACCESS [=access-type]

{FULLACCESS | FA} [=access-type]

MYACCESS [=access-type]

File Items

Moderately Expensive to Obtain

EMPTY [*{YES | NO}]

EXPFAC [*{DEF | n% | nP}]

MAXLENGTH [*n]

MAXSIZE[*n[P]]
SIZE[*n[P]]
TRUNC[*n[P]]

Very Expensive to Obtain

AVAILSPACE[*n]
AVLEN[*n]
HOLES[*n]
LINES[*n]
MAXHOLE[*n]
MINSIZE[*n[P]]

Item Combinations

CATALOG
ALL
FILE
FULLFILE
TOTAL

Other Items

NAME[=filename]
SUMMARY

MTS SET Command Options

SET option•••

option

AUTOHOLD=[ON|OFF]
*Specifies whether or not to hold *PRINT*, *PUNCH*, and *BATCH* jobs.*

BOTH$=[ON|OFF]
Specifies whether or not to print soft and hard costs after each command.

[BRIEF|TERSE]=[ON|OFF]
Specifies whether or not to suppress or abbreviate many informational and error messages.

CASE=[UC|LC|MX|]
Controls case conversion of data lines read in MTS command mode.

CMDSCAN=[AMBIGUOUS|UNAMBIGUOUS]
Controls MTS command-recognition procedure.
(See note on page 4.)

[CMDSKIP|CMDSKP]=[ON|OFF]
Controls page-skip after command generating printed output in batch.

CONTCHAR=c
Specifies MTS command-line continuation character.
The default is - (hyphen).

COPIES=n
Specifies number of copies of printed output.
The default is 1.

[COST|$]=[ON|OFF]
Prints/does not print cost after each command.

CROUTE=station-code
Specifies on which remote card punch job is to be punched.
The default is CNTR.

DEBUG=[ON|OFF]
Invokes debug mode for each program run.

DELIVERY=delivery-station-code
*Specifies where printed and punched output is to be delivered. The file *DELIVERIES contains a list of delivery station codes and a delivery schedule.*
The default is CNTR.

EBM=[W][H]
Controls the format of 'Execution Begins' message.

ECHO=[ON|OFF]
Specifies whether or not MTS command lines are to be echoed.

ENDFILE=[ON|OFF|ALWAYS|SOURCE|NEVER]
Specifies how ENDFILE is to be recognized.

ERRMAP=[ON|OFF]
Specifies whether or not to produce a loader map on error (batch only).

ERRORDUMP=[ON|OFF|FULL|**LIB**RARY|**NOLIB**RARY]
Specifies whether or not and how to produce a program dump on error (batch only).

ETM=[W][H][T][R]]
Controls the format of 'Execution Terminated' message.

[EXECPFX|EXECPREFIX]=c
Specifies prefix character for executing programs.
The default is a blank.

[] - not necessary { } - required
| - separates alternate forms ••• - preceding field may be repeated

EXECPKEY=[program-key | OFF]
Specifies program-key override.

FILECHAR=c
Specifies file character.
The default is # (number sign).

[**FORM**S | PAPER]=[form-code | DEFAULT]
*Specifies paper to be used for *PRINT* output.*
See page 51 for a list of form codes.

HARD$=[ON | OFF]
Specifies whether or not to print hard dollar cost after each command.

IC=[ON | OFF]
Turns implicit concatenation (i.e., the processing of $CONTINUE WITH lines) on or off.

INITFILE(cls)=[fdname | OFF]
Specifies/disables command language subsystem initialization file.

LBLSEP=c
Specifies MTS command line label separator.
The default is : (colon).

LIBR=[ON | OFF]
*Specifies whether or not to search the library files *LIBRARY and LCSYMBOL plus any public or private libraries specified by the LIBSRCH option.*
Interacts with LIBRARY and LIBSRCH options.

*LIBRARY=[ON | OFF]
*Specifies whether or not to search *LIBRARY.*
Interacts with LIBR and LIBRSRCH options.

LIBSRCH=[OFF | filename]
Specifies which public or private libraries to search.
Interacts with LIBR and LIBRARY options.

LINECNT=n
Sets number of lines per logical page of printed output.
The default is 60.

MAPDOTS=[ON | OFF]
Specifies whether dotted lines around loader map are to be printed or not.

NAME=[name | 'name' | OFF]
Specifies mailbox to be used by message system.

NAMELIB=[filename | OFF]
Specifies name library.

NEWFILEACCESS='string'
where string *is a file-access string enclosed in either single or double quotes.*
Specifies file access to be assigned to all subsequently created permanent files.

ORL=[S | L | n]
where 40≤n≤255.
Specifies output record length.
If S *is specified, length is 70; if* L, *120.*

PAGES=n
*Specifies maximum number of pages per copy of *PRINT* output.*
The default is 100 for non-Q accounts.

PAPER
See FORMS above.

[PASSWORD | PW]

Changes signon password.

PDMAP=[ON | OFF]
Specifies whether or not to print loader map predefined symbols.

[PREFIX | PFX]=[ON | OFF]
Specifies whether or not to print terminal prefix character.

PRINT=[PN | TN | APL | ALA | ANY]
Specifies print train to be used on line printer output.

PRINTCOMMENT='comment'
Specifies comment to appear on header sheet of output.

PRINTER=[PAGE | ANY | LINE]
*Specifies which printer to use for *PRINT* output.*

PRINTPRIO=[**L**OW | **N**ORMAL | **H**IGH | **D**EFERRED | **R**USH]
*Specifies the priority to be used for *PRINT* jobs.*

PRMAP=[ON | OFF]
Specifies whether or not to print loader map pseudo-register information.

PROUTE=station-code
*Specifies on which remote printer *PRINT* output is to be printed.*
The default is CNTR.

RCPRINT=[NEVER | OFF | NO | **POS**ITIVE | **NONNEG**ATIVE | ALWAYS | YES | ON]
Controls printing of user program return code.

RF=[hhhhhh | GRx]
Specifies global relocation factor.
The default is RF=000000.

RIBBON=ribbon-type-code
Specifies line printer ribbon.

ROUTE=station-code
Specifies on which remote printer or card punch output is to be printed or punched.
The default is CNTR.

SEQFCHK=[ON | OFF]
Specifies whether or not to check indexed operation on sequential file.

SIGFILE=[OFF | filename]
Specifies file, if any, to be sourced at signon.

SIGFILEATTN=[ON | OFF]
Specifies whether or not to allow attention to interrupt sigfile processing.

SPELLCOR=[OFF | PROMPT | ON]
Specifies whether or not to perform spelling correction.

SYMTAB=[ON | OFF]
Specifies whether or not to retain loader symbol table.

TDR=[ON | OFF]
Specifies whether or not to print CPU-time and drum-reads for each command.

TERSE
Same as BRIEF above.

TIME=[t | tS | tM | OFF]
Sets local CPU time limit for RUN command.
The default is OFF (i.e., no limit).

TRIM=[ON | OFF]
Specifies whether or not to trim trailing blanks in files.

USMSG=[ON | OFF]

Specifies whether or not to print loader undefined symbol message.

UXREF = {ON | OFF}
Specifies whether or not to print loader cross-reference to undefined symbols.
The default is ON for batch, OFF for terminal jobs.

VERBOSE = {ON | OFF}
Opposite of BRIEF.

VERSION(command) = {NEW | OLD | CURRENT}
Specifies which version of a command is to be used if versions other than CURRENT are available.

XREF = {ON | OFF}
Specifies whether or not to print loader cross-reference listing.

CONTROL Command

Files

CONTROL filename [option]•••

option

{BUFFERS | MAXBUFS} =n
where n *is 3 to 100 for line files and 1 to 100 for sequential files.*
Sets the number of file buffers.

EMPTY
Empties the file.

EXPFAC = {nP | n% | DEFAULT}
Sets the expansion factor for the file.
The default is 5 for both line and sequential files.

MAXSIZE = {n | nP}
where n≤*32767.*
Changes the maximum size of the file.

MAXSIZEINC = [±] {n | nP}
Increments the maximum size of the file.

{PKEY | PGMKEY} =program-key
Sets the program key.

RENUMBER
Renumbers the file.

SAVE | NOSAVE
Specifies whether or not to save the file on the system file-save tapes.

SIZE = {n | nP}
Changes the size of the file.

SIZEINC = [±] {n | nP}
Increments the size of the file.

TRUNCATE
Truncates the file.

See the manual Files and Devices **R***01 for more details.*

Magnetic Tapes

CONTROL *pdn* [option]•••

option

BLK = {ON | OFF}
Enables/disables blocking.

BLK**SIZE** =n
where 18≤n≤*32767.*
Specifies block size.

BSF [n]
Spaces backward n *files.*

BSR [n]
Spaces backward n *physical records.*

{**DSN**AME | NAME} [=name]
Specifies name for next new file written.

DTCHK = {ON | OFF}
Enables/disables expiry-date checking.

EOV
Terminates tape with end-of-volume labels.

EXPDT[=\{mm-dd-yy | mm/dd/yy\}]
Specifies expiry date for new file.

\{FORMAT | FMT | RECFM\}=fmt[(\{size | lrecl | size,lrecl\})[
Specifies blocking format and, optionally, block size and/or logical record length.

FSF[n]
Spaces forward n *files.*

FSR[n]
Spaces forward n *physical records.*

INIT
Initializes (empties) a labeled tape.

LBLTYPE=\{VLO | OS/VS | ANSI\}
Specifies label type.

LP=\{ON | OFF\}
Enables/disables label processing.

LRECL=n
where 1≤n≤32767.
Specifies logical record length.

