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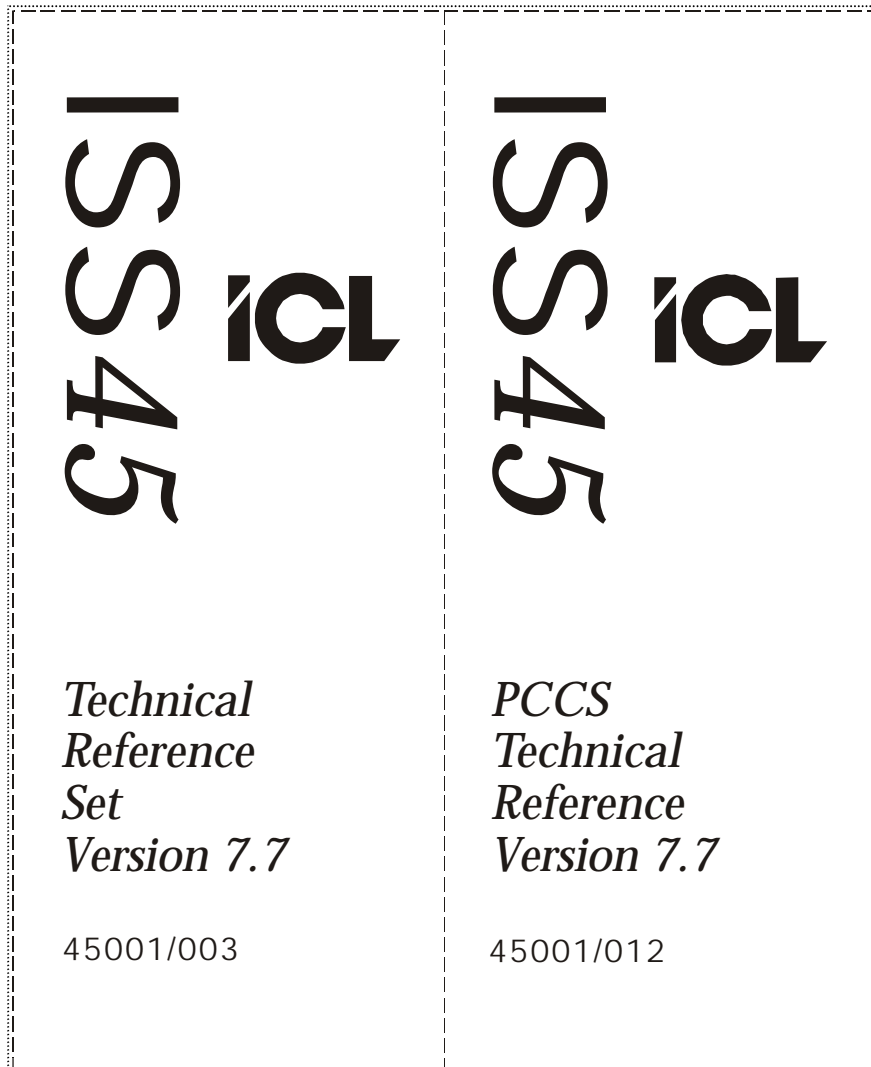


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Introduction

This manual applies only to stores using the ICL Personal Computer Communication System (PCCS).

It provides technical reference information for data center personnel concerning the host computer to personal computer interface.

The Personal Computer Communications System (PCCS) provides a mechanism for transferring file data between the Personal Computer disk and a Host computer. PCCS is specifically designed to interface with a version of BHCS executing in an IBM Host computer, and this is the environment assumed throughout this document. Obviously, however, other Host systems could be programmed to provide the same interface.

The BSC point-to-point protocol is used for these communications, with PCCS assuming the slave station role. The Transparent Text mode of operation is employed enabling the transmission of binary data.

PCCS uses the synchronous RS232-C port of the POSCOM Board and an appropriate external synchronous modem.

Terms and Definitions

ACK0/1	BSC Alternating Positive Acknowledgment Sequences
BCC	BSC Block Check Character Sequence
BHCS	Basic Host Communications System
BSC	Binary Synchronous Communications
CLOG	Communications Log File
DLE	BSC Data Link Escape Character
DLE/EOT	BSC Disconnect Sequence
DSR	Data Set Ready Modem Signal
DTR	Data Terminal Ready Modem Signal
ENQ	BSC Inquiry Sequence
EOT	BSC End Of Transmission Sequence
ESF	Electronic Store and Forward File
ETB	BSC End of Text Block Sequence
ETX	BSC End of Text Sequence
FDB	File Descriptor Block
HLOG	Host Communications Log File Maintained by BHCS
HRES	Host Initiated Maintenance Results File
NAK	BSC Negative Acknowledgment Sequence
PC	Personal Computer
PCCS	Personal Computer Communications System
POS	Point Of Sale
RCB	Request Control Block
RI	Ring Indicator Modem Signal
RVI	BSC Reverse Interrupt Sequence
SCCS	Store Computer Communications System
SRES	Store Initiated Maintenance Results File

STX	BSC Start of Text Sequence
SYN	BSC Synchronization Character
TTD	BSC Temporary Text Delay Sequence
WACK	BSC Wait and Acknowledge Sequence

General Description

The Personal Computer Communications System (PCCS) is usually initiated from the ISS45 POS System. Once activated, PCCS will passively monitor the communications link waiting for BHCS to initiate a communication session.

CC - Communications Controller
HOST - IBM Host Computer
BHCS - Basic Host Communications System
M - Synchronous Modem
PCB - POSCOM Board
PCCS - Personal Computer Communications System

To provide a level of system security, an exchange of identification messages must be accomplished before PCCS will honor any file transfer requests received from BHCS. The /SIGNON message sent by BHCS contains a password which is validated by PCCS. If correct, PCCS returns a Signon Response message containing Store identification information. The diagram on the next page depicts this exchange.

BHCS		PCCS
	ENQ	---->
		<---- ACK0
	/SIGNON	---->
		<---- ACK1
	EOT	---->
		<---- ENQ
	ACK0	---->
		<---- Signon Response
	ACK1	---->
		<---- EOT

Once the signon messages have been successfully exchanged, BHCS can issue any combination of the supported file transfer requests described in detail in the following sections. Section 4.4 contains further illustrations of various communication exchanges between PCCS and BHCS.

Like SCCS, PCCS provides a Real File Transfer service which is limited to transferring sequential files between the Host Computer and Personal Computer disk. In addition, PCCS provides a POS File Maintenance service to the ISS45 POS system.

PCCS maintains a Communications Log File (CLOG) to record the arrival of commands from BHCS and their ultimate completion status. The CLOG can be read by BHCS and is used to effect recovery when transmission errors occur.

In general BHCS is responsible for all error recovery. In the event of a link failure, BHCS will subsequently try to recover by reading the

CLOG and correlating this information with its own HLOG and retrying the command sequence in progress at the time of the failure.

If PCCS detects an internal error during the processing of a request, an Error Block is generated and sent to BHCS. Refer to the section on 'Formatted message blocks', later in this manual, for details of the Error Block format. BHCS recovery action will depend upon the contents of the Error Block.

Host Computer to PCCS Command Interface

Each command is preceded by a slash (/) and is optionally followed by a series of modifiers separated by spaces. The whole command string is encoded in ASCII and is transmitted as a single text block which cannot exceed eighty characters in length. The commands and their modifiers are described in the following sections.

/SIGNON command

The /SIGNON command is used to check the identity of the participants at the start of a communications session. The format of the /SIGNON command is as follows:

/SIGNON passkey

where passkey is the PC password (1-8 digits).

The passkey is a positional modifier which must be separated from the /SIGNON command by one or more spaces. Up to eight consecutive digits can be accepted as the passkey, and leading zeros can be suppressed.

If the PC password is currently set to zero, PCCS updates it to match the passkey received from BHCS. The current password can be displayed and/or reset to zero by the PC operator.

