

SYSTEM ADMINISTRATOR



The Programmer's Companion

PRIME

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The Programmer's Companion is a new series of pocket-size, quick-reference guides to Prime software products

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GLOSSARY OF PRIME CONCEPTS AND CONVENTIONS

The following is a glossary of basic concepts and conventions of Prime computers: the PRIMOS operating system, and the file system.

abbreviation of PRIMOS commands Only internal PRIMOS commands may be abbreviated.

binary file A translation of a source file generated by a language translator (PMA, COBOL, FTN, RPG). Such files are in the format required as input to the loaders. Also called **object file**.

byte 8 bits: 1 7 bit ASCII character plus 1 parity bit.

CPU Central Processor Unit (the Prime computer proper as distinct from peripheral devices or main memory).

current directory A temporary working directory.

directory A file directory, a special kind of file containing a list of files and/or other directories, along with information on their characteristics and location. MFDs, UFDs, and subdirectories (sub UFDs) are all directories. (Also see **segment directory**.)

directory name The file name of a directory.

external command A PRIMOS command existing as a runfile in the command directory (CMDNCO). It is invoked by name and executes in user address space. External commands print GO when starting and cannot be abbreviated.

file An organized collection of information stored on a disk (or a peripheral storage medium such as tape). Each file has an identifying label called a **filename**.

filename A sequence of 32 or fewer characters which names a file or a directory. Within any directory, each filename is unique. Directory names and a filename may be combined into a pathname. Most commands accept a pathname wherever a filename is required.

Filenames may contain only the following characters:

A Z 0 9 _ # \$ - * &

The first character of a filename must not be numeric. On some devices, underscore (_) prints as backarrow (←).

filename conventions: Prefixes indicate various types of files. These conventions are established by the compilers and loaders, or by common use, and not by PRIMOS itself.

B_filename	Binary (object) file
C_filename	Command input file
L_filename	Listing file
M_filename	Load map file
O_filename	Command output file
PH_filename	Phantom command input file
filename	Source file or text file
*filename	SAVED (executable) R-mode runfile
#filename	SAVED (executable) V-mode runfile

file-unit: A number between 1 and 63 ('77) assigned as a pseudonym to each open file by PRIMOS. This number may be given in place of a filename in certain commands, such as CLOSE. PRIMOS-level internal commands require octal values. Certain commands or activities use particular unit numbers by default.

PRIMOS assigned units	Octal	Decimal
INPUT, SLIST	1	1
LISTING	2	2
BINARY	3	3
AVAIL	5	5
COMINPUT	6	6
SEG's loadmap	13	11
COMOUTPUT	77	63
EDITOR	1,2	1,2
SORT	1-4	1-4
RUNOFF	1-3	1-3

file protection keys: See **keys, file protection.**

home directory: The user's main working directory, initially the login directory.

identity: The addressing mode plus its associated repertoire of computer instructions. Programs compiled in 32R or 64R mode execute in the R-identity, programs compiled in 64V mode execute in the V-identity, programs compiled in 32I mode execute in the I-identity. R-identity, V-identity, and I-identity are also called R-mode, V-mode, and I-mode.

internal command A command that executes in PRIMOS address space. Most do not overwrite the user memory image. Internal commands can be abbreviated. See "abbreviation of PRIMOS commands."

keys, file protection Specify file protection as in the PROTEC command.

0	No access
1	Read
2	Write
3	Read/write
4	Delete and truncate
5	Delete, truncate and read
6	Delete, truncate and write
7	All rights

LDEV Logical disk device number as printed by the command STATUS DISKS. (See **ldisk**.)

ldisk: A parameter to be replaced by the logical unit number (octal) of a disk volume. It is determined when the disk is brought up by a STARTUP or ADDISK command. Printed as LDEV by STATUS DISKS.

logical disk A disk **volume** that has been assigned a logical disk number by the operator or during system startup.

MFD The Master File Directory. A special directory that contains the names of the UFDs on a particular disk or partition. There is one MFD for each logical disk.

mode An addressing scheme. The mode used determines the construction of the computer instructions by a compiler or assembler. (See **identity**.)

nodename: Name of system on a network assigned when local PRIMOS system is built or configured.

number representations

xxxxx	Decimal
'xxxxx	Octal
\$xxxxx	Hexadecimal
Bxxxxx	Binary

object file See **binary file**.

open Active state of a file-unit. A command or program opens a file-unit in order to read or write it.

output stream Output from the computer that would usually be printed at a terminal during command execution but which is written to a file if COMOUTPUT command was given

packname See **volume-name**

page A block of 1024 16 bit words within a segment

partition A portion (or all) of a multihead disk pack. Each partition is treated by PRIMOS as a separate physical device. Partitions are an integral number of heads in size offset an even number of heads from the first head. A **volume** occupies a partition and a partition of a disk and a volume of files are actually the same thing.

pathname A multi part name which uniquely specifies a particular file (or directory) within a file system tree. A **pathname** (also called **treename**) gives a path from the disk volume through directory and subdirectories to a particular file or directory.

PDEV Physical disk unit number as printed by STATUS DISKS (see **pdisk**)

pdisk A parameter to be replaced by a physical disk unit number. Needed only for operator commands.

phantom user A process running independently of a terminal under the control of a command file.

runfile Executable version of a program consisting of the loaded binary file, subroutines and library entries used by the program, COMMON areas, initial settings, etc. (Created using LOAD or SEG)

SEG Prime's segmentation utility

segment A 65 536 word block of address space

segment directory A special form of directory used in direct access file operations. Not to be confused with **directory** which means file directory.

segno Segment number

source file A file containing programming language statements in the format required by the appropriate compiler or assembler.

subdirectory A directory that is in a UFD or another subdirectory.

sub-UFD: Same as **subdirectory**

treename A synonym for **pathname**

UFD A User File Directory, one of the Directories listed in the MFD of a **volume** It may be used as a LOGIN name

unit: See **file-unit**

volume: A self-sufficient unit of disk storage, including an MFD, a disk record availability table and associated files and directories A volume may occupy a complete disk pack or be a **partition** within a multi-head disk pack

volume-name. A sequence of 6 or fewer characters labeling a volume The name is assigned during formatting (by MAKE) The STATUS DISKS command uses this name in its DISK column to identify the disk

word: As a unit of address space two bytes or 16 bits

COMMAND FORMAT CONVENTIONS

The conventions for PRIMOS documentation are

WORDS-IN-UPPER-CASE: Capital letters identify command words or keywords They are to be entered literally

Words-in-lower-case Lower case letters identify parameters The user substitutes an appropriate numerical or text value

Braces { } Braces indicate a choice of parameters and/or keywords Unless the braces are enclosed by brackets at least one choice must be selected

Brackets []: Brackets indicate that the word or parameter enclosed is optional

Hyphen -: A hyphen identifies a command line option as in **SPOOL -LIST**

Parentheses () When parentheses appear in a command format they must be included literally

Ellipsis . The preceding parameter may be repeated

Angle brackets < > Used literally to separate the elements of a pathname For example

<FOREST>BEECH>BRANCH537>TWIG43>LEAF4

Option The word option indicates one or more keywords or parameters can be given, and that a list of options for the particular command follows

Spaces. Command words, arguments and parameters are separated in command lines by one or more spaces. In order to contain a literal space, a parameter must be enclosed in single quotes. For example, a pathname may contain a directory having a password

```
<FOREST>BEECH SECRET>BRANCH6'
```

The quotes ensure that the pathname is not interpreted as two items separated by a space

SPECIAL TERMINAL KEYS

CONTROL The key labeled CONTROL (or CTRL) changes the meaning of alphabetic keys. Holding down CONTROL while pressing an alphabetic key generates a control character. Control characters do not print. Some of them have special meanings to the computer. (See **CONTROL-P**, **CONTROL-Q** and **CONTROL-S**, below.)

