DS/3000 to DS/1000
DISTRIBUTED SYSTEMS
Section D

The *Communications Handbook* (obsolete part number 30000-90105) has been restructured to make it more widely available and more readily updated. The various sections of the handbook are now available in two ways:

1. Those sections pertinent to all datacomm products, including controller, modem, CS Trace and troubleshooting guides, are now combined and expanded into a separate handbook, the *Fundamental Data Communications Handbook* (5957-4634). This handbook is included with each new HP 3000 and as such is updated under operating system and software contracts. It can be separately ordered from CSO.

2. The product specific sections are now provided with each product for use as quick references and as such are updated under operating system, software and manual contracts for the products. These sections can also be separately ordered from CSO.

The DS/3000 to DS/1000 section of the *Data Communications Handbook* is intended for use as a quick reference. It is not a set of product specifications. Refer to the appropriate reference manual for complete product, system, and component specifications.

HEWLETT PACKARD
Information Networks Division

Part No. 32189-90006
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PRINTING HISTORY

New editions are complete revisions of the manual. Update packages, which are issued between editions, contain additional and replacement pages to be merged into the manual by the customer. The dates on the title page change only when a new edition or a new update is published. No information is incorporated into a reprinting unless it appears as a prior update; the edition does not change when an update is incorporated.

The software code printed alongside the date indicates the version level of the software product at the time the manual or update was issued. Many product updates and fixes do not require manual changes and, conversely, manual corrections may be done without accompanying product changes. Therefore, do not expect a one to one correspondence between product updates and manual updates.

First Edition.....Jun 1984.....B. 51. 00

DSN/DS HP 3000 to HP 1000

SECTION D

CONTENT

REFERENCES

DSN/DS HP 3000 to HP 3000 User/Programmer Reference Manual (32189-90001)
DSN/DS HP 3000 to HP 3000 Network Administrator Manual (32189-90002)
DSN/X.25 for the HP 3000 Reference Manual (32191-90001)

Software Pocket Guide (30000-90049)
MPE Intrinsics Reference Manual (30000-90010)

Getting Started With DS/1000-IV (91750-90004)
DS/1000-IV User's Manual (91750-90002)
DS/1000-IV Network Manager's Manual Vol I & II (91750-90010 & 91750-90011)
DS/1000-IV Quick Reference Guide (91750-90005)
DS/1000 Programmers Reference Manual (91740-90002)
DS/1000 Network Managers Manual (91740-90003)
RTE Quick Reference Guides (RTE-A 92077-90020), (RTE-IVB 92068-90003), (RTE-M 92064-90007), (RTE-L 92070-90020), and (RTE-6/VM 92084-90003).

HP30360A Hardwired Serial Interface (HSI) Installation and Service Manual (30360-90001)

Intelligent Network Processor (INP) Manuals

HP30010A INP Installation and Service Manual (Series II/III: 30010-90001)
HP30020A INP Installation and Service Manual (Series 30,33,40,44: 30020-90001)
HP30020B INP Installation and Service Manual (Series 30,33,40,44,64,68: 30020-90005)
HP30010A/HP30020A/B INP Diagnostic Procedures Manual (30010-90002)
DSN/INP Handbook (10A: 30010-90006), (20A: 30020-90009), and (20B: 30020-90010)

Programmable Serial Interface (PSI) Manuals

12042-91001 *L/A-Series PSI (Modem) Installation and Service Manual*
12042-91002 *L/A-Series PSI (Direct-Connect) Installation and Service Manual*
12826-91001 *M/E/F-Series PSI (Modem) Installation and Service Manual*
12826-91002 *M/E/F-Series PSI (Direct-Connect) Installation and Service Manual*

SOFTWARE SUPPORT

DS/3000 HP32189A: Standard DS/3000 (includes link to HP 1000).
DS/1000-IV HP91750A: Standard DS/1000-IV (includes link to HP 3000).

HP 1000 Operating Systems: RTE-MIII,-IVB,-IVE,-6/VM,-XL,-A,-L

Supported Capabilities

PTOP - Program-to-Program communication
RFA - Remote File Access
Remote Commands (HP 3000 to HP 1000, RTE commands only)
DEXEC (HP 3000 to HP 1000)

Buffer Specifications

HP 1000 Software

The RFA/DEXC buffer size is always 512 words. The size of the HP 1000 PTOP buffer depends on the library used to generate the system. The user buffer sizes are not interface dependent. The exact amount of data depends on the the type of call. PTOP header and apprendage are larger than others.

Nominal Data	Maximum HP 1000 PTOP Buffer
256 words	304 words
1072 words	1072 words
4048 words	4096 words

HP 1000 Hardware

Maximum Line Buffer: 1072 words PSI
4096 words HSI

M/E/F Series Interfaces:
HP 12834A: PSI - Direct Connect Interface
HP 12793A: PSI - Modem Interface
HP 12889A: HSI
HP 12250A: PSI X.25 LAP-B PDN Interface

A/L Series Interfaces:
HP 12082A PSI - Direct Connect
HP 12073A PSI - Modem Interface
HP 12075A PSI - X.25 LAP-B PDN Interface

HP 3000 Software

The software supports buffer sizes between 256 and 4096. The system configuration establishes the line buffer size up to hardware maximum. The person opening the line may use the LINEBUF=*parameter* to override the default configuration size. The end which establishes the link specifies the require line buffer size. The final effective line buffer size is the minimum of the four values: HP 1000 hardware, HP 1000 software, HP 3000 hardware, and HP 3000 software.

HP 3000 Hardware

SSLC	4096 word maximum
HSI	4096 word maximum
INP	1024 word maximum

DS/1000 Programs

LOG3K	Used to log DS messages
TRC3K	Used to format data logged by LOG3K
DSINF	DS parameter and timeout information
DSMOD	Modify DS link characteristics, re-enable line
DINIT	Initialize DS/1000
SLCIN	HSI Bisync Driver Trace information
DSLIN	Establishes a Bisync link to HP 3000 using HP 1000 PSI Modem or Direct Connect cards. Refer to "HP 1000 DSLIN Errors" Note: DSLIN is not necessary for X.25 connections.
RMOTE	Sends Remote Operator Commands to HP 3000; provides virtual terminal capability. (A version of RMOTE contains the MO command to transfer files between HP 1000 and HP 3000 systems.)
DSTES	HP 1000 PTOP slave for HP 1000 DSTEST program

(See *DS/1000-IV Network Managers Manual* and *DS/1000-IV Users Manual* for more information.)

Virtual Sessions

The number of virtual sessions (HP 1000 to HP 3000) depends on the number of virtual terminals configured on the HP 3000 and the number of **Transaction Control Blocks (TCB)** on the HP 1000.

TCBs are used for:

a. Remote session on HP 1000 and HP 3000 systems.
b. Each outstanding master request and command.
c. Each uncompleted slave request.

HARDWARE SUPPORT

Hardwired Direct Connect (RS-449 Link)

Series 3X/4X/6X

30020A/B INP to 12834A: PSI - Direct Connect Interface for M/E/F series
or
12082A: PSI - Direct Connect Interface for A/L series

NOTE: 30020B must be used with Series 64/68.

30221F Cable: Maximum length 1200m (3900 feet)
Cable 24 pin, contains 4 twisted wire pairs
(transmit data, receive data, transmit clock, receive clock)
Data rate up to 7000 char/sec (56k bps)

Series II/III

30010A INP to 12834A: PSI - Direct Connect Interface for M/E/F series
or
12082A: PSI - Direct Connect Interface for A/L series

30222F Cable

HP 1000 Connection

Supported by 12834A (MEF) or 12082A (A/L) Direct Connect Board. Includes Direct Connect Cable and Diagnostic Hood.

Option 001 Firmware update

HP 91712A 75m cable (male-female) 24 pin connector.
HP 91713A one pair cable connectors, Option 1 Edge connectors for card
HP 91714A 300m cable (no connectors) (Belden YR19169)

NOTE

For an HP 1000 connection using the INP, the INP must be configured for full duplex (transmission mode=0).

DSN/DS 3000 to 1000

HSI Hardwired Link

30360A HSI (for HP 3000 Series II/III) to 12889A HSI (for HP 1000 M/E/F Series) HSI 12889-60001
Crystal (15 Mhz) 1813-0046 250,000 char/sec up to 1000 feet
Crystal (7.5 Mhz) 1813-0052 125,000 char/sec 1000 to 2000 feet
Cable 12889-60004

Interfacing Coaxial Cables

30220A	Cable Kit	25 feet
	Option 001	100 feet
	Option 002	250 feet
	Option 003	500 feet
	Option 004	1000 feet
	Option 005	2000 feet

8120-2404 COAX (Beldon 9259) UL 1354
75 ohm, 17.3pf/ft, 0.24 in. OD, stranded center, solid copper strands, 22 AWG (6x30) (1x29) The cables are fabricated on site. Refer to the *HP 30360A Hardwired Serial Interface Installation and Service Manual (30360-90001)* for fabrication instructions.