When a signon message is received from BHCS, PCCS checks the passkey against the PC password. If the passkey does not match, an Error Block is returned to BHCS. If the passkey does match, the PC Signon Response Block is sent to BHCS.

/SIGNOFF command

The /SIGNOFF command is used to indicate the normal completion of a communications session. The format of the /SIGNOFF command is as follows:

```
/SIGNOFF
```

The /SIGNOFF command is sent by BHCS to signal the termination of the communications session and, normally, BHCS will disconnect the communication link in an orderly manner by subsequently transmitting the BSC DLE/EOT sequence. In a 2-wire environment PCCS also ensures that the modem goes on-hook by dropping the DTR EIA signal until the modem drops the DSR signal.

/LOAD command

The /LOAD command is used to transfer file data from the Host computer to the PC. The format of the /LOAD command depends on whether the Real File Transfer service or the POS File Maintenance service is required.

```
/LOAD filename[.ext] [ID=i] [TYPE=t] [TRANS=YES|NO]
```

or

```
/LOAD filename[.ext] [ID=i] PID=p [TYPE=t] [TRANS=YES|NO] *u
```

where i is a Host Request ID Sequence (1-8 digits)
 p is a Process ID Sequence (1-8 chars.)
 t is a Request Type ID Sequence (1-3 chars.)
 u is a free format user data area

The presence of the PID modifier indicates that the POS File Maintenance service is requested. Conversely, the absence of the PID modifier indicates that the Real File Transfer service is requested.

If a PID modifier is present, PCCS determines which specific /LOAD type POS File Maintenance function is required from the user data area following the asterisk at the end of the command line. The following /LOAD type functions are currently supported:

LOAD ITEM	Provides for the initial loading of the entire ITEM file.
EDIT ITEM	Provides for the creation of an ITEM file maintenance batch.(Add, Delete and Change batches can be created).
CHANGE ITEM	Provides for the creation of an ITEM file maintenance Change batch.
MESSAGE	Provides for the creation of a message batch.

The filename[.ext] is a positional modifier which must be separated from the /LOAD command by one or more spaces. The filename can be composed of up to eight consecutive characters selected from the letters A through Z and the numbers 0 through 9. The filename extension, if specified, must directly follow the filename and consist of a period followed by zero to three characters selected from the same character sets.

All the other optional modifiers are position independent, keyword modifiers which can appear anywhere in the command string after the filename and before any asterisk. If the maximum length of a modifier sequence is exceeded, PCCS simply ignores the additional characters.

If an ID sequence is specified, PCCS stores this sequence in the CLOG entry. This sequence is intended to be used by the Host Application Programs to correlate completion information with the original requests. In addition this sequence can be used by the POS File Maintenance service to create the filename of maintenance batches and message files.

If a PID sequence is specified, PCCS checks the user data area following the asterisk for a valid POS File Maintenance function. For full details of the POS File Maintenance service refer to the section 'PCCS to Personal Computer Application Program Interface', later in this manual.

If a PID sequence is not specified, PCCS handles the /LOAD request directly, creating the file on the PC disk as directed by the filename.ext parameter and the contents of the subsequent File Descriptor Block. If the specified file already exists, PCCS rejects the request and returns an Error Block to BHCS. After creating the file, PCCS writes any data subsequently received from BHCS to the disk file. The Real File Transfer service is limited to creating sequential files only.

If a TYPE sequence is specified, PCCS stores this sequence in the CLOG entry. In addition this sequence is used by the POS File Maintenance service to determine the batch type for the EDIT and CHANGE functions. (e.g. ADD, DEL, CHG).

If TRANS=YES is specified, PCCS decompresses the following file data before writing it to the disk or processing it via the POS File Maintenance service. The file will have been converted from EBCDIC to ASCII and compressed by BHCS. Refer to the 'Data compression' section further in this manual, for details of the compression techniques employed.

If TRANS=NO is specified (or the TRANS= parameter omitted), PCCS writes the following file data to the disk or process it via the POS File Maintenance service directly without modification.

Following a /LOAD command initiating a Real File Transfer, BHCS sends a File Descriptor Block (FDB) which indicates the file type, and the number and size of the records in the file. The FDB allows PCCS to verify that the correct amount of data is subsequently transferred, and to decompress and deblock the records if required. The FDB is sent as a single text block and is described in detail in section 4.8. The Real File Transfer service is limited to handling sequential files with fixed length records. A further limitation imposed by this service is a maximum record size of 512 bytes. PCCS checks the file type and record length specified in the FDB and, if supported, actually creates a disk file of that type. BHCS then sends the file data in a series of text blocks, with each block containing an integral number of records up to a maximum of 512 bytes of data per block. If required, PCCS decompresses this data before writing it to the disk file. When all the records have been sent, BHCS sends a final text block containing the /END command causing PCCS to close the disk file.

Following a /LOAD command initiating a POS File Maintenance function, BHCS simply sends the file data in a series of text blocks, with each block containing an integral number of records up to a maximum of 512 bytes of data per block. In this case PCCS has full knowledge of the structure of the data being transferred. If required, PCCS decompresses this data before processing it via the POS File Maintenance service. When all the file data has been sent, BHCS sends a final text block containing the /END command causing PCCS to complete any necessary POS File Maintenance housekeeping.

If, during either process, an error is detected, PCCS attempts to terminate the file transfer operation by sending an Error Block to BHCS after reversing the flow of message data with a BSC RVI sequence.

/END command

The /END command is used to normally terminate the transfer of file data from the Host computer to the PC following a /LOAD command. The format of the /END command is as follows:

```
/END
```

Upon receipt of the /END command, if no errors have been detected, PCCS closes any newly created file and updates the CLOG appropriately.

/ABORT command

The /ABORT command is used by BHCS to abnormally terminate the transfer of file data from the Host computer to the PC following the receipt of an Error Block sent by PCCS to indicate the occurrence of an error during the processing of a /LOAD command. The format of the /ABORT command is as follows:

```
/ABORT
```

Upon receipt of the /ABORT command, PCCS deletes any newly created file and updates the CLOG appropriately.

/READ command

The /READ command is used to solicit the transfer of file data from the PC to the Host computer. The format of the /READ command depends on whether the Real File Transfer service or the POS File Maintenance service is required.

```
/READ filename[.ext] [ID=i] [TRANS=YES|NO]
```

or

```
/READ filename[.ext] [ID=i] PID=p [n:n] [(4>0)] *u
```

where *i* is a Host Request ID Sequence (1-8 digits)
 p is a Process ID Sequence (1-8 chars.)
 u is a free format user data area
 n is a PLU number (1-12 digits)

The presence of the PID modifier indicates that the POS File Maintenance service is requested. Conversely, the absence of the PID modifier indicates that the Real File Transfer service is requested.

If a PID modifier is present, PCCS determines which specific /READ type POS File Maintenance function is required from the user data area following the asterisk at the end of the command line. The following /READ type functions are currently supported:

READ ITEM	Provides for the reading of the entire ITEM file.
READ ITEM TERSE	Provides for the reading of the ITEM file movement data.
READ ITEM CLEAR	Provides for the reading of the ITEM file and the subsequent clearing of any movement data.
READ HRES	Provides for the reading of the entire HRES (Host Maintenance Results) file.
READ SRES	Provides for the reading of the entire SRES (Store Maintenance Results) file.
READ HRES CLEAR	Provides for the reading and subsequent clearing of the HRES file.
READ SRES CLEAR	Provides for the reading and subsequent clearing of the SRES file.

The filename[.ext] is a positional modifier which must be separated from the /READ command by one or more spaces. The filename can be composed of up to eight consecutive characters selected from the letters A through Z and the numbers 0 through 9. The filename extension, if specified, must directly follow the filename and consist of a period followed by zero to three characters selected from the same character sets.

All the other optional modifiers are position independent, keyword modifiers which can appear anywhere in the command string after the filename and before any asterisk. If the maximum length of a modifier sequence is exceeded, PCCS simply ignores the additional characters.

If an ID sequence is specified, PCCS stores this sequence in the CLOG entry. This sequence is intended to be used by the Host Application Programs to correlate completion information with the original requests.