MINSIZE=n
where 1≤n≤100.
Specifies minimum write block length.

MODE=mode
Specifies tape mode.

POP
Pops tape parameters from stack.

POSN=\{*n* | * | *EOT* | filename\}
Positions tape to nth *file, current file (*), end-of-tape (*EOT*), or* filename.

PUSH
Pushes tape parameters onto stack.

RETRY=n
where 0≤n≤15.
Specifies read error retry count.

REW
Rewinds tape to load point.

SIZE=n
See BLKSIZE above.

SNS
Returns sense data (via subroutine only).

TRANSLATE=\{IBM | MTS(parity) | MTS | NONE\}
Specifies translation scheme for ANSI labeled or ASCII unlabeled tapes; parity *is EVEN, ODD, ZERO, or ONE.*

\{WTM | EOF\}[n]
Writes n *tape marks.*

See the manual Magnetic Tape **T***06 for more details.*

Floppy Disk

CONTROL *pdn* [option]•••

option

Any of the floppy disk keywords that are allowed on the MOUNT command (see page 22) plus the following.

REWIND
Sets the track to 0 and the sector to 1.

FSR[=n]
Spaces forward n *sectors.*

BSR[=n]
Spaces backward n *sectors.*

Fuller definitions of the above keywords are provided in the write-up Floppy Disk **R***305. This document is essential to the floppy disk user.*

Electrostatic Printer/Plotter (ESPP)

CONTROL *pdn* [option]•••

option

EJECT
Issues form feed if fanfold paper or moves paper three inches if continuous roll paper.

See the write-up ESPP **O** *103 for more detail.*

Paper Tape Reader

CONTROL *pdn* [option]•••

option

EOR=nxx
where n *is the number of pairs of hexadecimal digits and* xx *is a pair of hexadecimal digits.*
Specifies the end-of-record sequence.

{NULLDELETE | ND}={ON | OFF}
Specifies whether or not to delete the null character.

PARITY={EVEN | ODD | NONE}
Specifies the paper tape parity.

SIZE=n
where $1 \leq n \leq 32767$.
Specifies the maximum record length.

TRANSLATE={OFF | ON}
Specifies whether ASCII-to-EBCDIC translation is to be suppressed or not.

See the write-up Paper Tape **T** *106 for more detail.*

Paper Tape Punch

CONTROL *pdn* [option]•••

option

BLANK
Punches 25.6 inches of blank paper tape.

[BLOCK=]'string'
Punches string *in block letters.*

EOR=nxx
Specifies the end-of-record sequence.
See the description under paper tape reader above.
PARITY={EVEN | ODD | NONE}
Specifies the paper tape parity.

See the write-up Paper Tape **T** *106 for more detail.*

Terminals

The CONTROL command can be used to make changes to terminal behavior. The form of CONTROL for setting up the terminal is:

CONTROL *MSOURCE* [option]•••

where *option* is a device command. See page 40 for a list of device commands.

Print Jobs

The CONTROL command is used to specify the characteristics you want to be in effect for a particular print job. The form of CONTROL for setting up the printer is:

CONTROL *PRINT* [option]•••

where *option* is a printer keyword. See page 48 for a list of printer keywords.

BATCH

CONTROL *BATCH* [option]•••

option

CANCEL
Cancels the job.

HOLD
Holds the job.

RELEASE
Releases the job.

PUNCH

CONTROL *PUNCH* [option]•••

option

CANCEL
Cancels the job.

CARDS=n
Specifies the maximum number of cards that may be punched.

{CROUTE | ROUTE}=station-code
Routes the job to a remote card punch.

DELIVERY=delivery-station-code
Specifies where output is to be delivered.
*The file *DELIVERIES contains a list of delivery station codes and a delivery schedule.*

HOLD
Holds the job.

RELEASE
Releases the job.

MOUNT Command

Magnetic Tapes

MOUNT [request[;request]•••]
Prototype for *request* is:
[RACK=]racknumber [[ON]{9TP|7TP}] [PNAME=]*pdn* [keyword]••• ['comment']

keyword

BLKPFX=n
where 0≤n≤99.
Specifies the block prefix length for ANSI labeled tapes.
The default is 0 for uninitialized tapes.

BLK**SIZE**=n
where 18≤n≤32767
Specifies maximum block size.
The default is 255 for unlabeled tapes.

{BLOCKING|BLK}={ON|OFF}
Enables/disables blocking.

{**DSN**AME|NAME}=name
Specifies data set file name.

DTCHK={ON|OFF}
Enables/disables expiry-date checking.

EXPDT={mm-dd-yy|mm/dd/yy}
Sets expiration date.

{FORMAT|FMT|RECFM}=fmt[({size|lrecl|size,lrecl})[
where fmt *is U, F, FBS, FB, V, VB, VS, VBS, D, or DB.*
Sets format, size, and logical record length (LRECL).
The default is U(255,255).

INIT={YES|NO}
Initializes/does not initialize labeled tape.

LBLTYPE={VLO|OS/VS|ANSI}
Specifies label type.

LP={ON|OFF}
Enables/disables label processing.
The default is ON for labeled tapes, OFF otherwise.

LRECL=n
where 1≤n≤32767.
Specifies logical record length.
The default is 255 for unlabeled tapes.

MINSIZE=n
where 1≤n≤100.
Specifies minimum block size.
The default is 18.

MODE=mode
Specifies tape mode.
The default is 5EN for seven-track and the current mode for nine-track tapes.

POSN={*n*|*EOT*|name}
Positions tape.

QUIT={YES|NO}
Specifies whether or not to terminate batch job if mount fails.

RETRY=n
where 0≤n≤15.
Specifies retry count for read errors.
The default is 10.

RING={IN | OUT}
Specifies placement of file-protect ring.

SIZE
Same as BLKSIZE above.

TRANSLATE={IBM | MTS(parity) | MTS | NONE}
Specifies translation scheme for ANSI labeled and ASCII unlabeled tapes; parity *is EVEN, ODD, ZERO, or ONE.*

{**VOL**UME | LABEL | VOLSER}={name | 'namexx'}
Specifies volume name of labeled tape.

WRITE={YES | NO}
Specifies placement of file-protect ring.

'comment' User comment field.

See the manual Magnetic Tape **T***06 for more detail.*

Floppy Disks

MOUNT [request[;request]•••]
Prototype for *request* is:
[RACK=]racknumber [ON] FDSK [PNAME=]*pdn* [keyword]••• ['comment']

keyword {POSITION | POSN}=(t,s)
Specifies track and sector positions.
The default is (0, 1).

TRACK=t
Specifies track position only.
The default is 0.

SECTOR=s
Specifies sector position only.
The default is 1.

DDAM={ON | OFF}
Specifies the handling of deleted data address marks (DDAMs).

RETRY=n
where 1≤n≤255.
Specifies retry count for read errors.
The default is 10.

WRITE={YES | NO}
Specifies whether the disk is allowed to be written to or not.

INITIALIZE
Wipes the disk clean.

DENSITY={SINGLE | DOUBLE}
Specifies the density of the disk.
The default is the density determined by the floppy controller at time of mount.

SECMAP={(s,s•••,s†) | **PHYS**ICAL | **DSD**440}
Specifies a nonsequential logical-to-physical sector ordering.
†Up to 26 logical sectors may be specified.

'comment' User comment field.

Datapac Network

MOUNT [request[;request]•••]
Prototype for *request* is:
NET *pdn* [keyword]••• ['comment']

keyword
DEST=hostnumber
Specifies destination of connection.

NOTCOLLECT
Specifies not reverse charging.
The default is collect call.

PRIO={**H**IGH|LOW}
Specifies the priority of the call.
For international calls, the priority must be HIGH.

PROT=ITI
Specifies the host-to-host protocol.

'comment' User comment field.

Note: *A number of source files under the ID NET simplify the process of calling out to remote hosts. See* Terminal User **O***03 and* Network Calls Out **R***310 for more details.*

Electrostatic Printer Plotter (ESPP)

MOUNT [request[;request]•••]
Prototype for *request* is:
ESPP [PNAME=]*pdn* [keyword]••• ['comment']

keyword
DELIVERY=delivery-station-code
The default is CNTR.

{**F**EET|PAGES|PGS}=n
Specifies maximum number of pages of fanfold paper or maximum number of feet of continuous-role paper to be used.
No default—FEET or PAGES must be specified.

LPI=[6|8]
Specifies the number of lines per inch.

'comment' User comment field.

See the write-up ESPP **O***103 for more details.*

Remote Attached Devices (RADs)

MOUNT [request[;request]•••]
Prototype for *request* is:
RAD [PNAME=]*pdn* [keyword]••• ['comment']

keyword
CHARSIZE={5|6|7|8}
Specifies the number of data bits per character.

EOF={'string'|OFF}
Specifies/disables end-of-file string.

[] - not necessary { } - required
| - separates alternate forms ••• - preceding field may be repeated

EOL=['string' | OFF]
Specifies/disables end-of-line delimiter.
The default is RETURN LINEFEED.

ID=nn
Specifies ID for dedicated lines.

INPUT | OUTPUT
Specifies whether the device is capable of input only, output only, or both input and output.

PARITY=[EVEN | ODD | NONE]
Specifies parity.

PROTI=[(keyword,keyword) | ('string','string') | OFF]
Specifies/disables input protocol.

PROTO=[(keyword,keyword) | ('string','string') | OFF]
Specifies/disables output protocol.

SIZE=n
where 8≤n≤256.
Specifies the maximum input or output size.
The default is 72.