RUBOUT The key labeled RUBOUT has a special use in RUNOFF. It is not generally meaningful to other standard Prime software. On some terminals it is labeled DELETE or DEL.

RETURN. The RETURN key ends a line. PRIMOS edits the line according to any erase (') or kill (?) characters, and either processes the line as a PRIMOS command, or passes it to a utility such as the editor. RETURN is also called CR or CARRIAGE-RETURN.

BREAK, ATTN, INTRPT. See **CONTROL-P**

SPECIAL CHARACTERS

Caret (^): Used in EDITOR to enter octal numbers and for literal insertion of Erase and Kill characters. On some terminals and printers, prints as up-arrow (↑)

Backslash (\): Default EDITOR tab character

Double-quote (") Default erase character for PRIMOS, EDITOR, and RUNOFF Command Mode. Each double-quote erases a character from the current line. Erasure is from right (the most recent character) to left. Two double quotes erase two characters, three erase three, and so forth. You cannot erase beyond the beginning of a line. The PRIMOS command TERM allows the user to choose a different erase character.

Question mark (?) Default kill character for PRIMOS, EDITOR, and RUNOFF Command Mode. Each question mark deletes all previous characters on the line. The PRIMOS command TERM allows the user to choose a different kill character.

CONTROL-P. QUIT immediately (interrupt/terminate) from execution of current command and return to PRIMOS level. Echoes as QUIT. Used to escape from undesired processes. Will leave used files open in certain circumstances. Equivalent to hitting BREAK key.

CONTROL-S: Halt output to terminal, for inspection. No commands other than CONTROL-P (QUIT) or CONTROL-Q (Continue) may be given. This special function is activated by the command TERM -XOFF.

CONTROL-Q: Continue output to terminal following a CONTROL-S (if TERM -XOFF is in effect).

UNDERSCORE (_): On some devices, prints as a back-arrow (←)

PRIMOS II

Versions

UFD	File	Description	Low	Restart	High
DOS	*DOS64	64K real memory	130000	170000	177777
CMDNC0	1DOS64	64K virtual memory	140000	170000	177777

Error Recovery

To restart the CPU from the control panel

- 1 Turn the selector switch to STORE Y
- 2 Set DATA/ADDRESS switch to ADDRESS
- 3 Press DATA CLEAR
- 4 Enter '7 in the lights (push sense switches 14, 15, and 16)
- 5 Set DATA/ADDRESS switch to DATA
- 6 Press DATA CLEAR
- 7 Enter restart address for specific version of PRIMOS II This is normally '170000 (push sense switches 1, 2 3 and 4)
- 8 Press START
- 9 Turn rotary switch to RUN
- 10 Press START The prompt OK will be printed at the Supervisor terminal

START UP

- 1 Turn on power to equipment
- 2 Bootstrap in PRIMOS II
- 3 Start up command device
- 4 Attach to UFD=PRIRUN and resume PRIMOS
- 5 If the file C_PRMO is in UFD=CMDNC0 it will specify system configuration and set any other parameters and conditions and startup any subsystems (The file C_PRMO is built by the Administrator according to system needs)
- 6 If the file C_PRMO has not been installed, the operator must manually enter the configuration and subsystem startup commands
- 7 Set system time and date

SYSTEM SHUTDOWN

- 1 Send shutdown messages to users
- 2 Send shutdown messages to operators of other systems on the network
- 3 Prevent logins with the MAXUSR command
- 4 Logout users with LOGOUT ALL This does not log out the FAM (This automatically performs a MAXUSR command)
- 5 Shutdown the system with SHUTDN ALL command
- 6 Turn off equipment power in the reverse order as for start up

VIRTUAL CONTROL PANEL COMMANDS

The virtual control panel starts in control panel mode when the equipment is powered up. Control panel mode is entered from Supervisor terminal mode by typing ESC ESC (two escapes). Re-enter Supervisor terminal mode by typing MO ST.

Anywhere an address is required in a command, either *segno/wordno* or *wordno* may be used. *segno* is the segment number, *wordno* is the word number in the segment. The VCP remembers the last segment number referenced as the current segment and will use this current segment if *segno* is not explicitly specified. The initial value of the current segment is segment 0.

Data are represented in 5 formats — A B D H O. These specifiers set data display mode to ASCII, binary, decimal, hexadecimal, or octal respectively. If two specifiers are used (for example B H) the first refers to data and the second to address display. These specifiers are also valid after the D and A commands.

BOOT

Places VCP in auto boot condition.

BOOT number

Boots with sense switches set to **number**. For example, BOOT 114 bootstraps from a storage module.

DISPLAY address

Displays contents of **address** Operates only when PRIMOS is running

DISPLAYC address

Continuously displays contents of **address** The value is displayed each time it changes Operates only when PRIMOS is running Halt operation by a CONTROL-P

FETCH

Fetches data according to the previously set sense and data switches

LIGHTS

Displays the current lights

LIGHTSC

Displays current lights continuously The lights are displayed each time they change Halt operation by a CONTROL-P

MO ABS

Sets VCP to reference absolute (physical) memory

MO MAP

Sets VCP to reference mapped memory (default)

MO RFABS

Reference register file absolute

MO RFCRS

References register file current register set

MO RFL

Displays/modifies low side of register file

MO RFH

Displays/modifies high side of register file

NOIF When register file mnemonics are used both high and low sides are displayed The high-low mode determines which side is modified by the ACCESS command After a mode has been determined the following commands may be used

a n

Access address **n** The address may be followed by data display specifiers

A register-name

Access **register-name** The current high-low mode determines which side of the register is modified. The name may be followed by data display specifiers.

The following are legal responses to the ACCESS command:

CR (carriage return)	Access next location
↑ (uparrow)	Access previous location
number	Modify location to value of number
/ (slash)	Exit and return to control panel mode

C start end to

Copy the block starting at **start** and ending at **end** to the block starting at **to**. Overlapping blocks where $start < to < end$ are not allowed.