If a PID sequence is specified, PCCS checks the user data area following the asterisk for a valid POS File Maintenance function. For full details of the POS File Maintenance service refer to the section 'PCCS to Personal Computer Application Program Interface', later in this manual.

If a PID sequence is not specified, PCCS handles the /READ request directly, opening the file on the PC disk as directed by the filename.ext parameter. After opening the file, PCCS reads the disk file data and sends it to BHCS. The Real File Transfer service is limited to accessing sequential files only.

If TRANS=YES is specified, PCCS compresses the file data read from disk by the Real File Transfer service before transmitting it to BHCS. The file will be subsequently decompressed by BHCS and converted to EBCDIC from ASCII. This parameter is not valid for the POS File Maintenance /READ type functions.

If TRANS=NO is specified (or the TRANS= parameter omitted), PCCS transmits the file data without modification.

The n:n Range parameter allows the Host to specify a range of PLU records to be transmitted by the POS File Maintenance READ ITEM function.

The (4>0) Edit parameter allows the Host to specify that 'saved' rather than 'up to the minute' movement data should be transmitted by the POS File Maintenance READ ITEM function.

In response to a /READ command initiating a Real File Transfer, PCCS sends a File Descriptor Block (FDB) which indicates the file type, and the number and size of the records in the file. The FDB allows BHCS to verify that the correct amount of data is subsequently transferred, and to decompress and deblock the records if required. The FDB is sent as a single text block and is described in detail in the section 'Formatted message blocks'. The Real File Transfer service is limited to handling sequential files with fixed length records. A further limitation imposed by this service is a maximum record size of 512 bytes. PCCS checks the file type and record length of the requested disk file and, if supported, sends an FDB containing this information to BHCS. PCCS

then sends the file data, read from disk, in a series of text blocks, with each block containing an integral number of records up to a maximum of 512 bytes of data per block. If required, PCCS compresses this data before sending it to BHCS. When all the records have been sent, PCCS simply reverses the flow of message data by sending the BSC EOT sequence.

In response to a /READ command initiating a POS File Maintenance function, PCCS sends a Request Control Block (RCB) which indicates the file type, and the number and size of the records in the file. The RCB also identifies the POS system type to BHCS as either KeyScan or ISS45. The RCB allows BHCS to verify that the correct amount of data is subsequently transferred, and to deblock and process the records in order to present them to the Host Application program in the standard BHCS POS file format. The RCB is sent as a single text block and is described in detail in the section 'Formatted message blocks'. Following the RCB, PCCS sends the file data in a series of text blocks, with each block containing an integral number of records up to a maximum of 512 bytes of data per block. In this case PCCS has a full knowledge of the structure of the data being transferred. When all the file data has been sent, PCCS simply reverses the flow of message data by sending the BSC EOT sequence.

If during either process an error is detected, PCCS terminates the file transfer operation and sends an Error Block followed by the BSC EOT sequence.

/READ CLOG command

The /READ CLOG command causes PCCS to transfer the records of the CLOG to BHCS in chronological order. The format of the /READ CLOG command is as follows:

/READ CLOG [ID=*i*]

where *i* is a Host Request ID Sequence (1-8 digits)

PCCS reads the CLOG index record to determine the oldest entry record and then sends the CLOG entries in order starting with this oldest entry. In this case PCCS does not send an initial FDB, but rather

attaches a short block header to each text block containing the CLOG records. This block header indicates the actual number of records contained in the individual block and is described in detail in the section 'Formatted message blocks'.

/READ MODT command

The /READ MODT command causes PCCS to transfer Module Trace Table information to BHCS. The Module Trace Table contains a recent history of PCCS processing and can provide Datachecker Software Engineering personnel with valuable information when debugging communications problems. The format of the /READ MODT command is as follows:

/READ MODT [ID=*i*]

where *i* is a Host Request ID Sequence (1-8 digits)

PCCS sends the Module Trace Table as two text blocks each containing a single record preceded by a short block header. This block header is described in detail in section 4.8.

PCCS to Personal Computer Application Program Interface

PCCS provides two File Transfer services to application programs executing on the Personal Computer. The Real File Transfer service enables a Host Application to initiate the transfer of sequential files either to or from the Personal Computer disk. The POS File Maintenance service enables a Host Application to access and maintain the ISS45 data base.

Real file transfer service

Real File Transfers initiated by the Host computer are not directly synchronized with the execution of the various application programs in the Personal Computer. Thus, in order to coordinate processing, the application programs may access the CLOG to determine which, if any, files have been received from the Host and are available for processing. In addition the CLOG entries contain the various command modifiers which may be required to determine the appropriate processing. Refer to the section 'PCCS File Index' for details of the CLOG records.

POS file maintenance service for ISS45

The POS File Maintenance Service supports a number of /LOAD and /READ type functions as described in the following sections. The various standard POS file record formats are described in detail in the section 'PCCS File Index'. The /READ ITEM functions use the ISS45 Application Interface services to access the ITEM file. If ISS45 is not operational, PCCS rejects the READ command by sending an appropriate Error Block after the RCB has been transmitted.

LOAD ITEM

The LOAD ITEM function provides for the initial loading of the entire ISS45 ITEM file. The ITEM file records are transmitted following the command in the standard 144 byte BHCS format and are converted to the ISS45 Item Batch Maintenance format and stored in the file POS.SEQ. Byte 0 of each record is set to '1' to indicate a new item. Upon successful completion of the command, an 'End-of-File' record with byte 0 set to '9' is written to the file. Subsequently ISS45 can be invoked to process this 'Load Batch' file and create a new ITEM file.

The command is rejected if a POS.SEQ file already exists at the time the command is received.

EDIT ITEM

The EDIT ITEM function provides for the creation of ITEM file maintenance batches. Depending upon the encoding of the TYPE= parameter, Add (TYPE=ADD), Delete (TYPE=DEL), Change (TYPE=CHG), Change Price (TYPE=CHP) or Change Alternate Price (TYPE=CAP) batches can be created. If the TYPE= parameter is omitted, an Add batch is created by default. A Change batch can be used to modify any field of existing ITEM file records. The Change Price and Change Alternate Price batches can be used to modify the appropriate price field of existing ITEM file records.

Following the command, the ITEM file records are transmitted in the standard 144 byte BHCS format and are converted to the ISS45 Item Batch Maintenance format. The records are stored in a file created in the directory from which PCCS was executed. The filename is created by PCCS in the format Hlxxxx.DAT, where xxxx can take any value between 0000 and 9999. This value is either automatically incremented by PCCS for every batch created or reflects the contents of the Host ID sequence if the Filename/Host ID Correlation flag is set in the CLOG Index record and the Host ID contains a value between 0000 and 9999. Byte 0 of each record is set to '1', '2' or '3' to indicate a new item, a change item or a delete item as appropriate.

Upon successful completion of the command, an 'End-of-File' record with byte 0 set to '9' is written to the file.

ISS45 can subsequently be invoked to process these batch files and update the ITEM file appropriately.

The command is rejected if a file already exists with the generated batch file name at the time the command is received.

CHANGE ITEM

The CHANGE ITEM function is identical to the EDIT ITEM function except that if the TYPE= parameter is omitted, a Change batch is created by default.

READ ITEM

The READ ITEM function provides for the reading of the entire ISS45 ITEM file back to the Host computer. The ITEM records are read sequentially and converted to the link format before transmission.

READ ITEM TERSE [(4>0)]

The READ ITEM TERSE function provides for the reading of the movement data from the ISS45 ITEM file back to the Host computer. The ITEM records are read sequentially and those with non-zero movement fields are converted to the terse record link format before transmission.

The ISS45 ITEM record contains several movement fields. If the (4>0) optional parameter is not specified, PCCS transfers 'up to the minute' movement information in the Quantity Sold field of the link level record. However, if the (4>0) optional parameter is specified, PCCS transfers the appropriate 'saved' movement information in the Quantity Sold field as determined by the 'Saved' Movement Field in the CLOG Index record.