SPEED=[10 | 30 | 60 | 120 | 180 | 240 | 480 | 960]
Specifies line speed in characters per second.

STOPBITS=[1 | 2]
Specifies the number of stop bits.
The default is 2 if SPEED= 10, 1 if SPEED> 10.

TYPE=device-type
Specifies the device type.

'comment' User comment field.

See the write-up Remote Attached Devices **T** *101 for more details.*

Paper Tape Reader

MOUNT [request[;request]•••]
Prototype for *request* is:
[RACK=]racknumber [ON] PTPR [PNAME=]*pdn* [keyword]••• ['comment']

keyword

EOR=nxx
where 0≤n≤8.
Specifies end-of-record sequence.
The default is 20D0A.

{NULLDELETE | ND}=[ON | OFF]
Specifies whether or not to delete the null character.

PARITY=[EVEN | ODD | NONE]
Controls parity checking.

QUIT=[YES | NO]
Specifies whether or not batch job should terminate if mount fails.

{RUBOUT**DELETE** | ROD}=[ON | OFF]
Specifies whether or not to delete the rubout character.

SIZE=n
where 1≤n≤32767.
Sets the maximum record length.
The default is 255.

TRANSLATE = {OFF | ON}
Specifies whether ASCII-to-EBCDIC translation is to be suppressed or not.

'comment' User comment field.

See the write-up Paper Tape **T** *106 for more details.*

Paper Tape Punch

MOUNT [request[;request]•••]
Prototype for *request* is:
PTPP [PNAME=]*pdn* [keyword]••• ['comment']

keyword EOR=nxx
where 0≤n≤8.
Specifies end-of-record sequence.
The default is 20D0A.

FEET=n
where 1≤n≤950.
Specifies the maximum length of paper tape to be punched.
The default is 60.

PARITY={EVEN | ODD | NONE}
Controls parity checking.

QUIT={YES | NO}
Specifies whether or not batch job should terminate if mount fails.

TAPE={FANFOLD | REEL}
Specifies the type of tape to be punched.

'comment' User comment field.

See the write-up Paper Tape **T** *106 for more details.*

I/O Modifiers

You can modify the action of a specific I/O call or general I/O usage by means of the following modifiers. Modifiers control such functions as uppercase conversion, logical carriage control, machinge carriage control, record trimming, etc.

When used with FDnames, they are appended to the FDname; when used with I/O subroutine calls, they are given in a fullword of modifier bits.

Modifiers begin with an @ (at sign). If the @ is followed by a ~ (not sign) or - (hyphen), the action of the modifier is negated.

See the manual *Files and Devices* for more detail.

Name	Function	Value (Hex)	Value (Decimal)
SEQUENTIAL	sequential	00000001	1
INDEXED	indexed	00000002	2
EBCD	*EBCDIC translation*	*00000004*	4
BINARY	binary format	00000008	8
LOWERCASE | LC	no conversion to uppercase	00000010	16
CASECONV | UC	conversion to uppercase	00000020	32
NOCARCNTRL | NOCC	no carriage control	00000040	64
STACKERSELECT | SS | CC	logical carriage control	00000080	128
-PFX	no line number prefix	00000100	256
PREFIX | PFX	line-number prefix	00000200	512
-PEEL	no line-number peeling	00000400	1024
PEEL | GETLINE# | RETURNLINE#	peel line number	00000800	2048
-MCC	no machine carriage-control	00001000	4096
MACHCARCNTRL | MCC	machine carriage control	00002000	8192
-TRIM	don't trim blanks	00004000	16384
TRIM	trim trailing blanks	00008000	32768
-SP	no special processing	00010000	65536
SPECIAL	special processing	00020000	131072
-IC	no implicit concatentation	00040000	262144
IC	implicit concatenation	00080000	524288
FORWARDS | FWD	sequential forwards	00100000	1048576
BACKWARDS | BKWD	*sequential backwards*	*00200000*	2097152
-ENDFILE	suppress $ENDFILE recognition	00400000	4194304
ENDFILE	force $ENDFILE recognition	00800000	8388608
NOPROMPT	no prompting for replacement	04000000	67108864
MAXLEN	maximum input length	08000000	134217728
NOEC	no explicit concatenation	10000000	268435456
NOATTN	attention left pending	20000000	536870912
ERRRTN	error return	40000000	1073741824
NOTIFY	notify on I/O call	80000000	-2147483648

Note: The last six modifiers are for subroutine calls only.

The File Editor

In the following list of editor commands, *lpar* stands for any of:

linenumber—an actual line number or any of the following:
- * (the current line)
- *F (first line of file)
- *L (last line of file)
- *N (next line)
- *P (previous line)
- *VT (top line in visual mode)
- *VB (bottom line in visual mode)

linenumber linenumber

linenumber COUNT=n

predefined regions:
- /**F**ILE (*F to *L)
- /**T**AIL (*N to *L)
- /**H**EAD (*F to *)
- /**B**ACK (*P to *F)
- /**R**EVERSE (*L to *F)
- /**S**CAN (all lines successfully matched on the last SCAN command)
- /**M**ATCH (all lines successfully matched on the last MATCH command)

/region-name (user-defined region name)

COUNT=n

(linenumber,linenumber)

(linenumber,COUNT=n)

line-number list (a list of one or more of the above, each element of which is separated by a comma.)

The term *pattern* stands for any of a number of pattern structures, from single pattern elements such as a character string to complicated patterns composed of several elements (strings and variables) with concatenation and alternation operators.

See the manual *File Editor* **R**03 for details about line number parameters, patterns, variables, etc.

Pattern Elements

string
ABORT
ANY(string)
ANYCASE(string)
ARB
ASCII(string)
BREAK(string)
BREAKX(string)
DUPL(string,count)
EBCDIC(string)
FAIL
FENCE

HEX(string)
LC(string)
LEN(string)
LPAD(string,len[,padch])
NOTANY(string)
POS(column)
REM
RPAD(string,len[,padch])
RPOS(column)
RTAB(column)
SIZE(string)
SKIP(string)
SKIPNOT(string)
SPAN(string)
SUBSTR(string,beg[,end])
TAB(column)
UC(string)

Predefined Variables

ED_AZ	Uppercase and lowercase letters
ED_CURSOR_COL	Column of cursor in visual mode
ED_CURSOR_LINE	Line number of cursor in visual mode
ED_CURSOR_POS	POS value (column 1) of cursor in visual mode
ED_FILENAME	Edit file name (without trailing blank)
ED_LCAZ	Lowercase letters
ED_MSOURCE	Reads a line from MSOURCE and returns result as a string
ED_SOURCE	Reads a line from SOURCE and returns result as a string
ED_UCAZ	Uppercase letters
ED_VRULER	Current visual-mode ruler
ED_VRULER_DEF	Default visual-mode ruler
ED_WORK	Contents of work area
ED_09	Numeric characters

Edit Commands

Note: All commands are shown using ' (single quote) as the string delimiter; however, any of ', ", ¢, <, >, $, :, ;, %, &, ~, or # can be used.

ALTER [lpar] ['string1'string2' | pattern]
ALTER [lpar] [pattern1=pattern2]
Valid if PATTERNS=ON.

APPEND [lpar] ['string']

BLANK [lpar] ['string']

CHANGE [lpar] ['string1'string2' | pattern]
CHANGE [lpar] [pattern1=patterns]
Valid if PATTERNS=ON.

CHECKPOINT [FULL | UNDO | NONE]

CLOSE

COLUMN [c1 [c2]]
where c *is a column number.*

COMBINE [lpar] [LEN=n]

COMMENT [message]

CONCATENATE [lpar] [LEN=n]

COPY [lpar | F=fdname] [**C**OUNT=n] [[TO] {linenumber | F=fdname}] [COPIES=n]

CORRECT [lpar] ['command-string']
See File Editor **R***03 for an explanation of this command.*

COUNT [lpar]

DELETE [lpar] [OK]

EDIT [filename | **P**ROCEDURE !procedure-name | VPF pfname} [edit-command]
where pfname *is a visual-mode program-function-key cluster.*

EXECUTE !procedure-name [n]

EXPLAIN [edit-command]

GOTO label [[ON] condition]

condition	**E**NDOFFILE | EOF
	FAILURE
	SUCCESS

INSERT linenumber ['string' | **I**NCREMENT=n]

JUSTIFY [linerange] [{**L**EFT | **R**IGHT | **B**OTH} lc rc]
where lc *is the column to be used as the left margin and* rc *is the column to be used as the right margin.*

LET variable-name=value

LINE [linenumber] [increment | **C**OUNT=n]

MATCH [lpar] ['string' | pattern]

MCMD mts-command

MOVE [lpar] [[TO] {linenumber | F=fdname}]

MTS [mts-command]

[+ | -]n

[+ | -]n.n

OVERLAY [lpar] ['string']

PRINT [[lpar [**CH**ECKPOINT]] | item | {**MES**SAGE | MSG} string-expression]
where string-expression *is a delimited character string, variable name, or combination of both.*

item	**F**ILENAME
	COLUMNS
	REGIONS
	WINDOWS
	PROCEDURES

[] - not necessary { } - required
| - separates alternate forms ••• - preceding field may be repeated

XECS
!procedure-name
VARS
VPFS
VAR variable-name

PROCEDURE !procedure-name

!procedure-name [n]

REGION /region-name [!par]

/region-name

RENUMBER [first last] [beg [inc]]

REPLACE [!par] ['string']

RESTORE [!par]

RETURN

SCAN [!par] ['string' | pattern]

SET keyword=value[{blank | ,}keyword=value]•••
See page 32 for a list of SET keywords.