HSI link up to 610m (2000 feet).

Configured instantaneous line speed: 125,000 char/sec (up to 610m), or 250,000 char/sec (to 305m).

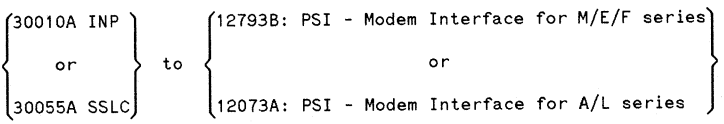
MODEM SUPPORT

Series 3X/4X/6X

30020A/B INP to 12793B PSI - for M/E/F series
or
12073A PSI - for A/L series

NOTE: 30020B must be used with Series 64/68.

Series II/III



Maximum speed for INP: 56K bps (RS-232)
Maximum speed for SSLC: 9600 bps (RS-232 or CCITT V.24)
Synchronous modems, half or full duplex, dial or leased lines

Dialing

All HP 1000 Bisync lines (non-HSI) are placed in secondary (answer) mode when they are enabled by DINIT, the DS/1000-IV initialization program.

To place an HP 1000 Bisync line in primary (call) mode, run the program DSLIN or `:RP,DSLIN` in the welcome file. If no connection is made before the connect timer expires (about 4 minutes), the line is placed back in secondary mode. The line also goes to secondary mode if the RTE `BR,DSLIN` command is entered before the connection is made.

If a call is received during the four minute dial-out window, the HP 1000 will not answer, as it is trying to connect as a primary, not a secondary.

DS/1000 91740A

Runs only with an HSI

Supported Capabilities

PTOP
RFA
DEXEC (HP 3000 to HP 1000)
Remote Commands (HP 3000 to HP 1000, RTE commands only)

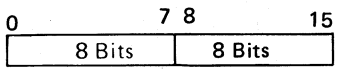
- HSI-HSI Communications
- HP 1000 End of the Communications Link

12889A HSI

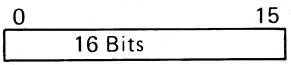
HSI 12889-60001
Crystal (15 Mhz) 1813-0046 250,000 char/sec up to 1000 feet
Crystal (7.5 Mhz) 1813-0052 125,000 char/sec 1000 to 2000 feet
Cable 12889-60004

- Specify the number of files in an answer file when the RTE system is initialized with the LSTEN program.
- The number of open files (RFA HP 3000 to HP 1000) plus the number of HP 1000 slave programs (depends on memory size and SAM).
- The number of TCB's is also specified with LSTEN.
- Virtual Sessions

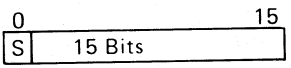
DATA TYPES



BYTE (8 Bits = 1 Byte)

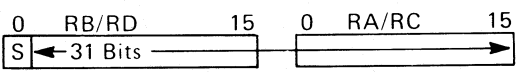


LOGICAL



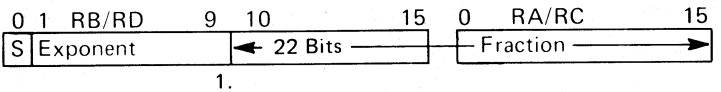
ARITHMETIC (INTEGERS)

$-32768 \leqslant X \leqslant 32767$



DOUBLE INTEGER

$-2,147,483,648 \leqslant X \leqslant 2,147,483,647$



REAL (FLOATING POINT)

1.

Exp. Excess 256 (Range 0 to 511)

Normalized Form: Implied 1 in Bit 9 preceding fraction, making 23 bits total.

Mantissa Range 1.000000 to 1.99999976

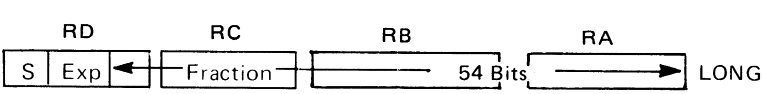
Range $\pm$ 8.63616 X $10^{-78} \leqslant X \leqslant$ 1.1579208 X 10^{77}

Accuracy 6-7 Digits

Figure D-1. HP 3000 Data Types

FLOATING POINT EXAMPLES

Exp-256		exponent (RB)	RA		
2^{-256}	S	0 0 0 0 0	0 0 0 0 0 0	=	Zero (by definition)
2^{-256}	S	0 0 0 0 0	0 0 0 0 0 1	=	$8.63616 * 10^{-78}$
2^{-224}	S	0 4 0 0 0	0 0 0 0 0 0	=	$3.70921 * 10^{-68}$
2^{-192}	S	1 0 0 0 0	0 0 0 0 0 0	=	$1.59312 * 10^{-58}$
2^{-160}	S	1 4 0 0 0	0 0 0 0 0 0	=	$6.84228 * 10^{-49}$
2^{-128}	S	2 0 0 0 0	0 0 0 0 0 0	=	$2.93823 * 10^{-39}$
2^{-96}	S	2 4 0 0 0	0 0 0 0 0 0	=	$1.26218 * 10^{-29}$
2^{-64}	S	3 0 0 0 0	0 0 0 0 0 0	=	$5.42101 * 10^{-20}$
2^{-32}	S	3 4 0 0 0	0 0 0 0 0 0	=	$2.32831 * 10^{-10}$
2^{0}	S	4 0 0 0 0	0 0 0 0 0 0	=	1.00000
2^{32}	S	4 4 0 0 0	0 0 0 0 0 0	=	$4.29497 * 10^{9}$
2^{64}	S	5 0 0 0 0	0 0 0 0 0 0	=	$1.84467 * 10^{19}$
2^{96}	S	5 4 0 0 0	0 0 0 0 0 0	=	$7.92282 * 10^{28}$
2^{128}	S	6 0 0 0 0	0 0 0 0 0 0	=	$3.40282 * 10^{38}$
2^{160}	S	6 4 0 0 0	0 0 0 0 0 0	=	$1.46150 * 10^{48}$
2^{192}	S	7 0 0 0 0	0 0 0 0 0 0	=	$6.27710 * 10^{57}$
2^{224}	S	7 4 0 0 0	0 0 0 0 0 0	=	$2.69600 * 10^{67}$
2^{256}	S	7 7 7 7 7	1 7 7 7 7 7	=	$1.15792 * 10^{77}$
	0	1-3 4-6 7-4 10-12 13-15	0 1-3 4-6 7-9 10-12 13-15		
	RB		RA		

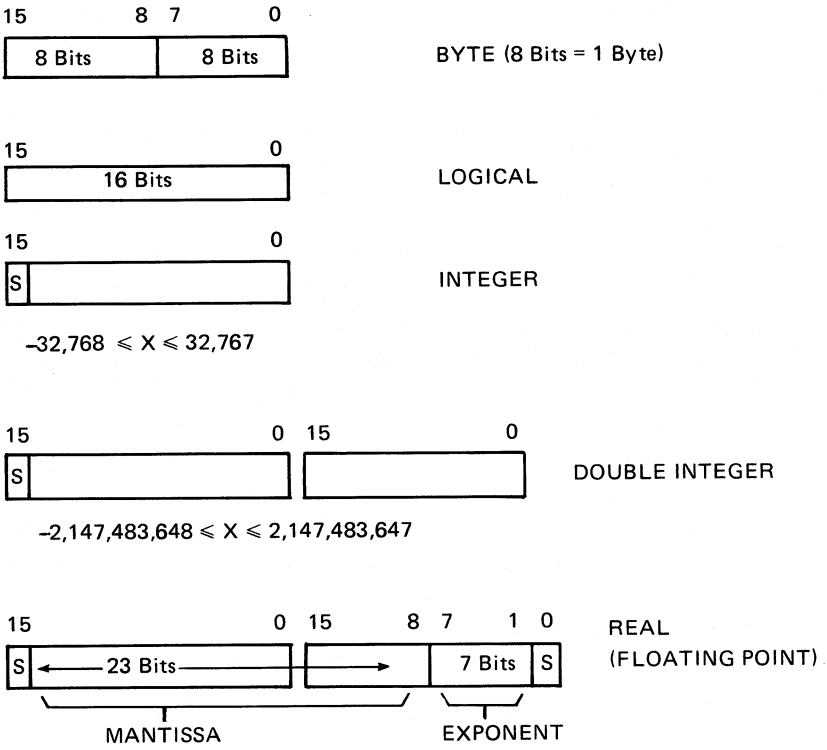


LONG FLOATING POINT

Range $8.63616\ 85551\ 14 * 10^{-78} \leq X \leq 1.15792\ 08923\ 72 * 10^{77}$

Accuracy 16-17 Digits

Figure D-2. Floating Point Example



Mantissa	(±23 bit fraction)
Exponent	(±7 bit integer 2^X power)
Range	1.469368 *10 -39
Accuracy	6 – 7 Digits