D start end

Dumps from **start** to **end**. Data display specifiers may follow (e.g., D 100 200 H O).

D register-name

Dumps both high and low sides of **register-name**. Data display specifiers may follow the name.

Long dumps may be terminated with a CONTROL-P.

F start end number

Fill the block from address **start** to address **end** with **number**.

MO ST

Enters supervisor terminal mode from control panel mode.

MO ZCD

Enters the Z80 microcode debugger.

RCP location

Identical to RUN (see below) except that the VCP stays in control panel mode.

RUN location

Puts **location** into PB and starts the CPU. If location is not supplied, the current value of PB is used. Automatically enters supervisor terminal mode (see **RCP**).

SD number

Sets the data switches to the value of **number** for one INA instruction only.

SS number

Sets the sense switches to the value of **number**.

SSTEP n

Single steps **n** locations. The value of **n** depends upon the data representation; for example, SSTEP 10 in octal specification steps 8 locations.

STEPU n

Steps until address is equal to **n**.

STOP

Halts the central processor unit.

STORE number

Stores the value of **number** into the location specified by the previously set sense and data switches.

SYSCLR

Performs a master clear.

SYSOUT BUFF

Buffers supervisor terminal output and prints this when System Terminal mode is re-entered (default).

SYSOUT IGN

Ignores supervisor terminal output while in control panel mode.

SYSOUT INT

Interleaves supervisor terminal output with control panel mode output.

VIRY

Performs a SYSCIR and then runs diagnostics to verify the VCP.

Register file mnemonics accepted by the VCP

Mnemonic	Register description
A	Accumulator
B	Double-precision and long accumulator extension
DSWPARTY	Descriptor Segment Word Parity (P750 only)
DSWPB	Descriptor Segment Word Procedure Base
DSWRMA	Descriptor Segment Word RMA
DSWSTAT	Descriptor Segment Word Status
DTAR0	Descriptor table address segments 0 to '1777
DTAR1	Descriptor table address segments '2000 to '3777
DTAR2	Descriptor table address segments '4000 to '5777
DTAR3	Descriptor table address segments 6000 to '7777
E	Accumulator extension for MPL, DVL
FADDR	Fault address
FAR0	Field address register 0
FAR1	Field address register 1
FCODE	Fault code
FLR0	Field length register 0
FLR1	Field length register 1
GR0	General Register 0
GR1	General Register 1
GR2	General Register 2
GR3	General Register 3
GR4	General Register 4
GR5	General Register 5
GR6	General Register 6
GR7	General Register 7
KEYS	Process status information
L	Combined A and B registers
LB	Link Base
MODALS	Process status information

OWNER	Address of PCB of process owning register contents
PB	Procedure base
PBSAVE	Saved return pointer when return pointer used elsewhere
PPA	Pointer to process A
PPB	Pointer to process B
PSWPB	Process Status Word Procedure Base
RECC1	ECC error register 1
RECC2	ECC error register 2
REOIV	Register End Of Instruction Vector
RSVPTR	Register Save Pointer location of Register Save after Halt
RSMT1	Register Segmentation Trap SDW2/Address of page map
RSMT2	Register Segmentation Trap Contents of page map/DSW2
S	Stack
SB	Stack base
TIMER	1-millisecond process timer (used for time-slice)
VSC	Visible shift counter
X	Index
XB	Temporary (auxiliary) base
Y	Alternate index

C _ PRMO TEMPLATE

The C_PRMO template is supplied in UFD PRIRUN with the name C_PRMO TEMPLATE. It is incomplete and must be completed to meet the needs of each installation (see System Administrator's Guide for details). The contents of the file are

```

CONFIC DATA          * specify CONFIC file after DATA
ADDISK                * specify local disks to be added
AMLCITY              /* specify AMLC lines
OIR 1                 * SHARF REQUIRES OPR 1
SHARF SYSTEM>LD2000 2000 * SHARE the editor — ED
SHARF SYSTEM>UI2000 2000 * SHARE the UI package
SHARF SYSTEM>S2014A 2014 700 * SHARF FORTRAN LIBRARY
SHARF SYSTEM>S 014B 2014 700
R SYSTEM>S4000
SHARF SYSTEM>K2014A 2014 700 * SHARF MIDAS LIBRARY
SHARF SYSTEM>K2014B 2014 700
R SYSTEM>K4000
SHARF SYSTEM>C2014A 2014 700 * SHARF COBOL LIBRARY
SHARF SYSTEM>C 2014B 2014 700
R SYSTEM>C4000
SHARF SYSTEM>F 014A 2014 700 * SHARF FORMS LIBRARY
SHARF SYSTEM  F2014B 2014 700
R SYSTEM>F4000
SHARF 2014
OPR 0
PH CX***>PH _ CO      * START CX MONITOR
PH SPOOLQ>PH _ PRO    * START SPOOLER PHANTOM
A CMDNCO
 * SEE THE DATE AND TIME *****
CO ILY

```

PRIMOS HALTS

Locations at which PRIMOS halts are defined at the load map M_PRIMOS in UFD=PRIRUN. In addition to the halt address displayed in the panel lights in STOP/STEP mode, the halt segment must be determined. The halt segment is contained in PBH, the high side of register '14 in the current register set.

All locations at which PRIMOS can halt are defined in the load map. A user determines the segment number and word number of the halt and looks for a definition of that halt on the load map. All halt definitions are of the form xxxxx_.

AMLCI_	Spurious AMLC Controller Interrupt
BDMEM_	Memory Parity During Cold Start
BOOT0_	SHUTDOWN ALL Stops Here
IFTLB_	Bad fault in interrupt process. Any halt that occurs between IFTLB_ and IFTLB_+64 is of this type.
INTRT_	Too many returns in interrupt process.
IPAGF_	Bad page fault in interrupt process.
MCHK_	Machine Check
MEMH2_	Halt after automatic mapping out of a page.
MEMPA_	Memory Parity Halt
MMOD_	Missing Memory
PAGFB_	Page fault when not allowed.
REFLO_	FLEX UII PSU when not allowed.
RMCF0_	Restricted mode fault when not allowed.
SVCF4_	SVC when not allowed.
XRNG0_	Illegal ring number in supervisor.

PRIMOS COMMANDS FOR THE OPERATOR/ADMINISTRATOR

ADDISK [PROTECT] pdev-1 [pdev-2] ... [pdev-n]

Starts up local device(s) specified by pdev. If **PROTECT** is included, the device is write-protected.

ADDISK nodename pdev-1 [pdev-2] . [pdev-n]

Makes devices on the remote computer nodename available to local users.