SHIFT [!par] {**L**EFT | **R**IGHT} count

SPREAD [!par]

STOP

TRANSLATE [!par] ['string1'string2' | string-expression1=string-expression2
[[FROM] fromset] [TO] toset]
where fromset *and* toset *describe the sets of characters to be translated and the nature of the translation. They are usually specified in the following pairs:*

fromset	***toset***	**Function**
EBCDIC	ASCII	EBCDIC to ASCII
ASCII	EBCDIC	ASCII to EBCDIC
UC	LC	uppercase to lowercase
LC	UC	lowercase to uppercase
BCD	EBCDIC	BCD to EBCDIC

The fromset *character set may be omitted in all but the last case.*
Note: The form pattern1=pattern2 *is valid for* 'string1'string2' if PATTERNS=ON.

UNDO

UNLOCK | **UN**LK

VISUAL [linenumber]
See page 34 for a list of visual-mode commands.

WINDOW [m [n]]

XEC !procedure-name

Edit Command Modifiers

The following command modifiers may be applied to override the default actions of individual edit commands or the actions specified by the SET command—see "Edit SET Command Options" below. They may be appended directly to the command name or given as the last parameter on the command line. For example, to specify right-to-left line scanning (the default is left-to-right), you would enter:

SCAN@RTL !par 'string'

or:

SCAN !par 'string' @RTL

You can negate the action of any modifier by prefixing the letter N, the ~ (not sign), or the - (minus sign) to the modifier. For example, to suppress the verification that would normally occur on the edit COPY command, you would specify:

COPY@NV !par TO linenumber

or:

COPY !par TO linenumber @NV

Note: The @ (at sign) always precedes the modifier.

ALL
Applies to all occurrences in the range.
Valid on ALTER, CHANGE, SCAN, and MATCH.
The default is NOTALL.

ANYCASE | AC
Applies to both uppercase and lowercase alphabetic characters in a string or pattern search.
Valid on ALTER, CHANGE, SCAN, and MATCH.
The default is NOTANYCASE.

CHECKPOINT
Stores edit commands in the checkpoint buffer. Note that the buffer must first have been opened by the CHECKPOINT command.
The default is CHECKPOINT.

COLUMN
Obeys the column range set previously by the COLUMN command.
The default is COLUMN.

HEXADECIMAL | X
Treats character strings as hexadecimal strings.
The default is NOHEXADECIMAL.

LINELENGTH | **LEN**GTH
Verifies (prints) line length.
The default is NOLINELENGTH.

LINENUMBER | LNR
Verifies (prints) line number.
The default is LINENUMBER.

LINE**TEXT** | TX·
Verifies line contents.
The default is LINETEXT.

MOVECURRENTLINE | MCL
Moves current line pointer with each edit command.
The default is MOVECURRENTLINE.

NOT

Search succeeds on SCAN or MATCH when string or pattern is **not** *found.*
Valid on SCAN and MATCH.
The default is NOTNOT.

ONCEPERLINE | OPL
Allows only one alteration or scan per line.
Valid on ALTER, CHANGE, SCAN, and MATCH.
The default is NOTONCEPERLINE.

PREFIXLINENUMBER | PLN
Prompts with line numbers.
The default is PREFIXLINENUMBER.

PRINTALL | PA
Prints all alterations of the line. Valid on ALTER and CHANGE.
The default is NOTPRINTALL.

PRINTCOLUMN | PC
Prints column number of match. Valid on ALTER, CHANGE, SCAN, and MATCH.
The default is NOTPRINTCOLUMN.

PROTECTNONPRINT | PNP
Prevents visual-mode alteration of lines containing nonprintable characters.
The default is PROTECTNONPRINT.

RESCAN | RS
Specified in combination with the ALL modifier, causes string or pattern searching to resume at the replaced string. Valid on ALTER and CHANGE.
The default is NOTRESCAN.

RIGHTTOLEFT | RTL
Scans from right to left. Valid on ALTER, CHANGE, SCAN, and MATCH.
The default is NOTRIGHTTOLEFT.

TRIM
Trims all but one trailing blank on written or changed lines.
The default is NOTTRIM.

VERIFY
Prints results of edit commands.
The default is VERIFY.

VISUALMODEVERIFY | VMV
Prints results of edit command issued from the work area in visual mode.
The default is NOTVISUALMODEVERIFY.

WINDOW
Obeys columns specified by a previous WINDOW command.

Edit SET Command Options

The default actions of edit commands may be overridden for the duration of an edit session by the edit SET command. The prototype for the SET command is:

SET option•••

option ALL = {ON | OFF}
Specifies whether or not to process all occurrences for ALTER, CHANGE, SCAN, and MATCH.

BASE=n
Sets the line number to be used as line 0.0 in edit commands and output. The default is 0.0.

CHECKPOINT={ON|OFF}
Specifies whether or not to record the results of edit commands in the checkpoint buffer, if the buffer has been turned on by the CHECKPOINT command.

COLUMN={ON|OFF}
Specifies whether or not to obey the column range set by the COLUMN command.

{DELETEVERIFY|DV}={n|OFF}
Specifies the minimum number of lines to delete without requesting confirmation or turns the mechanism off. The default is 5.

ECHO={ON|OFF}
Specifies whether or not to echo (print) commands. The default is ON for batch, OFF for terminal.

ERROREXIT={ON|OFF}
Specifies whether or not to go to MTS on error. The default is ON for batch, OFF for terminal.

FILLCHAR=c
Specifies the fill character to be used by BLANK, JUSTIFY, MATCH, and OVERLAY. The default is a blank.

{HEXADECIMAL|X}={ON|OFF}
Specifies whether or not to treat character strings as hexadecimal strings.

LC={ON|OFF}
Specifies whether or not to preserve lowercase input in visual mode.

LENGTH={ON|OFF}
Specifies whether or not to verify line length.

{LINENUMBER|LNR}={ON|OFF}
Verifies (prints)/does not verify line number.

LINE**TEXT**={ON|OFF}
Verifies (prints)/does not verify line contents.

MAXLINE=linenumber
Specifies the maximum accessible line. The default is 2147483.647.

{MOVECURRENTLINE|MCL}={ON|OFF}
Moves the current line pointer.

MINLINE=linenumber
Specifies the minimum accessible line number. The default is -2147483.648.

NOT={ON|OFF}
Specifies whether or not search is to succeed on SCAN or MATCH when string or pattern is **not** *found.*

{ONCEPERLINE|OPL}={ON|OFF}
Specifies whether or not to process command once per line.

PADCHAR=c
Specifies pad character. The default is a blank.

PATTERNS={ON|OFF}

Enables/disables pattern matching.

{PREFIXLINENUMBER | PLN} = {ON | OFF}
Specifies whether or not to prompt with line numbers on INSERT command.

{PRINTALL | PA} = {ON | OFF}
Specifies whether or not to print all alterations of a line.

{PRINTCOLUMN | PC} = {ON | OFF}
Specifies whether or not to print column number of match.

{PRINTMARGIN | PMAR} = n
Specifies the right margin for lines output to terminal.
The default is terminal output width.

{PROTECTNONPRINT | PNP} = {ON | OFF}
Specifies whether or not to prevent visual-mode alteration of lines containing nonprintable characters.

{RESCAN | RS} = {ON | OFF}
Specifies whether or not to resume string or pattern searching at the replaced string. Valid on ALTER and CHANGE.

{RIGHTTOLEFT | RTL} = {ON | OFF}
Specifies whether or not to scan from right to left.

SPELLCOR = {ON | OFF}
Specifies whether or not to perform spelling correction on misspelled edit commands.

STOP = {ON | OFF}
Specifies whether or not to terminate edit session on end-of-file or STOP command.

TIMEINTERVAL = {n | OFF}
Enables warning message after n CPU seconds have been used for a single command or turns if off.
The default is 3 (i.e., a warning is issued after three seconds).

TRIM = {ON | OFF}
Specifies whether or not to trim all but one trailing blanks.

VERIFY = {ON | OFF}
Specifies whether or not to verify results of edit commands.

VISUAL = {ON | OFF}
Specifies whether or not to go directly into visual mode on subsequent $EDIT command.

{VISUALMODEVERIFY | VMV} = {ON | OFF}
Specifies whether or not to verify (record in the conversation buffer) commands issued from the visual-mode work area.

VMCOST = {ON | OFF}
Specifies whether or not to display edit session cost in visual-mode command field.

VML = {ON | OFF}
Specifies whether or not to display line numbers in visual mode.

WINDOW = {ON | OFF}
Specifies whether or not to print only the portions of lines within the columns specified by a previous WINDOW command.

{XECCHAR | XC} = c
Specifies the prefix character for edit procedures.
The default is ! (exclamation point).

Edit Visual Mode Commands

VCURSOR **L**INE [linenumber [{col | **Z**IP}]]

VCURSOR **W**ORK [col | **Z**IP]

VCURSOR **H**OME

VEXECUTE

VEXIT [string-expression]

VEXTEND

VINSERT [init] [mult]

VMEMORY [n]

VPF {**S**AVE | **R**ESTORE} pfname

VPF {n | ENTER | CANCEL | PA2 | EOF} = command

VPFB

VPFE

VPREVIOUS

VSPLIT

VUPDATE

[] - not necessary { } - required
| - separates alternate forms ••• - preceding field may be repeated

Messagesystem Command Mode

Messagesystem Commands

Note: Where *ACTIVE* is underlined in the following list, it is the default only if you do not specify a message number.