Figure D-3. HP 1000 Data Types

TABLE D-1. EXAMPLES

Mantissa	Exponent	Value (+/-)
.77777 776	0	.99999 988
.5	-32	1.16415 *10-10
.5	-16	7.62939 *10-6
.5	- 8	1.95312 *10-3
.5	- 2	1.25 *10-1
.5	0	.5
.5	2	2.0
.5	8	1.28 *10^2
.5	16	3.2768 *10^4
.5	32	2.1475 *10^9
+0	+ 0	zero

TABLE D-2. ROUND OFF ERROR

Number	Exponent	Maximum Error
8,388,607.0	23	1.0
1,048,474.87	20	.125
32,767.996	15	.0039
1,023.99988	10	.0012 2
31.99999 52	5	.00000 38
.99999 9881	0	.00000 012

TABLE D-3. PARAMETER SUPERSCRIPTS

Superscript	Meaning
BA	Byte Array
BP	Byte Pointer
D	Double
DA	Double Array
DV	Double by Value
I	Integer
IA	Integer Array
IV	Integer by Value
L	Logical
LA	Logical Array
LV	Logical by Value
OV	Option Variable
R	Real

HP 1000 TO HP 3000 UTILITIES

HELLO (HP 3000 Logon Utility)

Used in conjunction with PTOP to establish communication between an HP 1000 system and an HP 3000 system. Creates a Session Main Process (SMP) at the remote HP 3000. You must execute the HELLO utility before issuing any master PTOP calls to the HP 3000 slave.

```
HELLO(err,ldev,lstdv,nmsmp,logr,logrl[,lux.25]);
```

Parameters

err — An error code is returned here if an error condition is encountered. Upon succesful completion of the call to HELLO, the value of *err* is zero. Refer to "HP 1000 HELLO/BYE Error Codes"

ldev — The logical unit number of an HP 3000 (an integer less than 256) or an X.25 address (up to 15 ASCII-coded digits).

lstdv — The logical unit number of the desired list device. The "logon" response generated at the HP 3000 as a result of a successful HELLO operation is transmitted to this device. Zero equals the scheduling terminal.

nmsmp — The Session Main Process (SMP) number is returned here.

logr — An array that contains HELLO command logon parameters in the form of a message. The first six characters of this logon message must be the characters HELLO followed with a blank. The entire message string must also be followed (terminated) with a blank.

logrl — The length (in characters) of the logon message contained in the *logr* array.

lux.25 — The LU associated with an X.25 network. If this parameter is omitted and an X.25 address is passed in *ldev*, HELLO passes zero in *lux.25*. This zero is used by the X.25 virtual circuit allocation routine which indicates that X.25 will use the first network in SAM (the last network entered from XINIT).

BYE (HP 3000 Logoff Utility)

Following completion of your operation at the HP 3000, you can terminate the Session Main Process via a call to the BYE utility. This utility issues a BYE command which terminates communication between your RTE program and the HP 3000.

```
BYE(err,ldev,lstdv,nmsmp)
```

Parameters

err An error code is returned here if an error condition is encountered when issuing the BYE command. Upon successful completion of the call to BYE, the value of *err* is zero. Refer to the "HP 1000 HELLO/BYE Error Codes" at the end of this section.

ldev The logical unit number of an HP 3000.

lstdv The logical unit number of the desired local list device. The "logoff" message generated by the HP 3000 as a result of a successful BYE operation is transmitted to this device. Zero equals the scheduling terminal.

nmsmp The Session Main Process (SMP) number obtained via this session's corresponding HELLO command.

HP 1000 HELLO/BYE Error Codes

0 No error
1 HELLO failure or line disconnected
4 Invalid LU
5 Timeout
6 Illegal (rejected) request
7 Transaction Table access error (not enough Transaction Control Blocks for HELLO)
8 Non-DS error (e.g., input-only device specified as list LU)

PRCNM

This utility is used to establish communication between a son program and a Session Main Process (SMP) created by a father program.

```
PRCNM(nmsmp)
```

Parameters

nmsmp The negated number of the Session Main Process (SMP) created by a father program at the HP 3000 node. This value is returned when a session is sucessfully created using the HELLO utility.

LU3K (for X.25 Links)

If you use (pooled) X.25 virtual circuits for HP 1000 to HP 3000 connections, you can obtain the actual LU number of the virtual connection by calling LU3K.

```
a3klu:= ludk([idumy])
```

Parameters

a3klu The LU number of the X.25 virtual circuit is returned to this variable.

idumy Dummy parameter required for FTN4x and earlier FORTRAN compliers. Omit this parameter for PASCAL and programs written in later versions of FORTRAN (FTN77/7x). For example: a3klu = lu3k().

PTOP CALLS

For DS/3000 to DS/1000 Program-to-Program communication:

- Programs residing on the HP 3000 must be written in SPL, PASCAL, FORTRAN, COBOL, COBOLII, or BASIC.
- Programs residing on the HP 1000 must be written in FORTRAN, PASCAL, or Assembly language.
- The HP 1000 slave program must exist in a FMGR file or must have an ID segment (RP). If the slave is located at an RTE-A node, it must also be loaded as a system utility.
- One slave per DS line per user, father and son processes.
- POPEN valid toward remote (outgoing direction), not toward local (backward).
- Use of PTOP temporarily inhibits simultaneous RFA from the same user (father and son).

Calls in this section are shown in SPL. Refer to Table D-3.

Common Parameters - HP 3000 PTOP Calls

dsnum	Master link identifier returned by POPEN. Required by all PTOP intrinsics.
itag	A 20-word tag array used to exchange data between masters and slave.
target	Integer array from which data is read, or into which data is returned.

Condition Codes

CCE	Request accepted by the remote slave program.
CCG	Request rejected by the remote slave program.
CCL	Request denied; an error occurred. Issue a PCHECK intrinsic call to determine the error code. Error code can be an DS/3000 error code or MPE file system error code.

PTOP Calls - HP 3000 Master

PCHECK

Returns completion code of most recently completed DS/3000 intrinsic.

```
   I                IV
icode:= PCHECK(dsnum);
```

icode Applicable Completion Code Values. Refer to HP 3000 PTOP errors at end of section, also other DS/3000 or MPE file system errors are possible.

CCL Denied. Invalid *dsnum*
CCE Successful completion
CCG Not returned.

PCLOSE

Forces immediate termination of the HP 1000 slave program and terminates logical connection.

```
          IV
PCLOSE(dsnum);
```

PCONTROL

Exchanges tag fields.

```
            IV      IA          0-V
PCONTROL(dsnum[,itag]);
```

POPEN

Opens a slave program.

```
  I             BA       BA       IA          BA      IV      IV      O-V
dsnum:= POPEN(dsdevice,progname[,itag][,entrynam][,param][,flags]
                 IV          IV       IV       IV
              [,stacksize][,dlsize][,maxdata][,bufsize]);
```

dsdevice — ASCII string terminated by a space. Specifies DS device or logical device number, device class name, or X.25 node name.

progname — ASCII slave name, up to 5 characters.

entrynam, *param*, *flags*, *stacksize*, *dlsize*, *maxdata* — These are all MPE parameters used to specify program loading. They are ignored if the slave system is an RTE system.

bufsize — The size in words of the communications buffer (DSN/DS buffer) that is established by the remote DSN/DS software. Must be specified for a buffer of 342 or more words.

PREAD

Reads a buffer from slave and exchanges tag field.

```
  I           IV    IA     IV     IA          O-V
lgth:= PREAD(dsnum,target,tcount[,itag]);
```

lgth — Returns number of words transferred.

tcount — Positive (+) for words, negative (-) for bytes. The number of words transferred. Up to slave to indicate whether number is valid through tag field. (Cannot exceed 4096 words to the HP 1000.)

PWRITE

Transmits a block of data and exchanges tag field.

```
          IV      IV     IV     IA          O-V
PWRITE(dsnum,target,tcount[,itag]);
```

tcount Positive (+) for words, negative (-) for bytes. The number of words transferred, up to 4096 words to the HP 1000.

PTOP ERRORS - HP 3000

Program-to-Program errors are returned by the PCHECK intrinsic.

CCE No error.
CCL Error condition. Refer to PCHECK.
CCG May not be returned, but generally indicates a reject by the slave program.

3	Not enough parameters.
5	Parameter address violation at the HP 3000.
72	Invalid DS line, or failure to do POPEN first.
205	No room at the 1000 to initiate communication.
206	Specified slave function from master program.
207	Slave function out of sequence (do GET first).
208	Specified master PTOP function on same line as slave functions.
209	Program does not exist on the 1000.
211	Slave progrram has issued reject (CCG).
213	Remote slave program not opened properly.
214	Missing :DSLINE command.
216	Remote computer has rejected request. May be due to time-out.
218	Invalid PTOP operation.
219	Too many POPEN commands issued. Only one master to slave PTOP operation/DSLINE.
222	Master PTOP function issued prior to a POPEN. Do a POPEN first.