AMLC [protocol] line [configuration] [lword]

Configures AMLC lines

protocol	TTY Normal terminal protocol
	TTYHS Terminal with per-character interrupt
	TRAN Transparent (no character conversion)
	TRANHS TRAN with per-character interrupt
	TTYNOP Ignores all traffic

line AMLC line number

configuration is a 16-bit word constructed as follows

1,2,3,4	Line number
5	Not used
6	Data set control bit (1=on, 0=off)
7	1=loop line 0=do not loop
8 9 10	AMLC line speed (Baud)
	*=assignable by hardware jumper

000	110
001	134 5
010	300
011	1200
100	9600*
101	75*
110	150*
111	1800*

- 11 Not used
- 12 0=1 stop bit 1 2 stop bits
- 13 0=enable parity 1=disable parity
- 14 0=odd parity 1=even parity
- 15,16 Character length
 - 00 5 bits
 - 01 6 bits
 - 10 7 bits
 - 11 8 bits

lword is a 16 bit word constructed as follows

- 1 0=Full duplex 1=half duplex
- 2 0=Echo LF for RETURN 1=do not echo LF for RETURN
- 3 0=Ignore X OFF 1=recognize X-OFF
- 4 0=Terminal in output mode 1=X-OFF seen
- 5 6 7 8 Reserved
- 9 16 AMLC user number (0=assignable)

There may be from one to four AMLC boards. Each board has up to four ports (C, D, E, F). Each port has four cable connectors (J1, J2, J3, J4). Line numbers may be calculated with the formulae below

AMLC Board(x)	Address	AMLC Port	y	Cable connector	z
1	54	C	1	J1	1
2	53	D	2	J2	2
3	52	E	3	J3	3
4	51	F	4	J4	4

Physical line number off AMI C $16(x-1)+4(y-1)+z-1$
 User number $16(x-1)+4(y-1)+z+1$
 Actual line $16(x-1)+4(y-1)+z$
 AMLC command line (line) — octal $20(x-1)+4(y-1)+z-1$
 Configuration number — octal $20(x-1)+4(y-1)+z+1$
 (for NAMLC directive)

NOTE: Certain connectors are not used depending upon the number of AMI C boards

Number of Boards	Connector Not Used	Associated actual line
1	J4 port f	16
2	J4 port F	32
3	J4 port F	18
4	J4 port F	64

CHAP {**-userno**}
 {**ALL**} [priority [timeslice]]

Changes **priority** level (Range 0 to 3) and or **timeslice** (deciseconds) for a specified user or for all users. Default is level 1 and '24 (two seconds)

CONFIG

Defines system parameters and defaults that are specified once per system session. The CONFIG directives are

ALTDEV physical-device [records]

Sets number of **records** on the **physical-device** which is the alternate paging device

AMLBUF line [in-buff-size [out-buff-size [dmq-buff-size]]]

Sets terminal I/O buffers on AMLC line (defaults='200, '300, '40 words)

ASRATE control-word

Sets supervisor terminal Baud rate

control-word	Baud rate (decimal)
110	110 (default)
1010	300
2010	1200
3410	9600

ASRBUF line [in-buff-size [out-buff-size]]

Set ASR terminal I/O buffer sizes on line (Currently, only line 0 is allowed) Defaults='200, '300 words

COMDEV physical-device

Specifies command device to be **physical-device**.

CONFIG options

Specifies basic system configuration

Option	Parameter set
0/ntusr	Number of terminal users
1/pagdev	Paging device
2/comdev	Command device
3/maxpag	Pages of physical memory
4/altdev	Alternate paging device
5/namlc	Assignable AMLC lines
6/npusr	Number of phantom users
7/nrusr	Number of remote users
10/smlc	Enable non-network SMLC

DISLOG option

Controls disconnect logout option YES user is logged out if AMLC line is disconnected NO user is not logged out (default)

ERASE { **character** }
 { **octal-value** }

Sets system erase to **character** or the character with ASCII **octal-value** (default= '')

FILUNT reserved-unit max-unit total-unit

Sets guaranteed and maximum per-user file units, and total system file units Defaults= 20 100 '4000

GO

Marks end of configuration data file

KILL { **character** }
 { **octal-value** }

Sets system kill to **character** or the character with ASCII **octal-value** (Default= '?')

LOGLOG option

Controls implicit logouts YES users can use LOGIN while logged in (default) NO LOGIN command inhibited for logged-in users

LOGMSG option

Controls printing of LOGIN/LOGOUT messages at supervisor terminal YES print messages (default) NO do not print messages

LOGREC file-size

Set event logging file to **file-size** words (default= 10000 words)

LOUTQM minutes

Set inactivity logout time to **minutes** (default= 1750 1000 decimal)

MAXPAG number-of-pages

Set memory validation at cold start to **number-of-pages** (default='2000) For best results set to real number of pages on the system

NAMLC number-of-lines

Set number of assignable AMLC lines (default=0)

NET ON

If included specifies network is to be configured (see **NETCFG** command)

NPUSR number

Set **number** of phantom users (default=0)

NRUSR number

Sets **number** of processes reserved for remote logins (default=0)

NSEG number

Sets total system virtual address space in segments (default='300 maximum='500)

NTUSR number

Sets **number** of terminal users

NUSEG number

Sets the per-process virtual address space size in **number** of segments (default='40) Maximum= 400 depending upon available paging space

PAGDEV physical-device [records]

Specifies paging device to be on **physical-device** and optionally its size If size is specified, NSEG is automatically calculated

PREPAG pages

Sets number of prepaged **pages** (default=3)

RWLOCK value

Sets file system read/write lock (default=1)

Value	Meaning
0	1 reader or 1 writer (writer controls)
1	N readers or 1 writer (writer controls)
3	N readers and 1 writer
5	N readers and N writers

SMLC ON

Enables SMLC in default condition

SMLC CNTRLR controller address

Specifies SMLC **controller** (0 or 1) and physical device **address** (default= 50 for controller 0 default=undefined for controller 1)

SMLC SMLCnn controller line

Maps logical line (nn=00 to 07) onto **physical controller** (0 or 1) and **line** (default maps SMLC00 to SMLC03 onto controller 0, lines 0 to 3)

TYPOUT option

Controls printing of configuration commands at supervisor terminal YES print commands as processed NO do not print commands (default)

UPS number

Controls restart after power failure

177777	No UPS (default)
0	UPS but HALT on a warm start
>0	Number of seconds to delay after warm start

COPY

Copies one disk to another and verifies the copy

COPY asks a series of questions some are asked conditionally upon specific answers to previous questions

FROM PHYS DISK= Enter physical device number of the device from which data are to be copied

TO PHYS DISK= Enter physical device number of the device to which data are to be copied

PARAMETERS OK? COPY has output disk parameters
 YES begin copy procedure
 NO repeat FROM PHYS DISK question

After the FROM or TO questions, COPY may ask ambiguity resolving questions to determine the exact type of device. These questions, such as 1.5M WORDPACK? or 40MB STORAGE MOD?, are answered YES or NO according to the actual device. In some cases the device number alone uniquely determines the device, if this is the case, these questions will not be asked.