APPEND [message] [send-command-option]•••

message message-number
ACTIVE | **CUR**RENT | **PRE**VIOUS | **NEX**T

ARCHIVE [message] [[FILE=]filename | *PRINT*] [**H**ISTORY={n | FULL}]

message [MESSAGES=]message-number,•••
ACTIVE | **CUR**RENT | **PRE**VIOUS | **NEX**T

CURRENT [display-command-option]••• [**O**UTPUT=fdname]

DELETE [message]

message [MESSAGES=]message-number,•••
ACTIVE | **CUR**RENT | **PRE**VIOUS | **NEX**T

DESTROY [message]

message [MESSAGES=]message-number,•••
ACTIVE | **CUR**RENT | **PRE**VIOUS | **NEX**T

DISPLAY [message] [item]••• [format]••• [**O**UTPUT=fdname]

message message-number
ACTIVE | **CUR**RENT | **PRE**VIOUS | **NEX**T

item **CHA**RACTERS
DATESENT
HEADER | **SUM**MARY | **FUL**L
EXPIRES
HOLDUNTIL
LINES
RECIPIENTS
SENDER
STATUS
SUBJECT
TEXT
TYPE

format **DEL**ETE | **NODEL**ETE
HISTORY={n | FULL}
NUMBERED | **UNN**UMBERED

DISPLAY [status]••• [**O**UTPUT=fdname]

status ARCHIVE
AUTOEDIT
AUTOHELP
AUTOPROMPT
FORWARD
HISTORY

INTRODUCTION
MAILBOX
MESSAGEFILE
MESSAGES | MSGS | **IN**COMING | **OUT**GOING
NAMEVERIFY
NOTICE
PERMIT
PROMPTSUBJECT
RESULT
REVERSEORDER

EDIT [message] [send-command-option]•••

message [MESSAGES=]message-number,•••
ACTIVE | **CUR**RENT | **PRE**VIOUS | **NEX**T

EXPLAIN [command | term]

FIND {[**N**AME=]'name' | ID=signon-id}

FORWARD [message] [send-command-option]•••

message message-number
ACTIVE | **CUR**RENT | **PRE**VIOUS | **NEX**T

HELP [term]

HISTORY {n | FULL} [**O**UTPUT=fdname]

MCMD [MTS-command]

MODIFY [message] [send-command-option]•••

message message-number
ACTIVE | **CUR**RENT | **PRE**VIOUS | **NEX**T

MTS [MTS-command]

NEXT [display-command-option]••• [**O**UTPUT=fdname]

OPEN {[**M**AILBOX=]mailbox | **DEF**AULT}

PERMIT [access] [who]

access **DEF**AULT
FORWARD
NONE
OPEN
SEND | SEND-MAIL
UNLIMITED

who ALL
ID=signon-id
ME
[**N**AME=]'name'
OTHERS
PROJECT=project-id

POST

PREVIOUS [display-command-option]••• [**O**UTPUT=fdname]

REPLY [message] [option]•••

message message-number
ACTIVE | **CUR**RENT | **PRE**VIOUS | **NEX**T

[] - not necessary {} - required
| - separates alternate forms ••• - preceding field may be repeated

option
APPEND | **NOAP**PEND
EDIT | **NOED**IT
EXPIRE = {date | 'date'}
HOLDUNTIL = {date | 'date'}
INPUT = fdname
[NOT] TO recipient,•••
OK
SUBJECT = {'message-subject' | NONE}
TEXT = 'message-text'
TO ALLRECIPIENTS

RETRIEVE [message]••• [item]••• [format]••• [**O**UTPUT = fdname]

message
[DELETED
HELD
INCOMING | **OUT**GOING
MAIL | **SIG**NONMESSAGES | **BUL**LETINS
MESSAGES =]message-number,•••
NEW | OLD | **NEWA**NDOLD
[NOT] FROM sender,•••
[NOT] TO recipient,•••

item
CHARACTERS
DATESENT
EXPIRES
HEADER | **SUM**MARY | FULL
HOLDUNTIL
LINES
RECIPIENTS
SENDER
STATUS
SUBJECT
TEXT
TYPE

format
DELETE | **NODEL**ETE
DISPLAY**FIRST** | DISPLAY**ALL** | NODISPLAY
FORWARDORDER | **REV**ERSEORDER
HISTORY = {n | FULL}
NUMBERED | **UNNUM**BERED

RETURN {mts-command}

SEND [**MAIL** | **D**ISPATCH] [option]•••

option
EDIT | **NOED**IT
EXPIRE = {date | 'date'}
HOLDUNTIL = {date | 'date'}
INPUT = fdname
[NOT] TO recipient,•••
OK
SUBJECT = {'message-subject' | NONE}
TEXT = 'message-text'

recipient
[ID =]signon-id
[ID =]signon-id-signon-id
LIST = fdname
ME
[**N**AME =]'name'
PROJECT = {project-id | project-id(signon-id-signon-id)}

SET option•••
See the section "Messagesystem SET Command Options" below for a list of the SET options.

STOP

UNDELETE [message]

message message-number
ACTIVE | **CUR**RENT | **PRE**VIOUS | **NEX**T

Messagesystem SET Command Options

SET option•••

option

ARCHIVE = {filename | OFF}
Specifies default archive file.

AUTOEDIT = {ON | OFF}
Specifies whether or not to enable automatic EDIT option.

AUTOHELP = {ON | OFF}
Specifies whether or not to enable help mode.

AUTOPROMPT = {ON | OFF}
Specifies whether or not to enable prompt mode.

ECHO = {ON | OFF | MTS}
Controls the echoing of message-system commands.

FORWARD = {mailbox | OFF}
Specifies the mailbox to which messages should be forwarded.

HISTORY = {n | FULL}
Controls the history message count.
The default is 0.

INPUT = fdname
Specifies input file or device.
*The default is *SOURCE**.

INTRODUCTION = {ON | OFF}
Specifies whether or not to print introductory text to message system.

NAMEVERIFY = {ON | OFF}
Controls name verification on the SEND command.

NOTICE = {'notice-message' | OFF}
Specifies notice message or turns it off.

OUTPUT = fdname
Specifies output file or device.
*The default is *SINK**.

PROMPTSUBJECT = {ON | OFF}
Specifies whether or not to enable subject prompting.

REVERSEORDER = {ON | OFF}
Specifies the order of message retrieval.

TERSE = {ON | OFF | MTS}
Controls the printing of error messages and comments.

WIDTH = terminal-width
Specifies line length.
*The default is *SINK** width.

[] - not necessary { } - required
| - separates alternate forms ••• - preceding field may be repeated

Terminal Device Commands

Many aspects of terminal behavior can be tailored to your purposes by issuing a command of the form:

CONTROL *MSOURCE* device-command

or:

%device-command

where *device-command* is from the lists below. The % (percent sign) is the default device command character (DCC). Refer to the manual *Terminal User* **O**03 for details about the following device commands.

Front-End Terminal Device Commands

The following commands can be issued from terminals that are connected to the front-end processor—AJ510s and DECwriters, for example.

ATTN=\{c | OFF\}
where the character c *is to generate an attention interrupt.*
The default is BREAK.

BINBUFF[=]\{ON | OFF\}
Specifies whether or not I/O done with @BIN modifier is to be included in conversation buffer.

BLANK
Causes next input line to be blanked (hidden).

BUFFER[=]\{ON[,n] | OFF[,n] | n\}
where n *is one of 0, 2, 4, 8, 16, 32, or 64.*
Sets conversation buffer size or turns it off.
The default is ON,2.

CHANGE 'string1'string2'
Changes string1 *to* string2.
Note: Must be specified at end of input line and valid only if %EDIT=ON.

COMMENT text
Outputs text *to terminal; usually issued from a sigfile.*

DCC=c
Specifies device command character.
The default is % (percent sign).

DELAY=m[,n]
where m *and* n *are positive integers less than 21.*
Sets the RETURN *delay to* m *character times and the* LINE FEED *delay to* n *character times.*

DLC=\{c | OFF\}
Specifies the delete line character or turns the facility off.
The default is _ (underscore).

DON'T[=\{ON | OFF\}

Prevents the line disconnect normal at signoff.

DPC={c|OFF}
Specifies the delete previous character.
The default is BACK SPACE.

DTC={x|OFF}
Specifies the delete thyself character.
The default is DEL.

ECHO={ON|OFF}
Specifies whether or not input characters are to be echoed back to terminal.

EDIT[=]{ON[,c][,n]|OFF}
where c *is the edit select character (default is % (percent sign)) and* n *is the number of input lines to buffer (*n *is from 1 to 255; the default is 20).*
Provides simple terminals with additional input line editing and reentry capabilities or turns the facility off.
Enables the CHANGE, FREEZE, LIST, REENTER, and THAW commands.

EFC={x|OFF}
Specifies the end-of-file character or turns it off.
The default is the [(left square bracket).

ELC=x
Specifies the end-of-line character.
The default is RETURN.

EMPTY
Empties the conversation buffer.

FAST
Causes output lines to be recorded in the conversation buffer but not output to the terminal until a read is requested by MTS, at which time the last screenful will be displayed.

FLIP
Reconnects the terminal to the other side of a GRAB/FLIP pair of MTS tasks.

FORMFEED={ON|OFF}
Outputs/does not output ASCII formfeed in front of each output line starting with a 1.

FREEZE[[=]n[m]]
where n *is the number of the first edit buffer line to freeze and* m *is the last.*
Prevents given line range from being overlaid in edit buffer.
Note: Valid only if %EDIT=ON.

GRAB
Allows you to sign on to a second MTS task.