PTOP SUMMARY - HP 3000

	PARAM	TAG	DATA	CCL	CCE	CCG
POPEN	DSNUM	Send / Receive	–	DSNUM Invalid	OK	Not Returned
PREAD	LGTH	Send / Receive	Receive	Error (PCHECK)	OK	Rejected by Slave
PWRITE	–	Send / Receive	Send	Error (PCHECK)	OK	Rejected by Slave
PCONTROL	–	Send / Receive	–	Error (PCHECK)	OK	Rejected by Slave
PCLOSE	–	–	–	Denied	OK	Not Returned
PCHECK	ICODE	–	–	Denied Bad DSNUM	OK	Not Returned
GET	IFUN	Receive	–	Error (PCHECK)	OK	Refer to Manual
ACCEPT	–	Send	Note 1	Error (PCHECK)	OK	Not Returned
REJECT	–	Send	–	Error (PCHECK)	OK	Not Returned

NOTE 1: Depends on the master intrinsic; required for a PREAD or PWRITE call.

PTOP Calls – HP 3000 Slave

GET

Receives the PTOP intrinsic from the master program.

```
  I          IA     I      I          O-V
ifun:= GET([,itag][,il][,ionumber]);
```

ifun	Function from the master program:
	0 An error occurred (CCL)
	1 POPEN
	2 PREAD
	3 PWRIT
	4 PCONT
	5 CCG (I/O without wait)
il	For PREAD, the number of words requested.
	For PWRIT, the number of words transmitted.
ionumber	Has meaning only for CCG (ifun:=5), the MPE file number for I/O without wait.

ACCEPT

Completes the request of the most recent GET and transfers tag field. For PREAD, transfers *tcount* words from target. For PWRITE, moves *tcount* words from DS buffer to target.

```
          IA     IA        IV          O-V
ACCEPT([,itag][,target][,tcount]);
```

tcount	Number of words to be transferred. 4096 maximum.
	For PREAD: Length of data buffer to be transmitted to remote master.
	For PWRITE: Number of words to be transferred from DS buffer to slave target.

REJECT

Rejects most recent GET intrinsic from master program.

```
          IA       O-V
REJECT([,itag]);
```

CCL	Error. Issue PCHECK for information.
CCE	Request was successful.
CCG	Implicit IOWAIT(0) call issued by the GET intrinsic completed a pending MPE I/O without wait request instead of a DS remote I/O request. The file number associated with the completed request is *ionumber*.

PTOP CALLS - HP 1000 MASTER

Common Parameters - HP 1000 PTOP Calls

ipcb Control Block. A 4-word array that serves as a control block for the data link.
ierr Error code returned.
itag A 20-word tag array.

PCLOS

Terminates the slave program immediately (does not wait for GET). Does not terminate logical connection (refer BYE utility call).

```
        IA   I
PCLOS(ipcb,ierr)
```

PCONT

Provides an exchange of a tag field between master and slave programs.

```
        IA    I   IA
PCONT(ipcb,ierr,itag)
```

PCONT transmits a tag field to the slave program. The slave must issue a GET to obtain the tag field data. Then, the slave must call either ACCEPT or REJECT and return a tag field to the waiting master program.

POPEN

Opens a slave program on the HP 3000 system.

```
        IA    I   IA   I    IA     IA       I       I       I
POPEN(ipcb,ierr,name,node,itag[,ienam][,ipram][,iflag][,ibfsz])
```

name 14-word array containing ASCII name of slave.
node Negative value of the LU number associated with the HP 1000/3000 link.
ienam DS/3000 program entry point.
ipram DS/3000 program control.
iflag DS/3000 loading options.
ibfsz DS/3000 communications buffer size.

PREAD

Reads the data and tag fields from the slave program and places them in the master program buffers.

```
        IA   I    IA  I   IA
PREAD(ipcb,ierr,ibuf,il,itag)
```

ibuf Data buffer, where size is equal to or less than *il*.
il Data length in words (4096 maximum).

PWRIT

Writes a data buffer and tag field from the master program to the slave program buffers.

```
        IA   I    IA  I   IA
PWRIT(ipcb,ierr,ibuf,il,itag)
```

ibuf Data Buffer, where size is equal to or greater than *il*.
il Length in words (4096 maximum).

PTOP CALLS - HP 1000 SLAVE

GET

Obtains the next outstanding master program request. If no master program requests are obtained, the slave is suspended. Slave must call the RTE intrinsic RMPAR before doing any PTOP calls to obtain a class number.

```
      I    I     I    IA   I    IA      I
GET(iclas,ierr,ifunc,itag,il[,ibufr[,ibufz]])
```

iclas Class number obtained when slave calls RMPAR.
ifunc Function requested by the master program:
1 POPEN
2 PREAD
3 PWRITE
4 PCONTROL
il For *ifunc*=2 PREAD, maximum size buffer expected.
For *ifunc*=3 PWRITE, the number of words transferred.
ibufr Data buffer (optional); an array the size equal to or greater than the value of the *ibufz* parameter. This parameter is only required when the master request is a PWRITE.
ibufz Defines buffer size of *ibufr* (optional).

ACEPT

Accepts and completes the master request obtained by the GET call and sends a data buffer.

```
        IA   I   IA
ACEPT(itag,ierr[,ibuf])
```

ibuf Optional data buffer for PREAD or PWRITE.

REJCT

Rejects the master request obtained by the GET call and sends tag field.

```
        IA   I
REJCT(itag,ierr)
```

PTOP ERRORS - 1000

PTOP errors returned to the master or slave program.

Negative Numbers:

-40	Not enough parameters.	
-41	Remote program not defined (POPEN).	
-42	No room to initiate (POPEN), no class number available.	
-44	Remote program not opened.	
-45	PWRIT, PREAD, or PCONT issued to dormant slave program.	
-46	Sequence error.	
-47	Communication line error, NRV incorrect: RTE: IOnn, RNnn, SCnn error.	
-48	Abortive communication error.	
-50	Local node not initialized.	(same as:)
-51	Communication line parity.	DS01
-52	Communication line time-out.	DS02
-53	Illegal record size.	DS03
-54	Illegal node address.	DS04
-55	Request time-out.	DS05
-56	Illegal request.	DS06
-57	System table error.	DS07
-58	Remote busy.	DS08
-59	Illegal or missing parameter.	DS09

DEXEC CALLS

The DEXEC intrinsics covered in this section are used to access remote HP 1000 I/O devices. A call to DEXEC will be processed by the EXEC module of the remote RTE operating system. For more information on HP 1000 EXEC calls see the RTE Programmers Reference Manual for your RTE system. You should check parameter formats and meanings for your specific RTE system; syntax may be different for L, XL, and A nodes. Programs scheduled with DEXEC calls at RTE-A systems must be loaded as system utilities.

Condition Codes

Test condition code for satisfactory completion of the DEXEC intrinsic. The information returned in the A-register and B-register (abreg) by DEXEC is the same as that returned by EXEC (refer to the appropriate RTE Operating System reference manual) with additional DS/1000-IV error conditions and codes (refer to "DS/1000 Alphanumeric Error Codes" at the end of this section.

CCL	Failure at the HP 3000 end. The binary code in ABREG may contain an DEXEC, DS, or MPE file system error code. Refer to "DEXEC Errors" for error code meanings, or check DS/3000 or MPE File System errors.
CCE	The call was completed successfully. Registers contain status information, not error information. No DS error.
CCG	Completed at communications level, but the HP 1000 detected an error. A four character ASCII DEXEC error code is in abreg.

Common Parameters - DEXEC Calls

idest	A 5-word logical array. Words 1 through 4 contain an ASCII DS device (LDEV,device class name or X.25 node name), word 5 receives the DS line number upon execution.
iname	A 5-character ASCII program name.

TABLE D-4. DEXEC CALLS

Instruction code	Call	Function
1	READ	Reads a record from a remote I/O non-disc device.
2	WRITE	Writes a record on a remote I/O non-disc device.
3	I/O CONTROL	Performs an I/O control operation on a remote I/O device.
10	PROGRAM SCHEDULE	Schedules dormant remote programs for execution.
11	TIME REQUEST	Obtains the current time from the remote real-time clock.
12	TIMED PROGRAM SCHEDULE	Schedules remote programs for a set time of execution.
13	I/O STATUS	Obtains I/O status information from a remote I/O device.

DEXEC 1 – READ, DEXEC 2 – WRITE

Reads or writes a record from or to a remote non-disc I/O device.

```
 D              LA     IV     I       IA    I         I      I            O-V
abreg:= DEXEC(idest,icode,icnwd,ibufr,ibufl[,iprm1][,iprm2]);
```

abreg — Upon return, word 1 (displayed in A-register):
8:8 Status information
2:6 EQT type code
0:2 Availability indicator;0=up, 1=down
Upon return, word 2 (displayed in B-register): Positive number of words or negative number or characters read (depends on *ibufl*).

icode — 1 Read, 2 Write

icnwd — Control Word.

ibufr — Byte array to contain the information read or to be written. Insure size is greater than or equal to *ibufl*

ibufl — Positive (+) for words, negative (-) for bytes. Maximum size is 512 words.

iprm1,iprm2 — Required for certain drivers. See the appropriate manual.