DISKS [NOT] pdev-0 [pdev-1] ... [pdev-7]

Adds or removes (NOT) physical disks to or from the Assignable Disks Table

ELIGTS deciseconds

Sets time that a user runs before being placed in the eligibility scheduler queue (default=3)

FIXRAT [OPTIONS]

Checks PRIMOS file integrity on a disk or partition

The following questions are asked some are asked contingent upon certain answers to previous questions

FIX DISK?

YES Compress UFDs, truncate or delete defective files
 NO. Do not modify UFDs or files

UFD COMPRESSION?

YES Compress UFDs
 NO Do not perform any modifications
 This question is asked only if FIX DISK? is answered NO

PHYSICAL DISK =

Device or partition on which FIXRAT is to run

TYPE DIRECTORIES TO LEVEL =

Octal number corresponding to lowest level to which directory names are to be printed. Asked if invoked as FIXRAT OPTIONS, otherwise, default=2 is used

MAX NESTED DIRECTORIES LEVEL?

Octal number of maximum level FIXRAT is to go
(default-700)

AUTO TRUNCATE DIRECTORIES NESTED TOO DEEPLY?

YES Automatically truncates directories beyond
level specified

NO Asks for confirmation if such directories
found (default)

TYPE FILE NAMES?

YES Print all filenames in all directories

NO Do not print filenames

Asked only if invoked as FIXRAT options other
wise default=NO is used

TYPE FILE CHAINS?

YES Print disk address of all records in all files

NO Do not print addresses

Asked only if invoked as FIXRAT options other-
wise default=NO is used

After the PHYSICAL DISK = questions, FIXRAT may ask ambiguity resolving questions to determine the exact type of device. These questions such as 1.5M WORDPACK? or 40MB STORAGE MOD? are answered YES or NO according to the actual device. In some cases the device number alone uniquely determines the device. If this is the case these questions will not be asked.

LABEL MTn -VOLID volume-id [options]

Initializes a magnetic tape and writes either an IBM or ANSI standard level 1 volume label followed by dummy HDR1 and EOF1 labels

MTn

Tape drive unit n (0 to 7)

-ACCESS access

Single character defining tape access. Not used by Prime software. If omitted left blank for ANSI labels. Ignored for IBM labels.

-OWNER owner

Owner's name (default=login UFD name) ANSI 14 characters IBM 1-10 characters Shorter names are right-padded with blanks

TYPE type

Tape type as follows

A	9-track ASCII	(ANSI) default
B	7-track BCD	(IBM)
E	9-track EBCDIC	(IBM)

-VOLID volume-id

Unique tape reel identifier (16 characters right padded with blanks)

LABEL MTn [-TYPE type]

Reads existing labels from magnetic tape The **MTn** and **-TYPE** options are the same as for writing a label

LOGPRT [destination [options]]

Prints the contents of the event logging file **destination** is the pathname for the LOGPRT output file (default=LOGLST in the working directory) TTY sends output to terminal The **options** are as follows

-CONTIN

Continue LOGPRT after encountering an invalid entry

-DEBUG

Allows LOGPRT to read entries from terminal for testing and formatting entry types

-DELETE

Deletes output file after spooling (see **-SPOOL** option)

-FROM date

Prints only LOGREC entries from the specified **date** (mmddyy) to the latest entry

-HELP

Prints a list of LOGPRT options

-INPUT pathname

Specifies **pathname** of LOGREC file to be processed. If no pathname is specified LOGPRT assumes CMDNC0>LOGREC

-PURGE

Empties LOGREC after LOGPRT has finished processing

-SPOOL

Automatically spools the output file (ignored if destination is TTY)

-TYPE t1 t2 tn

Process entries only of the indicated type

0	COLD	Cold starts
1	WARM	Warm starts
2	TIMDAI	Time/date entries
3	CHFCKS	Machine checks (including memory parity)
4	DISK	Disk errors
5	OVERFL	LOGREC overflow entries
6	SHUTDN	Operator shutdowns
7	CHK300	Prime 300 machine checks
8	PAR300	Prime 300 memory parity checks
9	MOD300	Prime 300 missing memory module checks
10 15	TYPE10 TYPE15	Entries for types 10 to 15
16	DSKNAM	Either ADDISK or STARTUP entries
17	POWERF	Power fail checks

LOOK [-userno [segno [access [mapseg]]]]

Allows operator to view any segment (default='6000') of any user (default=1) and map the user's address space into a segment (default= 4001 only)

MAKE

Creates a structure for any PRIMOS-supported disk or partition. MAKE asks a series of questions, some are asked conditionally upon specific answers to previous questions.

PHYSICAL DISK:

Enter physical device number

SPLIT DISK?

YES part of disk is to be used for paging

NO disk is not split (usual case)

PAGING RECORDS**(DECIMAL)**

Number of records for paging (only asked if disk is split)

PARAMETERS OK?

MAKE has output disk parameters

YES continue

NO return to PHYSICAL DISK question

PACK NAME?

Enter name for DSKRAT file (this is volume name)

BADSPOTS ON DISK?

YES operator will enter badspot locations

NO no known badspots

TRACK=

Enter badspot track number

HEAD=

Enter badspot head number

PARAMETERS OK?

MAKE has output badspot information

YES continue

NO return to BADSPOT question

VIRGIN DISK?

YES records initialized

NO records not initialized

VERIFY DISK?

YES verify records can be read

NO do not verify readability

FORMAT DISK?

YES format records

NO do not format records

After the PHYSICAL DISK question MAKE may ask ambiguity resolving questions to determine the exact type of device. These questions such as 1.5M WORDPACK? or 40MB STORAGE MOD? are answered YES or NO according to the actual device. In some cases, the device number alone uniquely determines the device, if this is the case, these questions will not be asked.

MAXSCH n

Controls amount of overlapped processing performed by the system (default=3)

MAXUSR n

Sets the maximum numbers of users (terminal, phantom, remote) allowed to be logged in. If number of users > n, none are logged out but no logins are allowed until number of users < n. User 1 may start up phantoms from the Supervisor terminal.

MESSAGE $\left\{ \begin{array}{l} \text{ALL} \\ \text{-userno} \end{array} \right\}$ [NOW]

text-of-message

Sends one-line message from supervisor terminal to specified user number or to all users when user(s) returns to PRIMOS level or immediately (NOW)

MESSAGE nodename

text-of-message

Sends one line message from supervisor terminal to supervisor terminal of nodename over PRIMENET

NETCFG [options]

Creates NETCON file for configuring local node within PRIMENET

- DSC** Allows the specification of non-standard Data Set Control parameters for SMLC lines
- NOCHECK** Suppresses checking on the number of nodes and/or connections

The NETCFG dialogue has three major subsections each one introduced by a YES/NO question

1 **REVIEW OLD NETWORK CONFIGURATION?**

- YES Read the NETCON file in the current UFD format the information and display it on the terminal
- NO Skip the above

2 **CREATE NEW NETWORK CONFIGURATION?**

- YES Proceed to further questions to describe the network
- NO Retain old configuration

3 **CREATE NEW SMLC LOGICAL TO PHYSICAL LINE MAP?**

- YES Proceed to further questions to describe the logical to physical line mapping
- NO Retain old line mapping

If either question 2 or 3 (or both) are answered YES then the System Administrator will be asked, at the end of the session, if the new network configuration is to be reviewed. The response is the same as for question 1.