HEX={ON[,c]|OFF}
Enables or disables hexadecimal input and specifies the delimiter (by default the ' (single quote)).

JOBID
Displays task information.

K={UC|LC}
Specifies whether or not input is converted to uppercase.

LEN={n|OFF}
Sets the truncation length for output lines or turns it off.

LIST[[=]n[m]]

where n *is the first (or only) edit buffer line to list and* m *is the last.*
Lists the specified edit buffer lines.
Note: Valid only if %EDIT=ON.

LMAR=n
Sets the left margin for output lines.
The default is 1.

LNC={c|OFF}
Specifies the literal next character or turns it off.
The default is ! (exclamation mark).

OK={ON|OFF}
Specifies whether or not the message "%OK" is to be output to your terminal in response to valid device commands.

PAGE={ON[,n]|OFF}
where n *is from 1 to 255.*
Enables or disables page mode, and if enabled, specifies the number of lines to output to the terminal at a time.

PARITY={ON|OFF}
Specifies whether or not to generate and check parity bits.

PFC[=]{c|OFF}
where c *is any character not in use for input line editing.*
Specifies program function key flag character or turns off PF key input. (This command is useful only on terminals that do not have program function keys; PF keys are enabled by default on AJ510s.)

PF?
Displays program function key assignments.

PFn[c]={string|OFF}
Performs program function key assignment.

PRENT={ON|OFF}
Enables/disables input pre-entry.

PTIP={ON[;p][,n]|OFF}
where p *is one of R (parity reverse to that of terminal), N (no parity), or O (paper tape mode is to stay on after an attention interrupt).*
Allows terminal to enter or leave paper tape input mode and set its parameters to control automatic transmission of input lines from a paper tape or cassette drive attached to the terminal.
Note: Not applicable on AJ510 terminals.

PTOP={ON[,2]|OFF}
Controls the setting of paper tape output mode.
Note: Not applicable on AJ510 terminals.

REENTER n['string1'string2']
where n *is the edit buffer input line to be reentered.*
Allows you to reenter an input line from your edit buffer and optionally change it.
Note: Valid only if %EDIT=ON.

RESET
Resets device commands to their default settings.

RMAR=n
Sets the right margin for output lines. (Note: The number of characters output on a write to

the terminal is limited by the LEN setting.)
Defaults to the terminal's carriage width.

ROLL
Sets the output mode to roll (the default).

TABI=[ON[;c][,tablist•••]|OFF]
where c is a character not in use for input line editing.
Enables/disables input tabbing and specifies the logical tab character (c). Up to ten tab stops may be specified in tablist.

TABO=[ON[;c][,t•••]|OFF]
where c is a character not in use for input line editing.
Enables/disables output tabbing and specifies the logical tab character (c). Up to ten tab stops may be specified in tablist.

TCC=[ON|OFF]
Specifies whether or not control characters are allowed out to your terminal. If TCC=ON, control characters are translated to ? (question marks).

TERMINAL[=]type
where type *is a valid terminal type.*
Identifies your terminal and adjusts the FECP support accordingly.

[TERMINALIDS|TERMIDS]
Displays current list of terminal IDs.

THAW[[=]n[m]]
where n *and* m *are edit buffer line numbers.*
Allows frozen lines to be overlaid.
Note: Valid only if %EDIT=ON.

TRATE=n
where n *is from 1 to 9.*
Changes the terminal's communication speed.

{WB|WF|WR|WL}[[=]n]
where 0≤n≤256 for WR and WL and 0≤n≤32767 for WF and WB.
Allows you to move around (window) in your conversation buffer.

?
Displays current device command and PF key settings.

AJ510 Terminal Control Characters

End-of-line	RETURN
Delete previous	BACKSPACE
Attention	BREAK
End-of-file	CTRL RETURN
Device command (DCC)	% (percent sign)
Literal next (LNC)	! (exclamation mark)
Hex Delimiter	' (single quote)

[] - not necessary { } - required
| - separates alternate forms ••• - preceding field may be repeated

3270 Device Commands

The following device commands are valid on Couriers and other 3270-type terminals.

ACTIVITY[[=]ON|OFF]
Produces a display of your task status and resource utilization.

AUTOGRAB
Allows %GRAB and %FLIP to be used interchangeably.

BLANK
Causes next input line to be blanked.

BRIGHT
Causes next input or output line to be brightened.

BUFFER[=]n
where n *is from 0 to 32.*
Specifies the size of the conversation buffer.
The default is 2.

CBEGIN
*Specifies the first line read from *MSOURCE*@SP.*

CEND
*Specifies the last line read from *MSOURCE*@SP.*

COMMENT character string
Displays character string *on the screen.*

CONTRACT[[=]n]
Changes the size of the input area; deletes n *lines.*

DCC[=]c
where c *is any character.*
Specifies the device command character.
The default is % (percent sign).

DC?|%?
Displays the current status of several device command parameters.
The form %? provides the current PF key definitions as well.

{DEQUEUE|DQ}[[=]n]
Deletes the n *most recently queued input lines.*
The default for n *is 1.*

DUPLEX[[=]{ON|OFF}]
Enables/disables duplex input.

EMPTY
Empties/clears the conversation buffer.

ENTER
Adds the current contents of the input area to the conversation buffer.
This command is only useful when defined on a PF key.

EOF
Generates an end-of-file condition to MTS.

EQ|**M**TQ
Empties the input queue.

EXPAND[[=]n]
Changes the size of the input area; adds n *lines.*

FAST
Specifies FAST output mode—output lines are recorded in the conversation buffer but not written to the screen until an input line is requested.

FLIP
If signed on to the same terminal twice, switches the terminal to the other MTS task. (See GRAB below.)

FOOTER[[=]text]
Displays text *at the bottom of the screen. If no text is supplied, the footer is deleted.*

FREEZE[=]n
Freezes (preserves) the top n *lines on the screen.*

GRAB
Starts a new MTS job on the terminal's 'other side'. (See FLIP above.)

HEX[[=]{ON|OFF}] [;c]
Enables/disables hexadecimal input editing, and if enabled, specifies the delimeter to be used.
The default delimiter is the ' (single quote).

HIST[[=]n]
where n *is an integer from 1 to 22.*
Specifies the number of lines of conversation history in LINE mode.

INSERT[=]string
Inserts string *at the current position in the input area; useful only when defined by a PF key.*

{JF|JB}[[=]n]
Jumps forward or backward to the n*th jump point in the conversation buffer.*
Jump points are set with the JSET command.
Default values for n *are the last window for JF and 1 for JB.*

JOBID
Displays the device name, task number, signon id, time, and date.

JSET | **JR**ESET | **JC**CLEAR
Sets (JSET), resets (JRESET), or clears (JCLEAR) the jump window.

[**K**EYBOARD[=]]{UC|LC}
Enables/disables translation of input to uppercase.

LCI
Specifies that lowercase input is to be preserved.

LENGTH
Same as ORL.

LINE
Specifies LINE output mode.

LNC[=]{c|OFF}
where c *is any character except , (comma), ; (semicolon), or (blank).*
Specifies the literal next character.
The LNC is undefined by default.

ORL[[=]n]
where n *is from 1 to 255.*
Changes the maximum output record length to n.

The default is 77.

PAGE
Specifies PAGE output mode.

PAUSE
Enters pause mode.

PFn[[=]text]
Redefines the program function key n *to* text. *If* text *is omitted, the PF key becomes undefined; i.e., no action is taken when that key is pressed.*

PFSAVE[=]name
PFRESTORE[=]{name | DEFAULT}
PFDELETE[=]name
Saves (PFSAVE), restores (PFRESTORE), or deletes (PFDELETE) PF key definitions.

PF**?**
Displays PF key definitions.

QUEUE
Displays the input queue of lines that have been entered asynchronously but not yet delivered to MTS.

QUIT
Performs an emergency signoff.

RATE[[=]n]
where n *is any integer between 0 and 9.*
Specifies the output speed.
The default is 5.

REFRESH
Rewrites the screen. (Same as the CLEAR *key.)*

RESET
Resets the device command parameter to initial status.

ROLL
Specifies ROLL output mode.

{TAB! | TI | **T**ABS}[[=]{ON | OFF}[;[c | c tablist | c{,A | ,F | ,P}]]]
where c *is any character not already assigned to an editing function* ***except*** *, (comma) ; (semicolon), blank, the letters A, F, or P, or the digits 0 through 9. Up to 20 tab settings may be given for* tablist.
Enables/disables input tabs.

TABO[[=]{ON | OFF}[;[c | c tablist | c{,A | ,F | ,P}]]]
where c *is any character not already assigned to an editing function* ***except*** *, (comma) ; (semicolon), blank, the letters A, F, or P, or the digits 0 through 9. Up to 20 tab settings may be given for* tablist.
Enables/disables output tabs.

THAW
Undoes the effect of FREEZE (see above).

TOP[[=]ON | OFF]
Specifies the interpretation of the 1 carriage control.

UC
Causes input to be converted to uppercase.
The default is LC.

WAIT
Prevents the signoff that normally occurs after 60 minutes of terminal inactivity.

{WB | WF | WR | WL} [[=] n]
Used to window around in the file.

WINDOW [[=] n]
Display the nth window.

ZIP
Moves the cursor to end of input area (i.e., to the first null character on the screen).
Only useful when defined by a PF key.

?
Gives a summary of current device commands and PF key definitions.