Reads and writes that directly address a disc are not supported.

DEXEC 3 – I/O CONTROL

Performs an I/O control operation on a remote I/O device.

```
 D              LA     IV     I       I          O-V
abreg:= DEXEC(idest,icode,icnwd[,iprm1]);
```

abreg — Upon return, word 1 (displayed in A-register) contains status EQT word 5.
Word 2 (displayed in B-register) is meaningless.

icode — 3 for I/O control.

icnwd — Control word.

iprm1 — Optional parameter required for list output line spacing and various other functions.

DEXEC 10 - PROGRAM SCHEDULE

Schedules dormant remote program for execution.

```
                  LA     IV     IA      I        I        I                  O-V
abreg:=DEXEC(idest,icode,iname[,iprm1][,iprm2][,iprm3]
                    I      I      I       I
                [,iprm4][,iprm5][,ibufr][,ibufl]);
```

abreg	Upon return, word 1 value (displayed in A-register) 0 No Error 1 Program was already scheduled 2 I/O suspend 3 Program in wait state 4 Unavailable memory suspend 5 Disc allocation suspend 6 Operator or program suspend Word 2 (displayed in B-register) upon execution contains address of 5-word parameter array.
icode	10 Program schedule.
iprm1 to *iprm5*	Optional parameters passed to program.
ibufr	
ibufl	Optional buffer length (+words, -characters) max 512 words.

DEXEC 11 - TIME REQUEST

Requests the RTE system clock value.

```
  D           IA     IV      I      I
abreg:= DEXEC(idest,icode[,itime][,iyear]);
```

icode	11 Time request.
itime	5-word logical array: 1 Tens of milliseconds 2 Seconds 3 Minutes 4 Hours 5 Day of year (Julian)
iyear	Year value, 1 word

DEXEC 12 - PROGRAM EXECUTION (OFFSET)

Schedules a remote program for execution at specified time intervals, starting after an initial offset time. Program is placed in the time list.

```
 D              LA    IV    IA    I     I     I
abreg:= DEXEC(idest,icode,iname,iresl,mptle,iofst);
```

icode 12 Program execution time.
iresl Time units:
1 Tens of milliseconds
2 Seconds
3 Minutes
4 Hours
mptle Number of time units (1<n<4095) between scheduling. (0= Run only once)
iofst Indicates number of time units to wait before initial program execution (must be a negative value).

DEXEC 12 - PROGRAM EXECUTION (ABSOLUTE)

Schedules a remote program for execution at specified intervals, starting initially at a specified time.

```
  D           LA       IV   IA    I     I
abreg:= DEXEC(idest,icode,iname,iresl,mtple,
               I     I        I       I       O-V
              hours,minutes,seconds,mseconds)
```

icode 12 Program execution time.
iresl Time units:
1 Tens of miliseconds
2 Seconds
3 Minutes
4 Hours
mtple Number of time units (1<n>4095) between scheduling. (0= Run only once)
hours 0-23
minutes 0-59
seconds 0-59
mseconds 0-99 (tens of milliseconds)

DEXEC 13 - I/O STATUS

Obtains status of remote I/O device.

```
  D                LA    IV    I     L     L     L                 O-V
abreg:= DEXEC (idest,icode,icnwd,ista1[,ista2[,ista3]);
```

icode 13 I/O status.
icnwd Control word.
ista1 Logical EQT word 5
ista2 Logical EQT word 4
ista3 Logical unit up/down flag and subchannel number are returned here.

CCE No error occurred.
CCL Error at the HP 3000. abreg contains a binary error code which can be an HP 3000 DEXEC Error code (see "DEXEC Errors"), or DS/3000 error code, or an MPE file system error code.
CCG Error on remote HP 1000 computer. abreg contains a 4-character ASCII code (see "DEXEC Errors").

NOTE

The syntax and parameters of this call are different if the HP 1000 has an RTE-A, L or XL operating system. Refer to the DS/1000-IV User's Manual for more information.

DEXEC ERRORS

CCL - Errors at the HP 3000:

3	Not enough parameters.
5	Parameter address violation at the HP 3000.
72	Invalid DSLINE.

CCG - Errors at the remote HP 1000:
Note: Check RTE system documentation for complete list of error codes.

DS03	Illegal record size
DS06	Illegal request
DS07	System table error
DS09	Illegal or missing parameter
IO01	Illegal or missing parameter
IO02	Illegal logical unit
IO03	Logical unit not assigned
IO04	Illegal user buffer
IO07	Call rejected by driver
SC01	Missing parameter
SC02	Illegal parameter
SC03	Program cannot be scheduled
SC05	Program cannot be defined
SC06	No resolution code in DEXEC call

RFA INTRINSICS - HP 3000 TO HP 1000

The Remote File Access intrinsics described in this section are used to access the HP 1000 files from the HP 3000. For more information about HP 1000 FMP calls, refer to the RTE Programmers reference manual for the RTE operating system you are accessing. RFA calls to an HP 1000 can only access FMGR files; you cannot access files in the hierachical file system.

Common Condition Codes

Test condition code for satisfactory completion of an RFA intrinsic. In case of an error, refer to the value of *ierr*.

CCL	Failure at the HP 3000 end. Refer to "RFA Error Codes -- HP 3000 to HP 1000" for error code meanings or DS3000 or MPE file system errors.
CCE	No DS error; but if *ierr*<0 then FMGR error.
CCG	Not used.

Common Parameters - HP 3000 to HP 1000 Intrinsics

idcb	4-word logical array. The array is filled at DOPEN or DCRET time. The data is used by the system and should not be changed by the user.
ierr	Normally returns 0 for valid completion. Non zero values are error codes. Exceptions: DCRET and DOPEN.

TABLE D-5. RFA AND FMP CROSS REFERENCING

RFA	FMP	DESCRIPTION
DAPOS	APOSN	Positions disc files to a record. Record address usually obtained through DLOCF.
DCLOS	CLOSE	Close DCB. Make file available to others. Can also truncate file.
DCONT	FCONT	Perform I/O control function on non-disc device file, a type 0 file.
DCRET	CREAT	Create a file.
DLOCF	LOCF	Return information on opened file.
DNAME	NAMF	Close DCB and rename file.
DOPEN	OPEN	Open file to calling program.
DPOSN	POSNT	Skip records forward or backward.
DPURG	PURGE	Purge file. Cannot be opened.
DREAD	READF	Read a record from a file to a user buffer.
DSTAT	FSTAT	Return status of all mounted cartridges.
DWIND	RWNDF	Rewind type 0 files, including magnetic tape. Set to record 1 in disc file.
DWRIT	WRITF	Write a record from the buffer of a user to file.

DAPOS

Positions disc file to a record (reference DLOCF).

```
        LA   I    IV    IV    IV          O-V
DAPOS(idcb,ierr,irec[,irb][,ioff]);
```

irec Sequential record number (reference DLOCF).
irb Next sequential block number (block=128 words, 2 physical disc sectors).
ioff Word offset within block for beginning of a new record. Omitted for files with fixed length records.

DCLOS

Closes file and makes file available for other access. Optionally truncate.

```
        LA    I     IV           O-V
DCLOS(idcb,ierr[,itrun]);
```

itrun Truncate parameter:
=0 File closed without truncation
<0 Truncate extents only
>0 Number of blocks to be deleted

DCONT

Provides I/O control to an I/O device (type 0 file).

```
        LA   I    IV     IV          O-V
DCONT(idcb,ierr,icon1[,icon2]);
```

icon1 Function code
icon2 Auxiliary control parameter for 11, 22, and 27.

DCRET

Creates a disc file, makes file directory entry, and allocates disc space.

```
        LA    I   LA    LA    IV    IV     IA    O-V
DCRET(idcb,ierr,name,isize,itype[,isecu][,icr]);
```

ierr	>0 Number of sectors allocated <0 An error occurred
name	3-word ASCII name.
isize	2-word array. Word 1 contains size requested in blocks (<0 allocates rest of cartridge). Word 2, (for type 2 files) contains record length.
itype	File type. Types 1 through 7 are FMGR defined.
isecu	Security code =0 No security (default) >0 Write protect only <0 Read/write protect
icr	Cartridge number. If 0, use any available cartridge; if>0, cartridge reference number; if<0, LU of cartridge. Words 2 through 5 ASCII DS device,LDEV, class name, or X.25 node name.

DLOCF

Retrieves status and pointer information on an open file.

```
        LA    I    I    I    I       I    I    I    I       O-V
DLOCF(idcb,ierr,irec[,irb][,ioff][,jsec][,jlu][,jty][,jrec]);
```

irec	Returns number of next sequential record.
irb	Returns number of current block (starts at 0). Type 0 file not returned; type 1 file=*IREC*.
ioff	Returns word offset within current block to beginning of next record.
jsec	Returns number of sectors in the main file.
jlu	Returns the LU number of the file on disc (not type 0).
jty	Returns the file type.
jrec	Returns record size in words (for type 0: bit 15=1 read, bit 15=0 write).