READ ITEM CLEAR [TERSE]

The READ ITEM CLEAR [TERSE] function, in addition to providing for the reading of the appropriate ISS45 ITEM file data back to the Host computer, provides for the clearing of the movement data. The function is identical to the READ ITEM or READ ITEM TERSE functions described above except that after the data transfer has successfully completed a Clear ITEM flag is set to cause PCCS to clear the transmitted movement information in the ISS45 ITEM file when the communications session has completed.

Once the Clear ITEM flag has been set, all other READ ITEM functions are rejected until the flag has been reset after the movement

information has been cleared at the end of the communications session.

READ HRES and READ SRES

The READ HRES and READ SRES functions provide for the reading of the entire ISS45 Maintenance Audit File back to the Host computer. This file contains the results of ITEM File maintenance operations performed by ISS45. The ISS45 system does not distinguish between Store and Host generated maintenance transactions therefore the same file is accessed for both READ functions. The file records are read sequentially in chronological order and converted to the link format before transmission.

The file is actually a DOS file created by ISS45 during 'End of Day' processing, by merging the maintenance information from both the Master and Slave PCs. The name of the file is specified in the ISS45 Parameter file.

READ HRES CLEAR and READ SRES CLEAR

The READ HRES CLEAR and READ SRES CLEAR functions, in addition to providing for the reading of the appropriate ISS45 file records back to the Host computer, provide for the subsequent clearing of those records. The function is identical to the READ HRES or READ SRES functions described above, except that after the data transfer has successfully completed, the Clear Maintenance File flag is set. This causes PCCS to clear the transmitted records by deleting the ISS45 Maintenance Audit file when the communications session has completed.

Once the Clear Maintenance File flag has been set, further READ HRES or READ SRES functions are be rejected until the flag has been reset after the records have been cleared at the end of the communications session.

MESSAGE

The MESSAGE function provides for the creation of Message Data files. Message data following the command is deblocked and written to a file created in the directory from which PCCS was executed. The filename is created by PCCS in the format HMxxxx.LOG, where xxxx can take any value between 0000 and 9999. This value is either automatically incremented by PCCS for every message file created, or reflects the contents of the Host ID sequence if the **Filename/Host ID Correlation flag** is set in the CLOG Index record, and the Host ID contains a value between 0000 and 9999.

The MESSAGE record size stored in the CLOG Index record is used to deblock the Message data and each record is terminated by a carriage return, line feed sequence. It is important that the same record size is used by the Host and PCCS.

These message files can subsequently be displayed at the monitor or printed as required.

The command is rejected if a file already exists with the generated message file name at the time the command is received.

Installation and Execution

PCCS consists of several files distributed on floppy diskette created by the standard DOS FORMAT and COPY commands. The diskette contains the following files:

BSCDRV.BIN	BSC Link Level Driver
PCCS.EXE	PCCS Program
STARTCOM.BAT	Batch File to Execute PCCS
CLOG.EXE	Utility Program for Creating CLOG
CLOG.DAT	CLOG File

To install PCCS:

- Insert the floppy diskette in the drive and copy all files to the main ISS45 directory on the hard disk.

```
COPY A: *.* C:\PCMASTER
```

- Copy the file BSCDRV.BIN to the root directory.
- Add the line **DEVICE=BSCDRV.BIN** to the CONFIG.SYS file in the root directory.
- Ensure that a jumper is installed between pins 2 and 3 of JP11 on the POSCOM Board to enable the synchronous clock to be supplied by the modem.
- Connect the upper 9 pin RS232 port of the POSCOM Board to an appropriate external synchronous modem using the EIA cable supplied.
- Re-boot the system to force DOS to load the BSC Link Level Driver.

Execute the CLOG.EXE Utility Program if necessary to create a new CLOG of the specified size. This program will also allow the selection of the following configuration parameters:

- Store Number
- Connection Type (2 or 4 wire)
- MESSAGE Record Size
- Screen Message Display Option
- Filename/Host ID Correlation Option
- 'Saved' Movement Field Option

To execute PCCS simply change the working directory to the main ISS45 directory on the hard disk and execute the batch file 'STARTCOM'.

E.xample: CD c:\pcmaster startcom

To start the Create CLOG Utility program, simply execute the CLOG.EXE file.

Data compression

ASCII file records may be compressed before transmission to provide more efficient line utilization. Two compression methods are employed, as described below.

Blank compression

Up to 63 blanks may be represented by a single byte formatted as follows:

B'10xxxxxx' where xxxxxx is the number of blanks compressed.

The value H'80' (zero compressed blanks) is treated as a filler character and is ignored. The value H'81' is the same as a single blank character.

BCD compression

Up to 63 numeric characters (0-9) or blanks may be represented by a byte string formatted as follows:

BYTE	DESCRIPTION
0	B'11xxxxxx' where xxxxxx is the number of characters compressed.
1	high order four bits - first character. low order four bits - second character.
2	high order four bits - third character. low order four bits - fourth character.
etc.	etc.

Each four bits described above represent a character in binary form. The binary value of the numeric characters (0-9) are 0000, 0001, 0010, ..., 1001 respectively. The value 1010 (H'A') is interpreted as a

blank character; this is convenient for handling the many numeric fields that are separated by one or two blanks. If an odd number of numeric characters/blanks are compressed, the low order half-byte of the last byte is unused.

Compression example:

```
source:          'MILK  1 139 '  
ASCII:          '4D494C4B2020202020312031333920'  
Compressed:    '4D494C4B85C61A139A'
```

Formatted message blocks

Signon response block

The Signon Response Block is the first text block sent to BHCS after a valid /SIGNON command has been received by PCCS.

The format of the Signon Response Block is as follows:

Offset	Field Description
0-3	ID Sequence 'SIGN' (ASCII)
4-5	Block Number 0001H
6	Records/Block 01H
7	Words/Record 0AH
8-9	Store Number 0000H - 7FFFH
10-13	Software Identifier 'PCCS' (ASCII)
14-19	Software Version Number e.g. '020300' (ASCII) (PCCS for KeyScan) '060300' (ASCII) (PCCS for ISS45)
20-23	Hardware Identifier '600 ' (ASCII)
24	Time (Hours) 00H - 17H
25	Time (Minutes) 00H - 3BH
26	Date (Month) 01H - 0CH
27	Date (Day) 01H - 1FH

File descriptor block

For Real File Transfers, the FDB always precedes the transmission of file data across the communication link. Thus it is sent by BHCS after every /LOAD command, and by PCCS upon receipt of a valid /READ command. The only exceptions to this rule are the /READ CLOG and /READ MODT commands which causes PCCS to transmit the CLOG records or MODT records respectively with a CLOG or MODT Block Header appended to each block.

The FDB is transmitted as a complete text block and is never compressed.

The format of the File Descriptor Block is as follows:

Offset	Field Description
0-3	ID Sequence 'FDB ' (ASCII)
4-5	Block Number 0001H
6	Records/Block 01H
7	Words/Record 06H
8-11	Reserved
12-13	File Format 0001H - Sequential Fixed Length Records 0002H - Sequential Variable Length Records 0003H - Undefined Records
14-15	Record Length
16-19	Record Count

Currently only Sequential Files with Fixed Length records (File Format 0001H) are supported by the Real File Transfer service.

Request control block

In response to a valid POS File Maintenance /READ function, PCCS always builds and transmits a Request Control Block (RCB) to BHCS before sending the requested file data.

The RCB is transmitted as a complete text block and is never compressed.