Configuration PRIMENET contains four distinct network types RING, IPC, SMLC, and PDN (Public Data Network). Each remote node configured in a network requires the following information:

NAME?

A PRIMENET node name. Names are 1-6 characters with the same restrictions as filenames.

PDN ADDRESS?

The Public Data Network address assigned to this node by the National Public Data Network. If no such address has been assigned, the question should be answered with a carriage return. TELENET addresses are 12 digits long with the format 3110AAANNNNN AAA is the area code, and NNNNN is the DTE address.

DATAPAC addresses are 8 digits long with the format NNNNNNNN.

RING ID?

Ring node ID of this node.

SLAVE #?

IPC slave number of this node.

LINE #?

SMLC line number of this connection.

ENABLE FAM?

YES Enable FAM to this remote node. The remote node must also enable FAM to you.

NO Do not enable FAM to this remote node. The remote node should not enable FAM to you.

PERMIT REMOTE FAM TO START DISKS?

YLS Allow the remote FAM to start-up your disks.

NO Do not allow the remote FAM to start-up your disks.

The specification of this parameter does not have to be symmetric, i.e., SYSA may allow SYSB to start its disks but SYSB does not have to allow SYSA to start remote disks.

ENABLE REMOTE LOGIN?

YES Permit terminals on your system to login to the remote node.

NO Do not allow the above.

FAM and remote login may be enabled/disabled on a per line type basis i.e. RING/IPC SMLC and PDN. If a remote node is enabled to start disks over any line type then it is enabled over all FAM line types.

The network configuration requires the following information

1 DESCRIBE YOUR NODE

Node name and PDN address. If a PDN address is specified the user is asked

Your national Public Data Network (PDN)?

Currently TELENET and DATAPAC are acceptable responses

2 DO YOU HAVE A RING? (YES/NO)

Number of ring nodes

Your ring node ID#

Remote node data for remaining nodes

3 DO YOU HAVE AN IPC? (YES/NO)

Number of IPC nodes

Your IPC slave #

Remote node data for remaining nodes

4 DO YOU HAVE AN SMLC? (YES/NO)

of PRIME to PRIME SMLC lines

Remote node data for each line

of SMLC lines attached to a PDN

Line # for each line

Remote node information for nodes connected to your PDN

SMLC lines are dedicated PRIME to PRIME connections

SMLC line mapping SMLC logical line numbers may be mapped to any physical line in the machine. A physical line is specified by a logical controller number (0 or 1), a device address for that controller, and a physical line number (0-3). The default mapping is to map logical lines 0 to 3 to logical controller 0, device address 50, physical lines 0 to 3. The default device address for SMLC controller 1 is undefined. To change the default mapping the following questions must be answered

LINES TO MAP?

The number of lines you wish to specify a mapping for. All lines not mapped will be voided. If this question is answered with 0 then the default mapping will be restored.

The following questions must be answered for each line to be mapped:

LOGICAL LINE #?

The logical line you wish to map.

CONTROLLER #?

The logical controller this line should be mapped to.

PHYSICAL LINE #?

The physical line on the specified controller to map the logical line to.

The following questions must be answered for each logical controller:

DEVICE ADDRESS OF CONTROLLER # <n>?

<n> is a logical controller number mentioned previously. The device address should be entered in octal.

Reviewing networks NETCFG separates the information in the NETCON file into four distinct network types: RING, IPC, SMLC, and PDN (Public Data Network). After printing all the nodes of a network type, the line —MORE— is printed. The user should type a carriage return to continue to the next network type. Following the networks, the SMLC logical to physical line mapping is printed.

For each node in the network, the following information is printed:

PREFIX

A prefix specifying special characteristics of the node. The following prefixes are currently defined:

ME This node is the local system.

PDN This line is a connection to a PDN (Public Data Network)

<NONE> This is a normal node

NAME: The PRIMENET name of this node or PDN name if the connection is to a PDN (Public Data Network)

ADDRESS: The X 25 address assigned to this node by the PDN. If this node is not connected to a PDN then this field will be blank

The X 25 standard specifies that addresses may be up to 14 digits in length. TELENET and DATAPAC do not use the full 14 digits.

In Prime's implementation, these unused digits are treated as 'wild cards'. These 'wild cards' positions are printed as X. Thus, a node with the address 311060300020XX would be sent not only a call addressed to 311060300020 but also a call addressed to 31106030002007. Connections to Public Data Networks are configured to be used for all calls which cannot be sent to any configured address. Therefore, the address for a PDN appears as 14 'wild cards'.

ONE OF:

RING ID (RING)

Slave # (IPC)

Line # (SMLC)

The device number to which the data are sent

FAM: Whether FAM is enabled to this node

RDP: Whether the remote FAM may start up local disks

RLOG: Whether remote login is enabled to the remote node

DS parameters: The SMLC line configuration word and Data Set Control word. The current default values are 000363 and '10401. See non-default data sets below for further information. For the SMLC only.

For the SMLC logical to physical line mapping, the following information is printed:

Line #. The logical line number

Controller #: The logical controller to which the line is mapped

Device Address: The octal device address of the logical controller

Physical Line: The physical line on the controller to which the line is mapped

If there is no line mapping information in the NEICON file, then the text 'DEFAULT LOGICAL TO PHYSICAL MAP' is printed. Currently, the default is to map logical lines 0 to 3 onto logical controller #0, device address 50, physical lines 0 to 3.

Non-default data sets: If the -DSC option is included in the command line, the following questions will be asked for each logical SMLC line:

ENABLE DSS CHANGE INTERRUPTS?

YES The CPU should be interrupted on Data Set Status changes. This is the normal mode of operation, and corresponds to a configuration word of '363.

NO Do not interrupt the CPU on Data Set Status changes. This is used when a line runs through a modem eliminator and corresponds to a configuration word of '323.

The following questions are only asked if Data Set Status changes are enabled:

XMIT DATASET PATTERN?

Enter the octal number for the dataset leads which must be high to transmit. The dataset bits are: *xyz*

- x* Carrier bit (default is 0)
- y* Clear to send bit (default is 0)
- z* Data Set Ready bit (default is 1 Data Set Ready)

RCV DATASET PATTERN?

Enter the octal pattern as above required to receive data. The default value for this parameter is 1 (Data Set Ready)

DATASET ORDER?