DNAME

Renames an existing file. If security is non-zero, it must be specified.

```
          LA   I   LA    LA    IV     LA              O-V
DNAME(idcb,ierr,name,nname[,isecu][,icr]);
```

name	3-word ASCII name.
nname	3-word ASCII name.
isecu	Security code. Omit or equal 0, if file created without security code.
icr	Cartridge reference. If 0 or omitted, first file with *name* is renamed.

DOPEN

Opens the named file to the program.

```
         LA    I   LA    IV       IV     LA       O-V
DOPEN(idcb,ierr,name,ioptn][,isecu][,icr]);
```

ierr	>0 File type <0 An error occurred
name	3-word ASCII name
ioptn	Open option: (default=0) For bits, refer to FMGR manual.
isecu	=0 No security (default) >0 Any may read, specify to write <0 Specify to read/write
icr	5-word logical array. Word 1, cartridge reference number. If omitted, opens first file found. Words 2 through 5, ASCII DS device, ldev, class name, or X.25 node name.

DPOSN

Positions file pointer forward or backward relative to current position.

```
         LA   I    IV  IV      O-V
DPOSN(idcb,ierr,nur[,ir]);
```

nur	Number of records to be skipped: =0 No operation >0 Forward <0 Backward
ir	If non-zero, position to absolute number specified (no skip).

DPURG

Deletes the file and all extents.

```
        LA    I   LA    IV      LA          O-V
DPURG(idcb,ierr,name[,isecu][,icr]);
```

name 3-word ASCII name.
isecu Must be specified if created with security code. Otherwise, may omit. (default=0)
icr Cartridge reference number. If specified, searches only that cartridge. Otherwise, purges first file found with proper name.

DREAD

Reads a record from open file to user's buffer.

```
        LA   I   LA  IV   I     IV          O-V
DREAD(idcb,ierr,ibuf,il[,len][,num]);
```

ibuf User buffer. Insure size is greater than or equal to *il*.
il Number of words requested up to 512 words.
len Number of words actually transferred or -1 if EOF was read.
num Record number for random access type 1 and type 2 files.
=0 Transfer starts at current pointer position
>0 Transfer starts at absolute record position
<0 Transfer starts at current position

DSTAT

Returns information on all cartridge labels in the RTE system.

```
        LA   I     LA
DSTAT(istat,ierr,idest);
```

istat 125-word buffer: The four-word entry is repeated for each cartridge, up to 31 maximum.
idest 4-word array. ASCII DS device LDEV, class name, or X.25 node name.

DWIND

Places file pointer to first record in disc file. Rewinds type 0 files.

```
        LA    I        O-V
DWIND(idcb,ierr);
```

DWRIT

Writes a record from a user's buffer to open file. For types 0 and 3, writes specified number of words (*len*).

```
        LA   I    LA  IV   IV           O-V
DWRIT(idcb,ierr,ibuf,il[,num]);
```

ibuf User buffer array containing a record.
il Number of words to write up to 512.
num Record number for type 1 and type 2 files:
=0 Transfer starts at current pointer (default)
>0 Transfer starts at absolute record position
<0 Transfer starts at current pointer position

RFA ERRORS--HP 3000 TO HP 1000

Test condition code for satisfactory completion of RFA.

CCG Not used

CCL DS/3000 error:

- 3 Not enough parameters
- 5 Parameter address violation on the 3000
- 72 Invalid DSLINE command

CCE No error with DS at either end. Check *IERR* for result on the 1000.

- 00 No error
- -01 Disc error (disc down)
- -02 Duplicate file name
- -03 Device cannot be backspaced
- -04 File too long, or record size error
- -05 Invalid record, or record too long
- -06 Cartridge Reference Number not found, or no room
- -07 Invalid security code
- -08 File open, lock rejected
- -09 Tries to open type 0 as type 1, or to position type 0
- -10 Missing or illegal parameter
- -11 DCB unopened
- -12 EOF or SOF
- -13 Cartridge is locked
- -14 Directory full
- -15 Illegal file name
- -16 Illegal type code, tried to purge type 0, zero length file
- -17 Illegal read/write position type 0 file
- -18 Destination node does not have FMP
- -25 Bad FCODE (internam RFAM error)
- -26 Bad entry number in RFAM (DCB destroyed)
- -28 No internal table space in RFAM
- -53 Illegal record size
- -56 Illegal request
- -57 System table error
- -59 Illegal or missing parameter

Note: DCRET and DOPEN return positive values.

RFA INTRINSICS - HP 1000 TO HP 3000

This section on Remote File Access intrinsics covers the HP 1000 intrinsics used to access HP 3000 files.

Error Conditions

To test condition code following an HP 1000 to HP 3000 RFA call:

```
CALL intrinsicname
 IF (ICC(n)) label <,label=,label>
```

Where *n* is a dummy parameter.

For CCL and CCG, use the FCHEK intrinsic to determine the error code. Refer to the *MPE Intrinsics Reference Manual* for a list of error codes associated with the MPE FCHECK intrinsic.

Common Parameters -- HP 1000 to HP 3000 RFA Intrinsics

filnm File number returned by FOPEN. Required for all file intrinsics.
targt Array from which data is read, or into which data is returned.
recnm Logical record number (starts at 0).

NOTE

filnm is obtained at FOPEN and is used as a reference to the file for all subsequent RFA calls.

FCHEK

Provides information about the RFA intrinsic that failed. *filnm*=0 for a POPEN error.

```
CALL FCHEK(filnm[,ierr][,tlog][,blknm][,nmrec])
```

ierr Returns the error code. Refer to *MPE Intrinsics*.
tlog Transmission log. Specifies words left over (not read or written) as result of input or output error.
blknm Relative block number.
nmrec Number of logical records in the bad block.

CCL Denied. Invalid *filnm*, or bounds violation.
CCE Request granted.
CCG Not returned.

FOPEN

Opens or creates a file and returns the file number required for all other file intrinsics. Specify INTEGER FOPEN.

```
filnm:=FOPEN([fname][,fopts][,aopts][,recsz][,dev][,frmsg][,ulabl][,blkfr]
             [,nbuf][,filsz][,nmext][,iallc][,fcode])
```

fname Fully qualified file name. Begins with alphabetic, contains alphanumeric, slash, and period.
fopts Foptions parameter.
aopts Aoptions parameter.

CCL Request rejected. Refer to FCHEK.
CCE File opened.
CCG Not returned.

FCLOS

Closes the file and releases MPE buffers. This call may change the disposition of the MPE file.

```
CALL FCLOS(filnm,disp,scode)
```

disp Disposition: (default=0)

```
13:3   0  No change
       1  Permanent file
       2  Temporary job file (rewound)
       3  Temporary job file (not rewound)
       4  Release (delete) file
12:1   0  Retains all space
       1  Returns space beyond EOF
```

scode Security Code: (default=0)

```
0  Unrestricted access
1  Private file creator
```

CCL File not closed.
CCE File closed successfully.
CCG Not returned.

FCNTL

Provides control operations of file or device.

```
CALL FCNTL(filnm,ccode,param)
```

ccode Control code.
param Used for *ccode* 0 to 9.

CCL Request denied.
CCE Request granted.
CCG Not returned.

FINFO

Returns file access and status information. Refer to *MPE Intrinsics* for information on parameters.

```
CALL FINFO(filnm[,fname][,fopts][,aopts][,recsz][,dtype][,ldevn][,hwadr]
                [,fcode][,recpt][,eof][,flim][,lcnt][,phcnt][,blksz]
                [,extsz][,nmext][,ulabl][,crtid][,laddr])
```

CCL Request denied due to error.
CCE Request granted.
CCG Not returned.

FLOCK

Dynamically locks a file.

```
CALL FLOCK(filnm,lockc)
```

lockc Lock condition:

```
15:1     1  TRUE    Unconditional lock. Suspends until file is locked.
         0  FALSE   Locks if RIN is not currently locked.
                    If RIN is used, returns CCG.
```

CCL Denied. File not opened with dynamic locking or needs multiple RIN capability.
CCE Request granted.
CCG Denied. File was locked by another process.

FPOIN

Sets record pointer to a logical record (fixed-length only).

```
CALL FPOIN(filnm,recnm)
```

CCL Request denied for various reasons.
CCE Request granted.
CCG Request denied. Beyond physical EOF.

FREAD

Reads a logical record from the current record pointer. Specify INTEGER FREAD.

```
lgth:=FREAD(filnm,targt,tcnt)
```

lgth Returns length of data read (units are words/bytes per *tcnt*).
tcnt Maximum size of data transfer (>0 words, <0 bytes).

CCL Data not read due to error.
CCE Data was read.
CCG Encountered End-of-Data.