The format of the Request Control Block is as follows:

Offset	Field Description
0-1	Command 000DH - Read
2-3	Transport Options 0000H
4-15	File Name 'ITEM', 'HRES' or 'SRES' (ASCII)
16-19	Command ID 00000000H
20-23	Record Count
24-25	File Format 0000H - Sequential
26-27	Record Format 0003H - Variable Length with Header 0005H - Special
28-31	Primary Allocation 00000000H
32-35	Secondary Allocation 00000000H
36-37	Record Length FFFFH - Variable Length
38-45	Reserved
46-71	Device Specific Options 'DTS 020000545 ' (ASCII) - PC Master Sofchek 'DTS 010000545' (ASCII) - PC Master 545 'DSI 0201002200' (ASCII) - KeyScan V2.1.0

'DSI 0300002200' (ASCII) - KeyScan V3.0.0

'DSI 0300002200' (ASCII) - PC Master V6.4

CLOG block header

The CLOG Block Header is appended to each block of CLOG records sent by PCCS to BHCS in response to a /READ CLOG command.

The format of the CLOG Block Header is as follows:

Offset	Field Description
0-3	ID Sequence 'CLOG' (ASCII)
4-5	Block Number 0001H - nnnnH
6	Records/Block 01H - 0AH
7	Words/Record 18H

CLOG records are 48 bytes (18H words) in length and, therefore, up to 10 can be transmitted in a single 512 byte maximum text block.

MODT block header

The MODT Block Header is appended to each MODT record sent by PCCS to BHCS in response to a /READ MODT command. The format of the MODT Block Header is as follows:

Offset	Field Description
0-3	ID Sequence 'MODT' (ASCII)
4-5	Block Number 0001H - 0002H
6	Records/Block 01H
7	Words/Record 81H

The two MODT records are each 258 bytes (81H words) in length and, therefore, only one is transmitted in a single 512 byte maximum text block.

Error block

The Error Block is sent by PCCS to BHCS whenever an internal error is detected during the processing of a command. If necessary, PCCS transmits the BSC RVI sequence in order to reverse the flow of message data. After sending the Error Block, PCCS transmits the BSC EOT sequence allowing BHCS to initiate any necessary error recovery procedures.

The format of the Error Block is as follows:

Offset	Field Description														
0-3	ID Sequence 'ERR ' (ASCII)														
4-5	Block Number 0001H														
6	Records/Block 01H														
7	Words/Record 02H														
8	Module Code 01H - 02H Command Pending State 04H - 05H Process LOAD State 08H - 0CH Process READ State														
9	Error Code <table border="0" style="margin-left: 20px;"> <tr> <td>xxxx -</td> <td>Error Category</td> </tr> <tr> <td>.... xxxx -</td> <td>Error Type</td> </tr> <tr> <td>0011</td> <td>Command Format Errors</td> </tr> <tr> <td>0011 0001</td> <td>Invalid file name (/LOAD)</td> </tr> <tr> <td></td> <td>Invalid file name, type or record size (/READ)</td> </tr> <tr> <td>0011 0100</td> <td>Illegal Command</td> </tr> <tr> <td>0101</td> <td>FDB Format Errors</td> </tr> </table>	xxxx -	Error Category xxxx -	Error Type	0011	Command Format Errors	0011 0001	Invalid file name (/LOAD)		Invalid file name, type or record size (/READ)	0011 0100	Illegal Command	0101	FDB Format Errors
xxxx -	Error Category														
.... xxxx -	Error Type														
0011	Command Format Errors														
0011 0001	Invalid file name (/LOAD)														
	Invalid file name, type or record size (/READ)														
0011 0100	Illegal Command														
0101	FDB Format Errors														

0101 0101	Duplicate file name (/LOAD)
0101 1000	Invalid file type or record size (/LOAD)
0111	File Access Errors
0111 0001	Read failure
0111 0010	Write failure
0111 0011	
0111 0100	File Clear pending (/READ)
0111 0101	Open/Create/Close failure
1001	Transmission Errors
1001 0001	Invalid Passkey (/SIGNON)
10-11	Relative Record Number

PCCS File Index

Communications log - CLOG.DAT

The CLOG is maintained by PCCS to provide an audit trail of every BHCS session.

The CLOG is a Direct Access file with a fixed number of records. The file is treated as a wrap-around sequential access medium, with the first record used as an index record indicating the location of the next (or oldest) entry. PCCS creates an entry upon receipt of every command, recording the various request parameters. Upon completion of the command, another entry is created indicating the completion status.

The index record is also used to save the current Store password, Store number and Software Version number as well as several configuration parameters. The format of the CLOG index record is as follows:

Offset	Field Description
0-1	Number of records in file including index (n+1)
2-3	Next entry index (1 to n)
4-5	Wrap count
6-9	Current Store Password
10-17	Current Software Version Number (ASCII)
18-19	Next sequence number for ITEM maintenance batch (HIxxxx.DAT or HP00xxxx.TXN)
20-21	Next sequence number for MESSAGE batch (HMxxxx.LOG or HM00xxxx.LOG)
22-23	Store Number 0000H - 7FFFH
24	Connection Type (2 or 4 wire) '2' - Switched Line (2 wire) '4' - Leased Line (4 Wire)
25	POS Terminal Type 00H - Sofchek 01H - 545

	02H - 2200
26-27	MESSAGE record size 0001H - 0200H
28-29	Next sequence number for HOT maintenance batch (HC00xxxx.TXN)
30	Flags 01H - Display Screen Messages Flag 02H - Filename/Host ID Correlation Flag 04H - Ignore Deleted Records Flag
31	'Saved' Movement Indicator 00H - Previous Day Movement 01H - Previous Week Movement 02H - Previous Month Movement
32-47	Reserved

A file with space for 100 records contains an index record and 99 entry records. The next entry index is reset to 1 after an entry record has been written to the last record location in the file. Also at this time, the wrap count is incremented.

The format of the CLOG entry records is as follows:

Offset	Field Description
0	Command Code 01H - SIGNON 02H - READ 06H - LOAD 09H - SIGNOFF
1	Reserved - FFH
2	Time (Hours) 00H - 17H
3	Time (Minutes) 00H - 3BH
4	Date (Month) 01H - 0CH
5	Date (Day) 01H - 1FH
6	Reserved - 00H
7	Status 40H - Command received from Host

	11H - Normal completion
	13H - Abnormal completion (Command Format Error)
	15H - Abnormal completion (FDB Format Error)
	17H - Abnormal completion (File Access Error)
	16H - Abnormal completion (Protocol Error)
8-11	Record Count (Binary)
12-13	Reserved
14-15	File Format
	0001H - Sequential Fixed Length Records
16-27	Filename.Ext (ASCII)
28-35	Host ID (ASCII)
	For a SIGNON Normal Completion record this field contains the SIGNON passkey
36-43	Process ID (ASCII)
	For a SIGNON Normal Completion record this field contains the current Software Version number
44-46	File Type (ASCII)
47	Reserved
	00H

Note

All ASCII fields are left justified.

Commands received from the Host computer (/SIGNON, /READ, /LOAD, /SIGNOFF) result in two CLOG entry records, the first indicating the receipt of the command and the second, indicating completion of processing of the command.

The following example is intended to illustrate the CLOG entries created by a simple communications session to a Personal Computer started at 9:54 a.m. on June 28th. The Personal Computer is running PCCS version 1.0.1.

```
/SIGNON 27

/LOAD TEST.DAT ID=1234 TYPE=ADD TRANS=YES

... FDB ...

... 26 File Records ...

/END

/READ POS ID=1235 PID=PCCS *READ ITEM TERSE

/SIGNOFF

01FF0936061C0040 0000000000000000 2020202020202020
2020202020202020

2020202020202020 2020202020202000 (SIGNON received
- 9.54)

01FF0936061C0011 0000000000000000 2020202020202020
2020202030303030 3030323730312E30 302E303120202000
(SIGNON completed - 9.54) 06FF0936061C0040 0000000000000001
544553542E444154 2020202031323334 2020202020202020
2020202041444400 (Real LOAD received - 9.54)
06FF093B061C0011 0000001A00000001 544553542E444154
2020202031323334 2020202020202020 2020202041444400 (LOAD
completed 26 records 9.59) 02FF093B061C0040 0000000000000001
504C553534352E44 4154202031323335 2020202050434353
2020202054525320 (READ ITEM received - 9.54)
02FF0A02061C0011 0000010A00000001 504C553534352E44
4154202031323335 2020202050434353 2020202054525320
(READ completed - 10.02) 09FF0A02061C0040 0000000000000000
2020202020202020 2020202020202020 2020202020202020
2020202020202000 (SIGNOFF received - 10.02)
09FF0A02061C0011 0000000000000000 2020202020202020
2020202020202020 2020202020202020 2020202020202000
(SIGNOFF completed - 10.02)
```

PCCS startup batch file - STARTCOM.BAT

When the PCCS Startup Batch File is run, PCCS is initiated. The file contains the following DOS commands:

ECHO OFF

CLS

: Batch File to initiate PCCS V6.4

: This version of PCCS uses the RS232 port of the POSCOM Board PCCS

This batch file can be modified by the user to automatically execute any necessary housekeeping functions before or after executing PCCS.