3270 Terminal Control Characters

End-of-line	ENTER
Delete previous	←
Delete line	CLEAR
Attention	PA1
End-of-file	PA2
Device command (DCC)	% (percent sign)
Hex Delimiter	" (double quote)
Pause mode	TEST REQ

[] - not necessary { } - required
| - separates alternate forms ••• - preceding field may be repeated

Using a Printer

Computing Services has two kinds of printers: the IBM 1403 line printer which uses 15 x 11 perforated paper (which can be cut and burst to the desired size), and the Xerox 9700 laser page printer which prints onto 8½ x 11 paper at the rate of two images per second. The page printer is by far the higher quality printer and is the default printer. The line printer, however, supports certain special forms that are not available on the page printer—catalogue cards and braille paper, for example. Self-adhesive labels are available on both printers.

Printed output is normally placed in specially marked bins in the I/O Room, 240 General Servces Building. You may specify that your output be delivered to a different campus building (see the DELIVERY keyword below). The file *DELIVERIES contains a list of DELIVERY codes and a delivery schedule. You may see the schedule at your terminal by giving the MTS command:

```
copy *deliveries
```

Printer Keywords

You specify the characteristics you want to be in effect for a particular print job by means of a variety of keywords available on the MTS SIGNON, SET, and CONTROL commands, and through calls to the CONTROl subroutine.

If you give printer keywords on the SIGNON line or by means of the SET command, the specified characteristics will be in effect for all print jobs generated during that signon session; the CONTROL command allows you to tailor individual print jobs to your needs. The prototypes for the three methods are:

```
SIGNON signon-id option•••
SET option•••
CONTROL *PRINT* option•••
```

where *option* is a keyword=value pair from the list below. Note: *PRINT* is the pseudodevice name for the printer.

AUTOHOLD={ON|OFF}
Holds/does not hold a print job until you explicitly release it; i.e., allows you to send more than one piece of output to one print job.

BACKOVERLAY={overlay|DEFAULT}
where overlay *is an overlay name from the list under the OVERLAY keyword below.*
Specifies the overlay to be used for the back of each sheet.

COPIES=n
Specifies the number of copies you want printed.
The default is 1.

DELIVERY=code
where code *is a delivery code from the list in *DELIVERIES.*
Specifies where you want your output delivered.
The default is CNTR (the I/O Room, 240 GSB).

FONT = {font | DEFAULT}

Specifies the font—style, density, size, pitch, orientation, and character set—to be used. The format in effect determines which fonts may be specified. (See the FORMAT keyword below.)

font

Fonts available for FMTL1:

1200.MEDIUM.9.FIXED.LANDSCAPE.1
The default for FMTL1—TN character set, medium.

1200.BOLD.9.FIXED.LANDSCAPE.1
TN bold.

1200.ITALIC.9.FIXED.LANDSCAPE.2
TN italic.

ALA.MEDIUM.9.FIXED.LANDSCAPE.3
ALA character set, available only in medium density.

APL.MEDIUM.9.FIXED.LANDSCAPE.4
APL character set, available only in medium density.

Fonts available for FMTP1 and FMTP2:

1200.MEDIUM.12.FIXED.PORTRAIT.1
TN character set, medium.

1200.BOLD.12.FIXED.PORTRAIT.1
TN bold.

1200.ITALIC.12.FIXED.PORTRAIT.2
TN italic.

ALA.MEDIUM.12.FIXED.PORTRAIT.3
ALA character set, available only in medium density.

APL.MEDIUM.12.FIXED.PORTRAIT.4
APL character set, available only in medium density.

Fonts available for FMTP3 and FMTP4:

1200.MEDIUM.6.FIXED.PORTRAIT.1
ASCII characters, medium.

1200.MEDIUM.6.FIXED.PORTRAIT.2
TN character set, medium.

Fonts available for FMTP5 and FMTP6:

SERIF.MEDIUM.12.FIXED.PORTRAIT.1
Serif Courier, medium.

SERIF.BOLD.12.FIXED.PORTRAIT.1
Serif Courier, bold.

1200.ITALIC.12.FIXED.PORTRAIT.2
TN italic.

ALA.MEDIUM.12.FIXED.PORTRAIT.3
ALA character set, available only in medium density.

APL.MEDIUM.12.FIXED.PORTRAIT.4
APL character set, available only in medium density.

Fonts available for UNIVERSL1:

UNIVERS.MEDIUM.10.PROP.LANDSCAPE.1
TN medium.

UNIVERS.BOLD.10.PROP.LANDSCAPE.1
TN bold.

UNIVERS.ITALIC.10.PROP.LANDSCAPE.1
TN italic.

Fonts available for UNIVERSP1 and UNIVERSP2:

UNIVERS.MEDIUM.10.PROP.PORTRAIT.1
TN medium.

UNIVERS.BOLD.10.PROP.PORTRAIT.1
TN bold.

UNIVERS.ITALIC.10.PROP.PORTRAIT.1
TN italic.

Fonts available for TYPEP1 and TYPEP2:

LETTER-GOTHIC.MEDIUM.11.FIXED.PORTRAIT.1
TN medium.

PRESTIGE-ELITE.MEDIUM.11.FIXED.PORTRAIT.2
TN medium.

Fonts available for SCIENTIFICP1 and SCIENTIFICP2:

SERIF.MEDIUM.12.FIXED.PORTRAIT.1
2Serif Courier medium.

SERIF.BOLD.12.FIXED.PORTRAIT.1
Serif Courier bold.

1200.ITALIC.12.FIXED.PORTRAIT.2
TN italic.

SCIENTIFIC.MEDIUM.12.FIXED.PORTRAIT.5
Greek and math medium.

ALA.MEDIUM.12.FIXED.PORTRAIT.3
ALA medium.

Fonts available for MANUALSP1 and MANUALSP2:

SERIF.MEDIUM.11.FIXED.PORTRAIT.1
Serif Courier medium.

SCIENTIFIC.MEDIUM.11.FIXED.PORTRAIT.2
TN and Greek medium.

Note: As new fonts are added to the page printer, they are announced in the Bulletin *and added to the file *PGPTR.FONTS.*

FONTNEXTIMAGE = {font | DEFAULT}
where font *is a font name from the list under the FONT keyword above and is valid for the format in effect.*
Specifies the font that is to be used for the next image.
Note: This keyword is not available on the SIGNON and SET commands.

FORMAT = {format | DEFAULT}

format

FMTL1
Landscape format with 0.3-inch top margin, 0.66-inch left margin, 132 characters per line, 66 lines per image.

FMTP1
Portrait format with no top margin, 0.7-inch left margin, 78 characters per line, 66 lines per image.

FMTP2
Portrait format with no margins, 78 characters per line, 66 lines per image. Note: This format is intended to be used with a text processing program (such as TEXTFORM) which will format the page.

FMTP3 | DEFAULT
Portrait format with two logical pages per image. An image can accommodate 132 characters per line and 132 lines.
This is the default format.

FMTP4
Portrait format with 120 lines per logical page, 132 characters per line, and 132 lines per image.

FMTP5
Portrait format with 0-inch top margin and 0.7-inch left margin, 6 lines per inch, and 10 characters per inch. Contains the Serif Courier fonts and ALA and APL special characters.

FMTP6
Same as FMTP6 but with 0-inch left margin.

UNIVERSL1
Landscape format with 0.2-inch top margin, 0-inch left margin, 59 lines per image. Contains the Univers proportional fonts.

UNIVERSP1
Portrait format with 0-inch top margin, 0.7-inch left margin, 76 lines per image. Contains the Univers proportional fonts.

UNIVERSP2
Same as UNIVERSP1 but with 0-inch left margin.

TYPE1
Portrait format with 0-inch top margin, 0.7-inch left margin, 6 lines per inch. Letter-Gothic provides 10 characters per inch while Prestige-Elite provides 12.

TYPE2
Same as TYPE1 but with 0-inch margin.

SCIENTIFICP1
Portrait format with 0-inch top margin and 0.7-inch left margin, 78 characters per line, 66 lines per image.

SCIENTIFICP2
Same as SCIENTIFICP1 but with 0-inch left margin.

MANUALSP1
Portrait format with 0-inch top margin and 0.7-inch left margin, 93 characters per line, 66 lines per image.

MANUALSP2
Same as MANUALSP1 but with 0-inch left margin.

{**FORM**S | PAPER} = {form | DEFAULT}

form

Page Printer

BA (the default)
8½" x 11" plain

CL
8½" x 11" light cardboard

DC
8½" x 11" University interdepartmental correspondence

L1
rectangular labels 2⅞" x .74" (four across)

L2
rectangular labels 3.7" x .99" (three across)

L3
rectangular labels 1" x 2.83" (three across)

L4
rectangular labels 1.38" x 2.83" (three across)

LL
rectangular label 8½" x 11"
OM†
optical scanning form
PB†
optical scanning form
QU†
optical scanning form
X3
three-holed 8½" x 11" (holes on left side in Portrait, top in Landscape)
X4
three-holed 8½" x 11" (holes on right side in Portrait, bottom in Landscape)
XK
8½" x 11" Earnscliff bond (thesis)
MI
any user-supplied form

† For information contact Dan Precht at 432-2261.

Line Printer

AA
11" by 15" lined
AS
8½" by 15" lined
BA (the default)
11" by 15" blank
HA
12" by 14⅞" Xerox Cheshire heat-activated paper labels
MI
any user-supplied form
TA
rectangular labels 3½" x 15/16" (one across)
TC
rectangular labels 3½" x 15/16" (three across)
TJ
rectangular labels 4" x 17/16",f 8 (one across)
TS
curved labels 3⅞" x 1¾" (one across)
..
11" x 15" Braille paper

FRONTOVERLAY = {overlay | DEFAULT}
where overlay *is an overlay name from the list under the OVERLAY keyword below.*
Specifies the overlay for the front of each sheet.