Enter the octal value for the dataset order to issue before transmitting. The dataset order bits are: *yz*

- y* Request to Send bit (default is 0)
- z* Data Set Ready bit (default is 1 Data Set Ready)

NETPRT [destination] [options]

Prints the contents of the network event logging file. **destination** is the pathname for NETPRT output file (default NETIST in the working directory). TTY sends output to terminal. The options are as follows:

-DELETE

Deletes output file after spooling (see **-SPOOL** option)

-FROM date

Prints only NETREC entries from the specified **date** (mmddy) to the latest entry

-HELP

Prints a list of NETPRT options

-INPUT pathname

Specifies **pathname** of NETREC file to be processed. If **pathname** is omitted, NETPRT assumes
CMDNC 0>NETREC

-PURGE

Empties NETREC after NETPRT has finished processing

-SPOOL

Automatically spools the output file (ignored if destination is I TY)

-TYPE t1 t2 tn

Process entries only of the indicated type

COI D	Cold starts
SHU FDN	Operator shutdowns
TIM DAT	Time/date entries
RESE T	Circuit resets
BAD SEQ	Packets received out of sequence
OV FLOW	Event buffer overflows
HOS TDN	Level III X 25 protocol down in a host
LPE	Circuit clears caused by local error
RING	Ring hardware errors
NET DMP	Abnormal software conditions in network modules
SMLC	SMLC hardware errors

OPRPRI option

Enables or disables the use of the SHARE command from the supervisor terminal 1 allow SHARE command to be used 0 do not allow SHARE command to be used (default)

REMOTE { PERMIT } [option]
 { DENY }

PERMITs or DENYs remote users access to local devices
The options are as follows

1	nodename	pdev-1	[pdev 2]	[pdev 9]
2	nodename	-ALL		
3	-NET	pdev-1	[pdev-2]	[pdev 9]
4	-NFT	-ALL		

Access may be specified for specific devices all devices specific remote systems or all other systems on the PRIMENET in any combination

SETIME -date -time

Sets the system date (mmddy) and time (hhmm)

SHARE [pathname] segment-number [access-rights]

Incorporates **pathname** into **segment-number** with **access-rights**. If **pathname** is omitted, the access rights of **segment-number** are changed.

0	No access
200	Read access
600	Read and execute access (default)
700	Read write and execute access

SHUTDOWN { **[nodename]** } **pdev-0 [pdev-1] [pdev-n]**

Shuts down the specified physical devices or all physical devices. If the command is **SHUTDOWN ALL**, the question **REALLY?** is asked. A **YES** answer continues shutdown; any other answer does not.

SPOOL options

See the Programmer's Companion PRIMOS Commands (FDR3250) for the spooler's user options. The administrator's **options** are as follows:

-ABORT

Stops printing of current file immediately. Does not drop current file from queue.

-BACK

Restarts printing 128-256 lines prior to current line. Used for large files after jam, no more paper, etc.

-DROP

Stops printing of current file immediately. Drops current file from queue.

-FINISH

Finishes printing of current file, drops file from queue, and halts printer.

-GO

Restarts printer after a **-FINISH**, **HANG**, or **-PAPER** option.

-HANG

Stops printing of current file immediately, does not drop current file from queue, and halts printer.

-LENGTH lines

Sets number of printable lines per page

-LOGOUT

Logs out the spool phantom

-PAPER form-name

Sets spooler to search the spool queue for files with specified **form-name**

-RESTART

Restarts printer at beginning of current file after a paper jam, running out of paper, etc

-TIME seconds

Sets acknowledgement time-out (default=120 seconds)

-USER user-number

Specifies the spool phantom to which subsequent commands are addressed if more than one spool phantom is running

STARTUP [PROTECT] comdev [pdev-1] .. [pdev-8]

Starts up the command device (logical disk 0) Starts up local device(s) specified by **pdev** If **PROTECT** is included the device is write-protected

STARTUP nodename pdev-1 [pdev-2] .. [pdev8]

Makes devices on the remote computer *nodename* available to local users

STATUS options

Prints information about system status at the supervisor terminal The information is slightly different from that printed at user terminal by the **STATUS** command The **options** are as follows

none	Same as ALL (this is different from the usage at a user terminal)
ALL	Sum of other options plus paging device and command device
DISKS	List of started up logical disks volume names, logical number physical device number, and their local system

NETWORK	Type(s) of network, nodenames of each node on the network, and its status (UP or DOWN)
UNITS	File units open and local nodename
USERS	List of users: login UFD, user number line number, physical disks used, assigned peripherals, priority, system logged into or from

USRASR user-number

Allows the supervisor terminal to act as a user terminal with the specified **user-number**

SYSTEM AND NETWORK PARAMETERS

Parameter	Default	CONFIG Directive
AMLC line input buffer	200	AMLBUF
AMLC line output buffer	100	AMLBUF
ASR terminal input buffer	200	ASRBUF
ASR terminal output buffer	300	ASRBUF
Configure network	NO	NET ON
DMQ AMLC buffer	40	AMLBUF
Event logger file size	10000	LOGREC
File system read/write lock	3	RWLOCK
Implicit logouts allowed	YES	LOGLOG
Inactivity timeout (seconds)	1750	LOUTQM
Logout on AMLC line disconnect	NO	DISLOG
Max per user guaranteed file units	20	FILUNT
Maximum per user file units	100	FILUNT
Number of pre-paged pages	3	PREPAG
Phantom users number	0	NPUSR
Print configuration directives	NO	TYPOUT
Print LOGIN LOGOUT messages	YES	LOGMSG
Remote users number	0	NRUSR
Restart after power failure	NO	UPS
Segments per user process	40	NUSEG
SMLC lines	OFF	SMLC
Supervisor terminal baud rate	100	ASRATE
System erase character		ERASE
System kill character	?	KILL
Total available file units (all users)	4000	FILUNT
Total virtual address space (segments)	300	NSEG

PRIMOS SEGMENTS

Segment	Contents
0	LOC '61 (OPTION-A memory increment cell) DMC channels for AMLC, SMLC, MAG TAPE AMLC buffers DISK driver (DVDISK) Disk I/O windows (4 pages) Mag tape I/O windows (6 pages) Mag tape dump window (1 page) IPC I/O window (2 pages) SMLC I/O windows (12 pages)
1	Associative buffers for file system (64 pages)
2,3	MOVU2U segment windows
4	Interrupt catchers (phantoms) Check catchers Semaphores Ready PCB list (loc '600) Process control blocks (PCBs) Interrupt fault table Interrupt stack
5	Gate segment for direct entrance PCLS
6	TMAIN including Supervisor and user fault catchers SVC front-ends Supervisor locked data (SUPCOM) Clock process Kernel procedures Linkage frames for all supervisor modules
7	User terminal buffers
10	Per-user unlocked data (USRCOM)
11	File system procedures
12	Network data and procedures SMLC data and procedures

14	Configuration common (FIGCOM) (loc 700) Crash 9 track magnetic tape dump program Memory parity scanner WARM restart routine <i>COLD start routine</i> Memory usage map (MMAP) Page maps (HMAP LMAP) Segment tables
6000	Ring 0 stack segment (one per user)
6001	Impure portion of shared libraries (one per user)