FRDIR

Reads the specified logical record (fixed or undefined length).

```
CALL FRDIR(filnm,targt,tcnt,recnm)
```

tcnt Maximum size for data (>0 words, <0 bytes).

CCL Not read due to error.
CCE Data was read.
CCG End End-of-Data.

FRDSK

Provides anticipatory read from disc file to buffer prior to FRDIR. File must allow I/O buffering and have fixed or undefined length.

```
CALL FRDSK(filnm,recnm)
```

CCL Read failed due to error.
CCE Request granted.
CCG Logical EOF encountered.

FRLAB

Reads a user-defined file label.

```
CALL FRLAB(filnm,targt[,tcnt][,labid])
```

tcnt Size in words (128 maximum).
labid Label ID number (default=0).

CCL Label not read due to error.
CCE Label was read.
CCG Referenced a label beyond the last written label on the file.

FRNAM

Changes a file name.

```
CALL FRNAM(filnm,nname)
```

nname New file name, fully qualified.

CCL Request denied due to error.
CCE Request granted.
CCG Not returned.

FRLAT

Determines whether a file pair is interactive and/or duplicative. Specify INTEGER intdu.

```
intdu:=FRLAT(infil,listf)
```

intdu — Returns information on the two files:
```
15:1    1 = Form interactive pair
 0:1    1 = Form duplicative pair
```
infil — File number of the input file.

CCL Denied due to error.
CCE Request granted.
CCG Denied. One of the files corresponds to $NULL.

FSPAC

Forward or backward spaces a disc file by changing logical record pointer. On magnetic tape, spaces physical records.

```
CALL FSPAC(filnm,displ)
```

displ — Displacement from current record position (>0 forward, <0 backward).

CCL Denied due to error, or file on Device that prohibits spacing.
CCE Request granted.
CCG Logical EOF encountered. For disc file, pointer unchanged. For magnetic tape, positioned beyond file mark.

FSTMD

Activates or deactivates the access modes: automatic error recovery, critical output verification, and terminal control by the user.

```
CALL FSTMD(filnm,modef)
```

modef Mode flags:
```
14:1  Critical output verification
13:1 Terminal control by user
12:1 Tape error recovery
```

CCL Request denied due to error.
CCE Request granted.
CCG Not returned.

FUNLK

Dynamically unlocks the file (RIN) that had been locked with FLOCK.

```
CALL FUNLK(filnm)
```

CCL Denied. File was not opened with dynamic locking *aopts*, or *filnm* invalid.
CCE Request granted.
CCG Denied. File had not been locked.

FUPDT

Updates the record in the disc file which filnm references.

```
CALL FUPDT(filnm,targt,tcnt)
```

tcnt Number of words/bytes to be written (>0 words, <0 bytes.

CCL Request denied due to error.
CCE Request granted.
CCG EOF encountered.

FWRIT

Writes a logical record to a file, and updates the pointer.

```
CALL FWRIT(filnm,targt,tcnt,contl)
```

tcnt Size of record (>0 words, <0 bytes)
contl Carriage control code for appropriate file opened with CCTL.

CCL Denied due to error.
CCE Request granted.
CCG Denied. Physical limits exceeded.

FWDIR

Writes specified record to a disc file (fixed or undefined length). Pads binary with zeros, ASCII with blanks.

```
CALL FWDIR(filnm,targt,tcnt,recnm)
```

tcnt Size of record (>0 words, <0 bytes).

CCL Request denied due to error.
CCE Request granted.
CCG Physical EOF encountered.

FWLAB

Writes a user-defined label onto a disc file.

```
CALL FWLAB(filnm,targt[,tcnt][,labid])
```

tcnt Size of label in words. (default=128)
labid Number of the label. First label=0. (default=0).

CCL Denied due to error.
CCE Request granted.
CCG Denied; would exceed limit established in FOPEN.

DS/1000-IV Alphanumeric Error Codes

(Refer to the *DS/1000-IV Quick Reference Guide* for a complete list.)

AUTO "BYE" FAILED
(RMOTE) The BYE generated automatically when the EX command is entered with a HELLO outstanding has failed.

BAD LU
(RMOTE) A negative LU number was specified in a MO command.

DS/1000 ERROR nnn
(RMOTE) The reported numeric DS/1000-IV error occurred during a file move.

>>DS/3000 COMMUNICATION LINK *DOWN*
>> XXXXXXXXXXXXX @ YYYYYYYYYYYYYYY
(QUEX) Displayed if initialization is not established or the link fails after initialization. QUEX tries to establish the link to the HP 3000 automatically. (HSI only) (See DS/1000-IV User's Manual for X and Y field errors.)

>>DS/3000 COMMUNICATION LINK *UP*
(QUEX) Displayed once initialization of the DS/3000 Communication Link is established. (HSI only)

DS/3000 ERROR nnn
(RMOTE) The reported numeric DS/3000 error occurred during a file move operation.

HELLO FAILED OR LINE DOWN
(RMOTE) HELLO command was not correct or could not be transmitted due to line error.

>>HP 3000: BAD BUFFER OUTGOING
(QUEX) Transmission did not pass verification test in QUEX.

>>HP 3000: BAD BUFFER RECEIVED
(QUEX) A message was received which did not pass a verification test in QUEX.

>>HP 3000 LINK READY FOR DIALING
(QUEX, PSI version) QUEX has caused the node to be in the primary (calling) state. QUEX tries to write the DS/3000 initialization request to MPE every five seconds until it is successful or a time-out (255 seconds) is reported. To move to the secondary state (receive)enter the RTE command BR,QUEX.

>>HP 3000 LINK DIALING TIMEOUT. NOW AWAITING CALL
(QUEX, PSI version) A time-out has occurred and QUEX has caused the node to be in the secondary state (receive). In this state, RTE waits indefinitely for a DS/3000 initialization request from MPE. The HP 1000 will accept incoming calls but cannot call other nodes in the network. If you wish to go from primary to secondary mode without waiting for the 255 second time-out, enter the RTE command BR,QUEX. Within ten seconds the AWAITING CALL message will appear on the system console. To go from secondary

ILLEGAL STATUS
(RMOTE) RTE returned an SC03 scheduling error for an RU, ON, or RW command.

INVALID INPUT
(RMOTE) Wrong or missing parameter or wrong prompt on transfer file input.

INVALID REMOTE LU
(RMOTE) From SW command: LU is not the one indicated when DINIT was executed. Simply reenter SW.

MPE FILE ERROR nnn
(RMOTE) The reported FS/3000 error occurred during a file move operation.

NEED "HELLO"
(RMOTE) Attempt to send a command to the HP 3000 before issuing HELLO.

NEED TO RUN "DINIT"
(RMOTE) Attempt to switch to remote node before the RTE node has been initialized for communications to the HP 3000. NO BUFFER SPACE
(RMOTE) Less than 256 words of memory are available for the PTOP file move buffer used with the MO command. Assign RMOTE more pages.

NO SLAVE AT 3000
(RMOTE) slave does not have copy of program COPY3K.PUB.SYS.

NO SUCH PROGRAM
(RMOTE) RTE returned an SC05 scheduling error for an RU, ON, or RW command.

NOT ENOUGH SAM
(RMOTE) RTE returned an SC10 scheduling error for an RU, ON, or RW command.

NOT LOCAL COMMAND
(RMOTE) Entered a HELLO or BYE under the $ prompt from RMOTE.

OVERWRITE?
(RMOTE) Asked when the "to" file in a file move already exists.

PROGRAM BUSY
(RMOTE) An RU or ON command specified a non-dormant program.

/QUEX: INSUFFICIENT S.A.M.
(QUEX) Could not deliver an incoming DS/3000 message because there was not enough System Available Memory

/QUEX: CLASS ERROR aaaa
(QUEX) Got the indicated ASCII error message (*aaaa*) when a class I/O operation was performed.

/QUEX: TRACING ERROR aaaa
(QUEX) Got the indicated ASCII error message (*aaaa*) when an attempt to write a trace record was made. The status of tracing is set to "down". (See LOG3K).

>>QUEX EXPECTS HSI LINK
(QUEX) The wrong version of QUEX (PSI) is loaded.

>>QUEX EXPECTS PSI LINK
(QUEX) The wrong version of QUEX (HSI) is loaded.

/QUEZ: INSUFFICIENT S.A.M
(QUEZ) Could not deliver an incoming DS/3000 message because there was not enough System Available Memory.

/QUEZ: CLASS ERROR aaaa
(QUEZ) Got the indicated ASCII error message (*aaaa*) when a class I/O operation was performed.

/QUEZ: TRACING ERROR aaaa
(QUEZ) Got the indicated ASCII error message (*aaaa*) when an attempt to write a trace record was made. The status of tracing is set to "down". (See LOG 3K)

>>QUEZ EXPECTS HSI LINK
(QUEZ) The wrong version of QUEZ (PSI) is loaded.