OVERLAY = {overlay | DEFAULT}

overlay

LANDSCAPE.DEFAULT
Overlay with "University of Alberta" printed vertically in small letters on the left-hand side of the paper.
The default overlay for FMTL 1.
LANDSCAPE.1.BOX.LINED.3
Lined overlay that simulates the lined paper used on line printers.
PORTRAIT.DEFAULT
Overlay with "University of Alberta" printed vertically in small letters on the

left-hand side of the paper.
The default overlay for FMTP1 and FMTP2.

BACK.PORTRAIT.DEFAULT
Same as PORTRAIT.DEFAULT but overlay is printed on the back side of the paper.

PORTRAIT.2.BOXES
Encloses in boxes the two logical pages in FMTP3 format.
The default overlay for FMTP3.

BACK.PORTRAIT.2.BOXES
Same as PORTRAIT.2.BOXES but overlay is printed on the back side of the paper.

PORTRAIT.2.BOXES.LINED.6
Puts a box around each logical page and a dotted line under every sixth line in FMTP3 format.

BACK.PORTRAIT.2.BOXES.LINED.6
Same as PORTRAIT.2.BOXES.LINED.6 but overlay is printed on the back side of the paper.

BLANK
Blank (i.e., no) overlay.

NONE
Same as BLANK but not changed when a format change is made.

PACKAGE=[STAPLE | LOOSE | DEFALULT]
Specifies whether or not the output is to be stapled.

PAGES=n
Specifies the maximum number of pages that may be printed on an individual print job.
The default for non-Q accounts is 100.

PRINT=[PN | TN | ALA | ANY]
Specifies the print train to be used on the line printer.

PRINTER=[PAGE | LINE | ANY]
Specifies the printer to be used to print the output.

PRINTON=[**BOTH**SIDES | **ONE**SIDE | **FRONT**ONLY | **BACK**ONLY]
Specifies whether output is to be printed on one side of paper only, on both sides, on front only, or on back only.

PRIORITY=[**R**USH | **H**IGH | **N**ORMAL | **L**OW | **D**EFERRED | DEFER]
Specifies the priority at which the job is to be printed.

RETURN
Same as DELIVERY above.

[ROUTE | PROUTE]=code
Specifies which remote printer is to be used to print the job.

SKIPTO=[NEXTSIDE | NEXTFRONT | NEXTBACK | NEXTSHEET]
Specifies on which image to print the coming output.
Note: This keyword is not available on the SIGNON and SET commands.

See the manual Files and Devices **R***01 and the write-up* Using the Printer from a Terminal **O***110 for more information.*

reference

Computing Services
The University of Alberta

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SDS Supplement to *MTS Reference*

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SDS Command Language

ACTIVATE {name | **F**LOW | **C**HANGES | **R**EFERENCES}•••

ALTER location {constant | location}

AT location••• [;command]

ATTRIBUTE location•••

BREAK location•••

CLEAN [option]•••

option	
	AT
	BREAK
	CALLS
	CHANGES
	COUNT
	FLOW
	LABEL
	ONS
	REF
	SIM
	WHENS

COMMENT [text]

CONTINUE [location]••• [T=x]

CSECT {section | n | *}

DEACTIVATE {name | **F**LOW | **C**HANGES | **R**EFERENCES}•••

DEBUG filename [i/o-unit]••• [limit]••• [PAR=parameters]
Same as the MTS DEBUG command.

DISPLAY location[...location]•••

DROP {section | location}•••

DUMP [PSW | GRS | FRS | section]•••

END

FULLDISPLAY location•••

GOTO location [location]••• [T=x]

HEXDISPLAY location[...location]•••

IF expression [;command]

IGNORE breakpoint-label {n | location}

INCLUDE filename

LIST [option]

option	
	AT
	BREAK
	CALLS

[] - not necessary { } - required
| - separates alternate forms ••• - preceding field may be repeated

CHANGES
COUNT
FLOW
LABEL
MODS
ONS
REF
SIM
WHENS

MAP [FULL | DSECT]

MCMD mts-command

MODIFY location {constant | location}

MTS [mts-command]

ON on-condition [;command]

PARLIST location [count]

QUALIFY location•••

RESET [on-condition]•••

RESTORE [location | name]•••

RETURN [mts-command]

RUN [location]••• [T=x]

SCAN [{section | location1. . .location2 | *} {constant | location}]

SDS

SET option•••
See the section "SDS SET Command Parameters" for a list of SET options.

STEP [n[**B**RANCH]]

STOP

SYMBOL location•••

TIMETALLY {ON | OFF | PRINT | RESET | CLEAR} [option]•••

TRACE trace-option [location]•••
See the manual Symbolic Debugging System **R***02 for details.*

UNDO

USING {section | location} location

WHEN [name] {expression | location **C**HANGES};command

SDS Modifiers

The following modifiers apply to the address location:

@TYPE=x[Li][Sj]
Sets the type, length, and scale attributes.

x		
	A	A-type address constant
	B	binary
	C	character(EBCDIC)
	D	floating-point (long)
	E	floating-point (long or short)
	F	fixed-point integer
	H	fixed-point integer (halfword)
	I	instruction
	L	logical (FORTRAN)
	M	complex (FORTRAN)
	P	packed decimal
	S	S-type address constant
	V	V-type address constant
	W	channel command word
	X	hexadecimal
	Y	Y-type address constant
	Z	zoned decimal

@LENGTH=i
where i *is from 1 to 65535.*
Sets the length attribute.

@SCALE=j
Sets the binary scale factor.

@CSECT=cs
Restricts the storage reference to the control or common setcion cs.

@GEN=n
Restricts the storage reference to generation n *of current control section.*

@DSECT=ds
Restricts the storage reference to the dsect ds.

@PRO=xxx
Restricts the storage reference to the external procedure xxx.
For PL/I programs only.

@BLOCK=n
Restricts the storage reference to block level n *of an external procedure.*
For PL/I programs only.

@INV=n
Restricts the storage reference to invocation n *of a recursive procedure or controlled data variable.*
For PL/I programs only.

@#nn
Specifies the compilation statement number for the data variable.
For PL/I programs only.

The following modifiers apply to the address itself:

@Q *symbolic location*
@R *hex relative location*
@A *hex absolute (virtual) address*
@X *forces hex conversion*
@D *forces decimal conversion*

SDS SET Command Parameters

SET option•••

option

AT=[ON|OFF]
Specifies whether or not to perform at-point processing.

ATPREFIX=c
Specifies the command-insertion mode prefix character.
The default is ? (question mark).

ATTN=[ON|OFF]
Controls attention-interrupt processing.

BLANK=name
Specifies the symbol for blank-named common sections
The default is a blank.

BREAK=[ON|OFF]
Controls breakpoint processing.

[BRIEF|TERSE]=[ON|OFF|MTS]
Specifies whether or not to eliminate many confirmation and diagnostic messages.
The default is the current setting of the MTS BRIEF/TERSE option.

COMMON=[ON|OFF]
Specifies whether or not to merge common sections in the symbol table.

DSECTS=[ON|OFF]
Specifies whether or not to include duplicate dsects in the symbol table.

DUMP=[SHORT|FULL]
Controls DUMP command processing.

ECHO=[ON|OFF|MTS]
Specifies whether or not to echo SDS commands.
The default is the current setting of the MTS ECHO option.

ENTRY=location
Specifies the entry-point to the user's program.

ERRORDUMP=[ON|OFF|FULL]
Specifies whether or not to perform a symbolic dump on error.

FULLSCAN=[ON|OFF]
Controls SCAN command processing.

FULLSEARCH=[ON|OFF]
Specifies whether or not to extend the scope of CSECT and DSECT modifiers and CSECT command to entire program.

FULLSIM=[ON|OFF|FULL]
Controls the simulation of low-core library routines.

INDCH=c

Specifies the indirection character.
The default is $ (dollar sign).

INDEX={ON|OFF}
Control index processing for symbols.

INPUT=fdname
Specifies the source for SDS commands.

IS={67|70}
Specifies the simulator instruction set.

LEN=n
where n is from 1 to 65535
Specifies the default length attribute.
The default is 4.

LLX={ON|OFF}
Specifies whether or not to include LINK, LOAD, and XCTL calls in the symbol table.

i/o-unit=fdname
Specifies the logical i/o assignments for user's program.

MODCH=c
Specifies the modifier character.
The default is @ (at sign).

OMAPCH=c
Specifies the open-map character
The default is * (asterisk).

OUTPUT=fdname
Specifies where to write SDS output lines.

PAR=text
Specifies the parameter field for user's program.

PGNT={ON|OFF}
Controls program interrupt processing.

PRAREA=name
Specifies the symbol for the pseudo-register area.
The default is PRAREA.

PREFIX=c
Specifies the SDS prefix character.
The default is + (plus sign).

RF=constant
Specifies the default relocation factor.
The default is 0.

SCALE=n
Specifies the default binary scale factor.
The default is 0.

SIM={ON|OFF}
Controls simulation of user's program.

{TERSE
Synonym for BRIEF.

TIMN={ON|OFF}
Controls timer interrupt processing.

TYPE=code
Specifies the default type attribute.
The default is X (hexadecimal).

VERBOSE={ON|OFF|MTS}

Specifies whether or not to perform complete message processing. The default is the current setting of the MTS VERBOSE option.

WARNMSG = {ON | OFF}

Specifies whether or not to suppress warning messages.

XFR = {ON | OFF}

Specifies whether or not to intercept LINK, LOAD, XCTL, and UNLOAD calls.