SHARED SEGMENT ASSIGNMENTS

'2000 (0-'160000)	Editor
'2000 ('160000 '177777)	XISUII Library
'2001- 2003	DBMS
'2004-'2011	SPSS
'2012	FORMS
'2013	BASICV
2014	Shared Libraries
'2016	COBOL
'2030- 2037	Reserved for users

PHYSICAL DEVICE NUMBER

Each physical device number is a 16 bit word constructed as follows

bits	meaning
1,2,3,4	One half the head offset
5,6,7,8,16	Number of heads in the partition
9	Controller address indicator 0 if controller [address '27 (default), 1 if controller address '26
10,11,12,13	Device type 0000 Moving head disk, 6 MB cartridge (obsolete) 0001 Fixed head disk 8 sectors/track 0010 Diskette 0011 Moving head disk 6 MB 0100 Fixed head disk 64 sectors/track 0101 Moving head disk, 6 MB or 12 MB cartridge 0110 Moving head disk storage module
14,15	Drive unit number 0 to 3 (00 to 11)

DISK ERROR CODES

Storage Module

Status Word Meaning

177777	Bad record identifier
177776	Device not ready
100000	Always set
040000	DMX overrun
010000	Check error
004000	Checksum error
002000	Header check failure
000010	Disk drive seeking
000004	Illegal seek
000002	Select error
000001	Not available or not ready

Cartridge disk with 4000 controller (obsolete)**Status Word Meaning**

177777	Bad record identifier
177776	Device not ready
100000	Data transfer complete (good if present)
040000	Read/write past end of record
040000	Seek complete (good if present)
002000	Write protect violation
000400	Command error
000200	Checksum error
000100	DMX overrun
000040	Stack overflow

Cartridge Disk with 4001 Controller**Status Word Meaning**

177777	Bad record identifier
177776	Device not ready
100000	Bit 1 always set
040000	DMX overrun
020000	Disk is write protected
010000	Checksum error
000100	Disk drive seeking
000040	Disk drive seeking
000020	Disk drive seeking
000010	Disk drive seeking
000004	Illegal seek
000002	Malfunction detected

Diskette Controller**Status Word Meaning**

177777	Bad record identifier
177776	Device not ready
100000	Normal end of instruction (good if present)
040000	Sector not found
020000	Checksum error on sector ID
010000	Track error, head is mispositioned
002000	Deleted data mark read
001000	DMX overrun
000400	Checksum error, write protect violation of file inoperable on write or format

SERIAL INTERFACE CONTROLLER CONTROL WORDS (Port 1)

Speed (Baud)	Serial Interface Control Words	SOC Port Sel and Speed	SOC Character Definition
110	110	27	74000
300	1010	76	34000
1200	2010	373	34000
4800	4010	1756	34000
9600	3410	3735	34000

UII CODES (LOAD)

Code	CPU
100	P450 and higher
57	P350, P400
17	P300 with Floating point
3	P300
1	P200 with High Speed Arithmetic
1	P100 with High Speed Arithmetic
0	P100, P200

ASCII CHARACTER SET (NON-PRINTING)

Octal Value	ASCII Char	Comments/Prime Usage	Control Char
200	NULL	Null character — filler	␣
201	SOH	Start of header (communications)	␣
202	STX	Start of text (communications)	␣
203	ETX	End of text (communications)	␣
204	EOI	End of transmission (communications)	␣
205	ENQ	End of ID (communications)	␣
206	ACK	Acknowledge affirmative (communications)	␣
207	BEL	Audible alarm (bell)	␣
210	BS	Backspace one position (carriage control)	␣
211	HT	Physical horizontal tab	␣
212	LF	Line feed, ignored as terminal input	␣
213	VT	Physical vertical tab (carriage control)	␣
214	FF	Form feed (carriage control)	␣
215	CR	Carriage return (carriage control) {1}	␣
216	SO	RRS to ribbon shift	␣
217	SI	BRS black ribbon shift	␣
220	DI1	RCP relative copy {2}	␣
221	DC1	RHT relative horizontal tab {3}	␣
222	DC2	HLL half line feed forward (carriage control)	␣
223	DC3	RVT relative vertical tab {4}	␣
224	DC4	HRL half line feed reverse (carriage control)	␣
225	NAK	Negative acknowledgement (communications)	␣
226	SYN	Synchronicity (communications)	␣
227	ETB	End of transmission block (communications)	␣
230	CAN	Cancel	␣
231	EM	End of Medium	␣
232	SUB	Substitute	␣
233	ESC	Escape	␣
234	FS	File separator	␣
235	GS	Group separator	␣
236	RS	Record separator	␣
237	US	Unit separator	␣

Notes

- 1 Interpreted as NL at the terminal
- 2 BREAK at terminal Relative copy in file next byte specifies number of bytes to copy from corresponding position of preceding line
- 3 Next byte specifies number of spaces to insert
- 4 Next byte specifies number of lines to insert

Conforms to ANSI X3 4-1968

The parity bit (200) has been added for Prime-usage

Non-printing characters (`^C`) can be entered at most terminals by typing the (control) key and the C character key simultaneously

ASCII CHARACTER SET (PRINTING)

Octal Value	ASCII Character	Octal Value	ASCII Character	Octal Value	ASCII Character
240	.SP (1)	300	@	340	\ (9)
241	!	301	A	341	a
242	" (2)	302	B	342	b
243	# (3)	303	C	343	c
244	\$	304	D	344	d
245	%	305	E	345	e
246	&	306	F	346	f
247	' (4)	307	G	347	g
250	{	310	H	350	h
251	}	311	I	351	i
252	*	312	J	352	j
253	+	313	K	353	k
254	, (5)	314	L	354	l
255	-	315	M	355	m
256	.	316	N	356	n
257	/	317	O	357	o
260	0	320	P	360	p
261	1	321	Q	361	q
262	2	322	R	362	r
263	3	323	S	363	s
264	4	324	T	364	t
265	5	325	U	365	u
266	6	326	V	366	v
267	7	327	W	367	w
270	8	330	X	370	x
271	9	331	Y	371	y
272	:	332	Z	372	z
273	;	333	[373	}
274	<	334	\	374	
275	=	335]	375	}
276	>	336	^ (7)	376	~ (10)
277	? (6)	337	_ (8)	377	DEL (11)

Notes

- 1 Space forward one position
- 2 Terminal usage — erase previous character
- 3 £ in British use
- 4 Apostrophe/single quote
- 5 Comma
- 6 Terminal usage — kill line
- 7 1963 standard \uparrow , terminal use — logical escape
- 8 1963 standard \ast
- 9 Grave \backslash
- 10 1963 standard ESC
- 11 Rubout — ignored

Conforms to ANSI X3.4-1968

1963 variances are noted

The parity bit (200) has been added
for Prime usage

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