>>QUEZ EXPECTS PSI LINK
(QUEZ) The wrong version of QUEZ (HSI) is loaded.

REQUEST FAILED
(RMOTE) The HP 3000 rejected the last request.

RMOTE IOxx
(RMOTE) RTE-reported I/O errors.

RMOTE SCxx
(RMOTE) indicates bad parameters.

RQCNV: BAD BUFFER. MSG FLUSHED!!
(RQCNV) The driver passed RQCNV a bad message. The message was flushed.

RTE FILE ERROR nnn
(RMOTE) The reported FMP error occurred during a file access.

TIMEOUT: NO REPLY FROM REMOTE
(RMOTE) The HP 3000 did not respond to the last command.

TR STACK OVERFLOW
(RMOTE) The transfer stack is more than seven levels deep.

UNINITIALIZED @ READ
(RMOTE) Local and/or remote ID sequences do not match the HP 3000. Re-initialize or use DSMOD to change them.

WARNING - ILLEGAL OPTION
(RMOTE) Printed on if severity = 0. SP specified with input from RTE LU or an RTE file in non-spooled format. The option is ignored and processing continues.

WARNING: RMOTE BUFFER TOO SMALL!
(RMOTE) Printed only if severity = 0. RMOTE has insufficient buffer space at the end of the partition to hold some of the messages from the HP 3000. Size up RMOTE and establish a new virtual session.

HP 1000 FMGR ERROR CODES

FMGR-105 D.RTR directory track buffer too small
FMGR-102 Illegal D.RTR call sequence
FMGR-101 Illegal parameter in D.RTR call
FMGR-099 Directory manager EXEC request was aborted
FMGR-052 Spool shut down. Spool file setup failed
FMGR-048 Spool not initialized or SMP cannot be scheduled
FMGR-047 No session LU available for spool file
FMGR-046 Greater than 255
FMGR-041 No room in SST
FMGR-040 Lu not found in SST
FMGR-039 Spool LU not mapped to the spool driver
FMGR-038 Illegal scratch file number
FMGR-037 Attempt to purge an active type 6 file
FMGR-036 Lock error on device
FMGR-035 Already 63 discs mounted to system
FMGR-034 Disc already mounted
FMGR-033 Not enough room on cartridge
FMGR-032 Cartridge not found
FMGR-030 Value too large for parameter
FMGR-026 Queue full or max pending spools exceeded
FMGR-025 No SPLCON room
FMGR-024 No more batch switches
FMGR-023 No available spool files
FMGR-022 No available spool LU's
FMGR-021 Illegal destination LU
FMGR-020 Illegal access LU
FMGR-019 Illegal access on a system disc
FMGR-018 Illegal LU
FMGR-017 Illegal read/write on Type 0 file
FMGR-016 Illegal Type 0 or size=0
FMGR-015 Illegal file name
FMGR-014 Directory full
FMGR-013 Disc locked
FMGR-012 EOF or SOF error
FMGR-011 DCB not open
FMGR-010 Not enough parameters
FMGR-009 Attempt to use APOSN or force to 1 a Type 0 file
FMGR-008 File open or lock rejected
FMGR-007 Illegal security code or illegal write on LU 2 or LU 3
FMGR-006 File not found
FMGR-005 Record length illegal
FMGR-004 Record size of Type 2 file is 0 or undefined
FMGR-003 Backspace illegal
FMGR-002 Duplicate file name
FMGR-001 Disc error, the disc is down
FMGR 000 Break, informative message only, no error has occurred
FMGR 001 Disc error - LU reported, disc associated with the LU is down
FMGR 002 Initialize LU 2!
FMGR 003 Initialize LU 3!
FMGR 004 Illegal response to FMGR 002 or FMGR 003
FMGR 005 Required track not available - relative TAT position reported

```
FMGR 006  FMGR suspended
FMGR 007  Checksum error
FMGR 008  D.RTR not loaded
FMGR 009  ID segment not found
FMGR 010  Input error
FMGR 011  Do 'OF,XXXXX,8' on named programs
FMGR 012  Duplicate disc label or LU
FMGR 013  TR stack overflow
FMGR 014  Required ID segment not found
FMGR 015  LS track report
FMGR 016  Insufficient system tracks for RP
FMGR 017  ID segment not set up by RP
FMGR 018  Program not dormant
FMGR 019  File not set up by SP on current system
FMGR 020  Illegal Type 0 file
FMGR 021  Illegal disc specified
FMGR 022  Copy terminated
FMGR 023  Duplicate program name
FMGR 038  Attempt to purge active file
FMGR 041  Program cannot be a segment
FMGR 042  Lu cannot be switched
FMGR 043  Lu not found in SST
FMGR 044  No messages waiting
FMGR 045  Session command only
FMGR 046  Insufficient capability
FMGR 047  Spool set up failed
FMGR 048  Global set out of range
FMGR 049  Cannot run RP'ed program
FMGR 050  Not enough parameters
FMGR 051  Illegal master security code
FMGR 052  Illegal LU
FMGR 053  Illegal label or ilabel
FMGR 054  Disc not mounted
FMGR 055  Missing parameter
FMGR 056  Bad parameter
FMGR 057  Bad track not in file area
FMGR 058  LG area empty
FMGR 059  Reported track unavailable
FMGR 060  Do you really want to purge this disc?
FMGR 061  Do a "DC" and a "MC" on this CR
FMGR 062  More than 63 discs
FMGR 063  Exceeding session disc limit
FMGR 064  No disc available from disc pool
FMGR 065  Conflict in SST definition
FMGR 066  No room in SST
FMGR 067  Program not found
FMGR 068  Lu not in variable part of SST
FMGR 069  Job LOGON failed
FMGR 070  Sectors/track value too large
FMGR 071  Do "EX,SP" to save or "EX,RP" to release private cartridges
FMGR 072  Lu not interactive
FMGR 073  Account not found
FMGR 074  JO command expected
FMGR 075  Cannot restore Type 6 PGM file (user protected)
```

```
FMGR 076  Cannot restore Type 6 PGM file (group protected)
FMGR 077  Cannot restore Type 6 PGM file (insufficient capability)
FMGR 078  Cannot restore Type 6 program file (internal error)
FMGR 079  Warning - records truncated to 128 words
```

HP 1000 DSLIN ERRORS

PRIMARY CONNECT TIMED OUT. CONNECTING AS SECONDARY STATION ON LU XX
Initialization request has timed out without a reply from the HP 3000. The board is then connected as a secondary station.

BREAK FLAG SET
During a request for initialization, DSLIN has received a break request.

LINE IS UP BUT 3000 IS NOT REPLYING
Initialization request has not resulted in a reply within 50 seconds. Board is connected as a secondary station. Check for initialization at HP 3000.

DS/1000 HAS NOT BEEN INITIALIZED
When trying to initialize an HP 3000 LU, DSLIN finds DS uninitialized. Run DINIT.

DSLIN IS ONLY USED FOR BISYNC LINKS
The node is initialized for HSI communication. If you want to use PSI, make sure the PSI versions of QUEX and QUEZ are loaded then rerun DINIT and specify PSI 3000 LUs.
DSLIN cannot initialize an X.25 pool LU.

LU nn IS NOT IN THE 3000 LU TABLE
The LU specified is not an HP 3000 LU. Specify an HP 3000 LU or reinitialize DS and specify this LU as an HP 3000 LU.
DSLIN cannot initialize an X.25 pool LU.

LU nn HAS BEEN INITIALIZED WITH BUFFER SIZE xxxx
Some other copy of DSLIN is initializing this LU or a program has it locked.

CANNOT LOCK LU nn
DSLIN is unable to lock the LU for initialization.

THE BOARD ON LU nn DOES NOT CONTAIN BISYNC FIRMWARE! (BOARD TYPE = X)
Board contains wrong firmware. Check for an HDLC board associated with this LU.

I/O ERROR AT iiiii. STATUS = vvvvv
Status returned from the driver indicates an error.

iiiii =	*vvvvv* =
INITIALIZE BOARD	LINE FAILURE
GET PARAMETER	TIMEOUT
PRIMARY CONNECT	OVERRUN
SECONDARY CONNECT	REMOTE BUSY
AWAITING REPLY	UNINITIALIZE
DISCONNECT	WRONG MODE
	ILLEGAL REQUEST
	CARD FAILURE

SESSIONS STILL OPEN ON LU xxx. THE LU WAS NOT CLOSED.
There were other users on the PSI BISYNC line when you tried to close it, so DSLIN terminated without closing the line. Try running DSLIN again later.

PLEASE ENTER THE LU
You entered a carriage return in response to the question: HP 3000 TO INITIALIZE:.
Enter the LU of the PSI BISYNC line that you want to initialize.

CONNECTING AS A SECONDARY STATION ON LU xxx
HP 1000 is awaiting a call from the HP 3000 to establish the communication link.

ERROR OPENING aaaaa
DSLIN could not open the command file *aaaaa*. Check syntax.