ISS45 parameter file - QDX\PARM.QDX

PCCS references the ISS45 Parameter File for two reasons. Firstly it is used by PCCS to determine if the Store supports the extended ITEM Batch Record format. Secondly, it is used to determine the file name and record length of the ISS45 Maintenance Audit file.

The file consists of a number of 128 byte blocks.

The format of the first block is as follows:

Offset	Field Description
0-20	Store Name
21-98	Refer to ISS45 documentation
99	Extended ITEM Batch Maintenance Record 'y' or 'Y' - 145 Byte Record 'n' or 'N' - 122 Byte Record
100-127	Refer to ISS45 documentation

The format of the 7th block is as follows:

Offset	Field Description
0	Maintenance Audit File Flag 'Y' or 'y' - File exists
1-12	Refer to ISS45 documentation
13-15	Record Size (ASCII)
16-55	Refer to ISS45 documentation
56-80	Maintenance Audit File Name
81-127	Refer to ISS45 documentation

Load, edit, change item (ISS45) - POS.SEQ, hixxxx.dat

Records following a /LOAD command that initiates a 'LOAD', 'EDIT' or 'CHANGE ITEM' POS File Maintenance function are in the BHCS 144 byte format. PCCS converts these records to the ISS45 122 byte ITEM Batch Maintenance format. The relevant fields of both formats are described below, followed by a detailed description of the conversion performed.

BHCS 144 Byte ITEM Record

Offset	Field Description
0	N/A
1-12	Item Code (000000000000 - 999999999999)
13	N/A
14	Item Type (0 - 9) '0' - Standard PLU '1' - Key Enter Price

	'2' - Scale Item
	'3' - Store Coupon
	'4' - Vendor Coupon
15	Price Format (0 - 8)
	'0' - Unit Pricing
	'1' - Split Pricing
16-17	Price Quantity (00 - 99)
18-26	Price (000000000 - 999999999)
27-35	Price Discount - N/A
36-51	Item Description (Alphanumeric)
52-54	Department Number (000 - 999)
55-58	Sub-Department Number - (0000 - 9999)
59	Trading Stamps Eligibility Flag - N/A
60	Restricted Sale Flag
61	Ad Flag - N/A
62	Tax Rate 1 Flag
63	Tax Rate 2 Flag
64	Tax Rate 3 Flag
65	N/A
66	Food Stamp Eligibility Flag
67-69	PLU Link (000 - 999)
70-72	Excise Tax Type - N/A
73-74	Tare Weight (00 - 99)
75	Discount Literal - N/A
76	Enforced Quantity Flag
77	Data Capture Flag - N/A
78-80	Mix and Match (000 - 999)
81-91	N/A
92	Report Group - N/A
93-138	N/A
139	Discount Flags - N/A
140	N/A
141	Price Verify Flag
142	Inhibit Quantity Flag
143	N/A

Note

All fields are ASCII.

Flag fields '1' = On, '0' = Off, ' ' = No Change

ISS45 145 Byte ITEM Batch Maintenance Record

Offset	Field Description
0	Record Type '1' - Add '2' - Change '3' - Delete '9' - End of File
1-13	Item Code (0000000000000 - 0999999999999)
14-21	Price (00000000 - 99999999)
22-37	Item Description (Alphanumeric)
38-41	Department Number (0000 - 0999)
42-43	Price Quantity (00 - 99)
44	Key Enter Price Item
45	Restricted Sale Flag
46	Non-merchandise Flag
47	Negative Entry Flag
48	Inhibit Quantity Flag
49	Enforced Quantity Flag
50	Price Verify Flag
51	Scale Item
52	Food Stamp Eligibility Flag
53	Discount Prohibit Flag
54	Promotion Flag
55	Vendor Coupon
56	Store Coupon
57-59	Reserved
60-61	Mix and Match Code (00 - 99)
62-63	Return Type/Tare Weight
64-103	Long Item Description (Alphanumeric)
104	Tax Rate 1 Flag
105	Tax Rate 2 Flag
106	Tax Rate 3 Flag

107-111	Reserved
112-118	Cost per Case (0000000)
119-121	Units per Case (000)
122-129	Price (00000000 - 99999999)
130-132	Family Number (000)
133-144	Subdepartment Number (0000 - 9999)

Note

All fields are ASCII

Flag fields 'Y' = Yes, 'N' = No, '' = No Change

Conversion Procedure

The LOAD ITEM function creates a file named POS.SEQ containing a series of batch maintenance records, byte 0 of each record containing a '1' to indicate a new item. The record length is either 122 or 145 bytes, depending upon the setting of the Extended ITEM Maintenance Batch Record indicator in the ISS45 Parameter File.

The EDIT and CHANGE ITEM functions create batch files named HInnnn.DAT, where nnnn is a number between 0000 and 9999. These files also contain batch maintenance records with byte 0 indicating 'add', 'change' or 'delete' (1, 2 or 3) as appropriate.

In either case an end of file record with byte 0 containing a '9' is written to the file when the command has been processed successfully.

The rest of the batch maintenance record is created directly from the BHCS record as described below. It should be noted that PCCS does minimal editing of the record data and often merely copies field data as indicated.

Offset	Field Description
1	Set to ''
2-13	Item Code copy from bytes 1-12
14-21	Price
	If Change Alternate Price Batch set to ''

	else
	copy from bytes 19-26
22-37	Item Description copy from bytes 36-51
38	Set to ' '
39-41	Department Number copy from bytes 52-54
42-43	Price Quantity copy from bytes 16-17
44	Key Enter Price Item
	If byte 14 = '1'
	set to 'Y'
	else
	set to 'N'
45	Restricted Sale Flag set from byte 60
46	Non-merchandise Flag set to ' '
47	Negative Entry Flag set to ' '
48	Inhibit Quantity Flag set from byte 142
49	Enforced Quantity Flag set from byte 76
50	Price Verify Flag set from byte 141
51	Scale Item
	If byte 14 = '2'
	set to 'Y'
	else
	set to 'N'
52	Food Stamp Eligibility Flag set from byte 66
53	Discount Prohibit Flag set to ' '
54	Promotion Flag set to ' '
Offset	Field Description
55	Vendor Coupon
	If byte 14 = '4'
	set to 'Y'
	else
	set to 'N'
56	Store Coupon
	If byte 14 = '3'
	set to 'Y'
	else
	set to 'N'
57-59	Reserved set to blanks
60-61	Mix and Match Code copy from bytes 79-80

62-63	Tare Weight If byte 14 = '2' copy from bytes 73-74 else set to blanks
64-79	Long Item Description copy from bytes 36-51
80-103	Set to blanks
104	Tax Rate 1 Flag set from byte 62
105	Tax Rate 2 Flag set from byte 63
106	Tax Rate 2 Flag set from byte 64
105-111	Reserved set to blanks
112-118	Cost per Case set to blanks
119-121	Units per Case set to blanks
122-129	Alternate Price If Change Alternate Price Batch copy from bytes 19-26 else set to ''
130-132	Family Number set to blanks
133-140	Set to blanks
141-144	Subdepartment Number copy from bytes 55-58

READ ITEM (ISS45)

Upon receipt of /READ command that initiates a READ ITEM POS File Maintenance function, PCCS accesses the ISS45 Item File using the standard PLU Services interface. PCCS reads the 256 byte records from this file and converts them to the link level format before sending them to the Host, preceded by an appropriate Request Control Block (RCB).

The format of the records sent to the Host depends on whether the TERSE parameter is specified. Both formats are described below. In addition, if the TERSE parameter is specified, only those records indicating movement are sent to the Host.

ISS45 256 Byte ITEM Record

Offset	Field Description
0-6	Item Code (BCD)
7-8	Department Number (BCD)
9-48	Long Item Description (ASCII)
49-64	Item Description (ASCII)
65	Tax Rate Flags
	Bit 7 - Tax Rate 1 Flag
	Bit 6 - Tax Rate 2 Flag
	Bit 5 - Tax Rate 3 Flag
66	Item Flags 1
	Bit 7 - Food Stamp Eligibility Flag
	Bit 6 - Non-merchandise Flag
	Bit 4 - Negative Entry Flag
	Bit 3 - Store Coupon
	Bit 2 - Vendor Coupon
67	Item Flags 2
	Bit 7 - Promotion Flag
	Bit 6 - Restricted Sale Flag
	Bit 5 - Price Verify Flag
	Bit 4 - Key Enter Price Item
	Bit 3 - Enforced Quantity Flag
	Bit 2 - Scale Item
	Bit 1 - Inhibit Quantity Flag
	Bit 0 - Discount Prohibit Flag
68	Reserved
69-72	Price (Reversed Binary)
73-88	Reserved
89	Price Quantity (BCD)
90	Mix and Match Code (BCD)
91	Tare Weight (BCD)
92	PLU Link (Binary)
93-96	Reserved
97-102	Subdepartment Number (BCD)
103-104	Family Number (BCD)
105-125	Reserved
126-129	Alternate Price (Reversed Binary)

130-154	Reserved
155-158	Previous Day Quantity Sold (Reversed Binary)
159-162	Previous Day Revenue (Reversed Binary)
163-178	Reserved
179-182	Previous Week Quantity Sold (Reversed Binary)
183-186	Previous Week Revenue (Reversed Binary)
187-202	Reserved
203-206	Previous Month Quantity Sold (Reversed Binary)
207-210	Previous Month Revenue (Reversed Binary)
211-246	Reserved
247-250	PCCS Quantity Sold (Reversed Binary)
251-254	PCCS Revenue (Reversed Binary)
255	Reserved

Link Level 46 Byte ITEM Record

Offset	Field Description
0-1	Record ID 0000H - Standard PLU 0001H - Key Enter Price 0002H - Scale Item 0003H - Store Coupon 0004H - Vendor Coupon
2-7	Item Code (BCD)
8-11	Quantity Sold (BCD)
12-16	Revenue (BCD)
17	Price Quantity (BCD)
18-21	Price (BCD)
22-23	Department Number (BCD)
24	x0H - Standard PLU x1H - Scale Item x2H - Linear Item - N/A x3H - Gasoline - N/A x4H - Store Coupon x5H - Vendor Coupon x6H - Key Enter Price x8H - Data Capture Flag - N/A 1xH - Price Verify Flag

	2xH - Enforced Quantity Flag
	4xH - Inhibit Quantity Flag
	8xH - Restricted Sale Flag
25	PLU Link (BCD)
26	Mix and Match Code or Tare Weight (BCD)
27	01H - Tax Rate 1 Flag
	02H - Tax Rate 2 Flag
	04H - Tax Rate 3 Flag
	08H - Food Stamp Eligibility Flag
	10H - Discount 1 Flag - N/A
	20H - Discount 2 Flag - N/A
	40H - Trading Stamps Eligibility Flag - N/A
28	Report Group (BCD) - N/A
29-40	Item Description (ASCII)
41	Alternate Price Quantity (BCD)
42-45	Alternate Price (BCD)

Link Level 10 Byte Terse ITEM Record

Offset	Field Description
0-5	Item Code (BCD)
6-9	Quantity Sold (BCD)

Conversion Procedure

The READ ITEM function causes PCCS to access the ISS45 Item File and transmit the records to the Host after converting them to the appropriate link level format.

The Link Level 46 Byte Item record is created from the ISS45 Item record as described below. It should be noted that PCCS does minimal editing of the record data and often merely copies field data as indicated.

Offset	Field Description
0-1	Record ID
	If bit 4 of byte 67
	set to 0001 Hex (Key Enter Price Item)
	Else If bit 2 of byte 67
	set to 0002 Hex (Scale Item)

Else If bit 3 of byte 66
 set to 0003 Hex (Store Coupon)
 Else If bit 2 of byte 66
 set to 0004 Hex (Vendor Coupon)
 Else set to 0000 Hex (Standard PLU)

2-7 Item Code copy from bytes 1-6
 8-11 Quantity Sold create from bytes 247-250
 12-16 Revenue create from bytes 251-254
 17 Price Quantity copy from byte 89
 18-21 Price create from bytes 69-72
 22-23 Department Number copy from bytes 7-8
 24 If bit 4 of byte 67
 set to 06 Hex (Key Enter Price Item)
 Else If bit 2 of byte 67
 set to 01 Hex (Scale Item)
 Else If bit 3 of byte 66
 set to 04 Hex (Store Coupon)
 Else If bit 2 of byte 66
 set to 05 Hex (Vendor Coupon)
 Else set to 00 Hex (Standard PLU)
 If bit 5 of byte 67
 OR with 10 Hex (Price Verify Flag)
 If bit 3 of byte 67
 OR with 20 Hex (Enforced Quantity Flag)
 If bit 1 of byte 67
 OR with 40 Hex (Inhibit Quantity Flag)
 If bit 6 of byte 67
 OR with 80 Hex (Restricted Sale Flag)

25 PLU Link copy from byte 92
 26 If bit 2 of byte 67
 copy from byte 91 (Tare Weight)
 Else
 copy from byte 90 (Mix and Match)

27 Set to 00 Hex
 If bit 7 of byte 65
 OR with 01 Hex (Tax Rate 1 Flag)
 If bit 6 of byte 65
 OR with 02 Hex (Tax Rate 2 Flag)
 If bit 5 of byte 65

	OR with 04 Hex (Tax Rate 3 Flag)
	If bit 7 of byte 66
	OR with 08 Hex (Food Stamp Eligibility Flag)
28	Report Group set to 00 Hex
29-40	Item Description copy from bytes 49-60
41	Alternate Price Quantity copy from byte 89
42-45	Alternate Price create from bytes 126-129

Notes

If the (4>0) Edit parameter is specified, Quantity Sold is created from bytes 145-148, 165-168 or 185-188 depending upon the 'Saved' Movement indicator in the CLOG index record.

If the (4>0) Edit parameter is specified, Revenue is created from bytes 149-152, 169-172 or 189-192 depending upon the 'Saved' Movement indicator in the CLOG index record.

The Link Level 10 Byte Terse Item record is created from the ISS45 Item record as follows:

Offset	Field Description
0-5	Item Code copy from bytes 1-6
6-9	Quantity Sold create from bytes 247-250

Note

If the (4>0) Edit parameter is specified, Quantity Sold is created from bytes 145-148, 165-168 or 185-188 depending upon the 'Saved' Movement indicator in the CLOG index record.

READ HRES or READ SRES (ISS45)

Upon receipt of a /READ command that initiates a READ HRES or READ SRES POS File Maintenance function, PCCS accesses the ISS45 Maintenance Audit File using the file name stored in the ISS45 Parameter file. PCCS reads the fixed length records from this file and converts them to the link format before sending them to the Host, preceded by an appropriate Request Control Block (RCB). All record formats are described below.

Records with a Record Type other than those specified below are not sent to the Host.

ISS45 Maintenance Audit File Record

Offset	Field Description
0	Record Type (ASCII) '1' - Add Item '2' - Change Item '3' - Delete Item
1-12	Item Code (ASCII)
New Item Information	
13-19	Price (0000000 - 9999999)
20-31	Item Description (Alphanumeric)
32-34	Department Number (000 - 999)
35	Item Type (0 - 5) '0' - Standard PLU '1' - Split Priced Item '2' - Scale Item '4' - Store Coupon
36-37	Price Quantity (00 - 15)
38-40	PLU Link (000 - 255)
41	Tax Rate 1 Flag (?)
42	Tax Rate 2 Flag (?)
43	Tax Rate 3 Flag (?)
44	Tax Rate 4 Flag (?)
45-46	Tare Weight (0 - 15)
47	Restricted Sale Flag (?)
48	Enforced Quantity Flag (?)
49-55	Cost per Case (0000000)
56-58	Units per Case (000)
Old Item Information	
59-104	(Ref: bytes 13-58 above)
105-111	Quantity Sold Since Last Z (ASCII)
112-122	Revenue Since Last Z (ASCII)

Note

The New Item Information fields of the Change Item record may contain nulls to indicate the field has not changed.

Link Level HRES or SRES Record

Offset	Field Description
0-1	Record Length 0049H - Add/Change Item Maintenance Record (New Information) 0049H - Change/Delete Item Maintenance Record (Old Information)
2-3	File ID 0001H - ITEM File
4-5	Record ID 0001H - Add Item Maintenance Record 0002H - Change Item Maintenance Record (New Information) 0003H - Change/Delete Item Maintenance Record (Old Information)
6-13	Reserved
14	Reserved
15	Record Type 01H - Add Item Maintenance Record 02H - Change Item Maintenance Record 03H - Delete Item Maintenance Record
16	Reserved
17-25	Reserved
26-28	Reserved
29-34	Item Code (BCD)

*Add/Change Item Maintenance Record***New Item Information**

35-72	(Ref: bytes 8-45 of Link Level ITEM record)
35-38	Quantity Sold
39-43	Revenue
44	Price Quantity

45-48	Price
49-50	Department Number
51	PLU Type
52	PLU Link
53	Mix and Match Code or Tare Weight
54	PLU Flags
55	Reserved
56-67	Item Description
68-72	Reserved

Change/Delete Item Maintenance Record

Old Item Information

35-72 (Ref: bytes 8-45 of Link Level ITEM record)

Conversion Procedure

The READ HRES and READ SRES functions cause PCCS to access the ISS45 Maintenance Audit File and transmit the records to the Host after converting them to the appropriate Link Level format.

The Link Level record is created from the ISS45 record as described below. It should be noted that PCCS does minimal editing of the record data and often merely copies field data or converts from ASCII numeric data to BCD as indicated.

Offset	Field Description
0-1	Record Length set to 0049H
2-3	File ID set to 0001H
4-5	Record ID create from byte 0
6-13	Reserved set to 00H
14	Reserved set to 00H
15	Record Type create from byte 0
16-28	Reserved set to 00H
29-34	Item Code create from bytes 1-12

Add/Change Item Maintenance Record

New Item Information

- 35-43 Quantity Sold and Revenue
 create from bytes 105-122
- 44-67 Price Quantity through Item Description
 create from bytes 13-48 (Note)
- 68-72 Reserved set to 00H
Change/Delete Item Maintenance Record

Old Item Information

- 35-43 Quantity Sold and Revenue
 create from bytes 105-122
- 44-67 Price Quantity through Item Description
 create from bytes 59-94
- 68-72 Reserved set to 00H

Note

If the ISS45 Change Item record indicates that these New Item Information fields have not changed, the original information is obtained from the equivalent Old Item Information fields.

POS system interface

ISS45 Interface

PCCS interfaces directly to the ISS45 POS Driver in order to execute the POS File Maintenance READ ITEM functions. The following table lists the specific commands used.

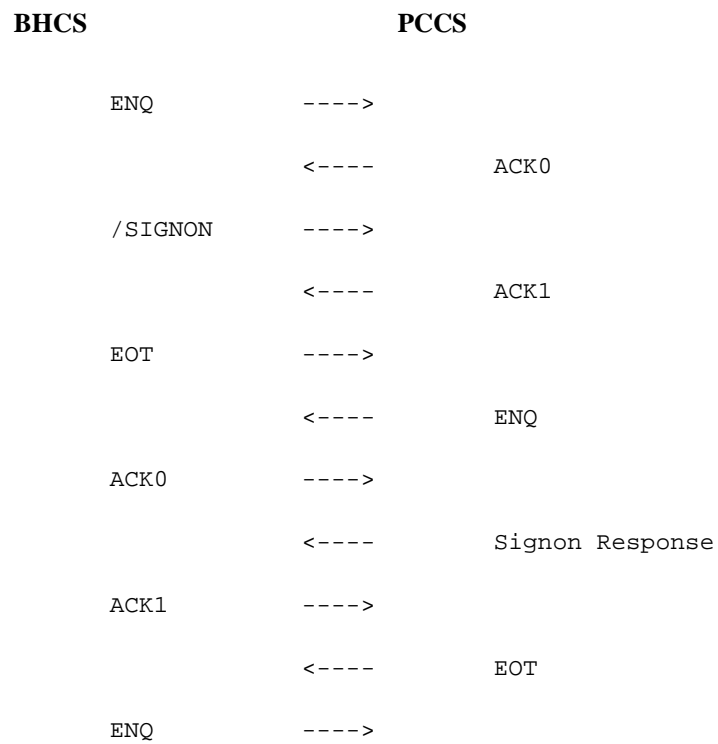
PLU Server

- 08H - PCCS Enable
- 01H - PCCS Read Start
- 02H - PCCS Read Next
- 06H - PCCS Clear Range
- 9H - PCCS Disable

Protocol diagrams

The following examples illustrate some typical communication exchanges between PCCS and BHCS.

SIGNON sequence



SIGNOFF sequence

BHCS

PCCS

ENQ

----->

<-----

ACK0

/SIGNOFF

----->

<-----

ACK1

DLE/EOT

----->

READ FILE request and normal processing

BHCS		PCCS
ENQ	---->	
	<----	ACK0
/READ File	---->	
	<----	ACK1
EOT	---->	
	<----	ENQ
ACK0	---->	
	<----	FDB
ACK1	---->	
	<----	Records 1,2,3
ACK0	---->	
	<----	Records 4,5,6
ACK1	---->	
	<----	Records y,z
ACK0	---->	
	<----	EOT
ENQ	---->	

READ FILE request and file does not exist

BHCS		PCCS
ENQ	---->	
	<----	ACK0
/READ File	---->	
	<----	ACK1
EOT	---->	
	<----	ENQ
ACK0	---->	
	<----	Error Block
ACK1	---->	
	<----	EOT
ENQ	---->	

LOAD FILE request and normal processing

BHCS		PCCS
ENQ	---->	
	<----	ACK0
/LOAD File	---->	
	<----	ACK1
FDB	---->	
	<----	ACK0
Records 1,2	---->	
	<----	ACK1
Records y,z	---->	
	<----	ACK1
/END	---->	
	<----	ACK0

LOAD FILE request and a processing error occurs

BHCS		PCCS
ENQ	---->	
	<----	ACK0
/LOAD File	---->	
	<----	ACK1
FDB	---->	
	<----	ACK0
Records 1,2	---->	
	<----	RVI
EOT	---->	
	<----	ENQ
ACK0	---->	
	<----	Error Block
ACK1	---->	
	<----	EOT
ENQ	---->	

POSCOM board

PCCS utilizes the 9 pin RS-232 port of the POSCOM Board to control the transmitting and receiving of BSC sequences on the communications link.

A jumper must be installed between pins 2 and 3 of JP2 (located above U11) on the POSCOM board enabling clocking to be provided by the attached synchronous modem.

The following table shows the pin assignments of the POSCOM 9 pin RS-232 connector and their mapping to a standard 25 pin RS-232 connector.

Port Pin	Signal	Modem Pin
1	DSR	6
2	RxD	3
3	TxD	2
4	DTR	20
5	GND	7
6	CLK	17
7	RTS	4
8	CTS	5

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