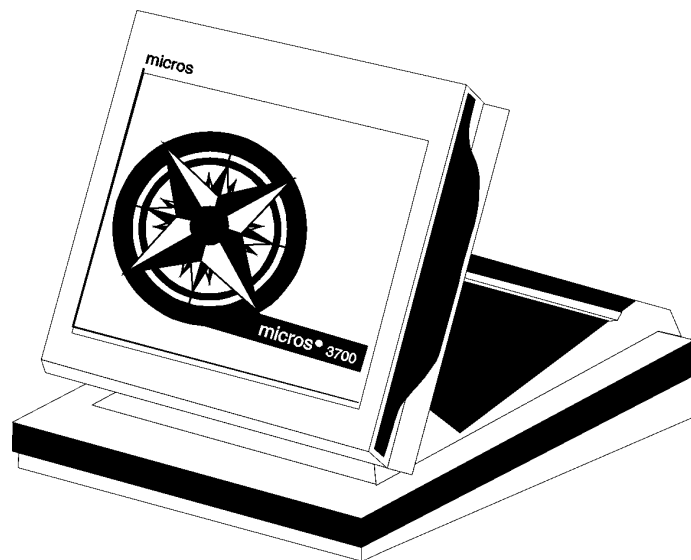

micros[®] Systems, Inc.

PMS Interface Specifications Manual

1700 / 2000 / 3700 / 4700 / 8700 System Software



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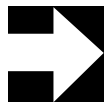
Design and Production

This manual was written with FrameMaker 5.0.1 for Windows.

Printing History

New editions of this manual incorporate new and changed material since the previous edition. Minor corrections and updates may be incorporated into reprints of the current edition without changing the publication date or the edition number.

Edition	Date	Software Version					
		1700	2400	2700	3700	4700	8700
1st	November, 1986	N/A	N/A	N/A	N/A	1.00	N/A
2nd	October, 1988	N/A	N/A	N/A	N/A	2.00	N/A
3rd	May, 1989	N/A	N/A	1.00	N/A	2.00	N/A
4th	January, 1990	1.00	N/A	1.00	N/A	2.00	N/A
5th	September, 1992	1.10	1.00	3.00	N/A	5.00	N/A
6th	March, 1993	1.10	1.10	4.00	N/A	6.00	N/A
7th	July, 1993	1.15	2.00	4.00	N/A	6.01	1.00
8th	March, 1995	1.21	3.00	5.00	N/A	6.02	1.02
9th	January, 1998	1.21	3.00	5.00	2.00	6.02	1.02



Note

PMS Interface is disabled in 2400 Version 3.00. It may be reinstated in a future release.

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Preface

This preface provides an introduction to the organization, conventions, and contents of this manual.

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Why Read This Manual?

Purpose

The *PMS Interface Specifications Manual* provides information concerning design of the software interface between MICROS Systems 1700, 2400, 2700, 3700, 4700 or 8700 POS products and a Property Management System (PMS).

For the purposes of this document, the term “POS System” will be used as a generic term to refer to one or more 1700 System Units, 2000 series System Units (2400 or 2700), 3700 Computer-based systems, 4700 Computer-based systems, or 8700 Computer-based systems. In the case of the 1700 and 2000 series, the PMS Computer attaches to a Communications Interface Board (CIB) that is installed in a 1000/2000 System Unit, allowing access to all other System Units configured within the same network. For the 3700, 4700 and 8700, the PMS Computer attaches to an Asynchronous Communications Adapter (COM port) installed in the Personal Computer that controls the 3700, 4700 or 8700 system. The 3700 and 8700 also support a TCP/IP connection with the PMS. All other differences between the products will be discussed within each definition.

Who Should Use This Manual

This manual is intended for:

- ❑ programmers who are designing the software interface between a MICROS 1700, 2400, 2700, 3700, 4700, or 8700 POS and any Property Management System (PMS)
- ❑ field engineers/technicians who troubleshoot problems with any PMS interface

Two prerequisites are suggested for using this manual:

- ❑ clear understanding of the charge posting specifications of the PMS interface being programmed
- ❑ a thorough understanding of how to implement the interface

It would also be helpful to understand how to program the specific MICROS product involved to enable the charge posting interface.



Note

Be mindful of the version of applications software. There are differences in the PMS messages sent by each product version, as documented in this manual.

How This Manual is Organized

This manual is divided into three major sections:

Section One:

This section (Chapter 1) will introduce you to the requirements of the interface from the standpoint of cabling, transmission characteristics, and basic message protocol.

Section Two:

This section (Chapter 2) describes the protocols for computer inquire request and response messages, and for outlet charge posting request and response messages.

Section Three:

This section (Appendices A and B) provides a reference table of ASCII control codes and sample messages.

Related Manuals

Here's a list of related MICROS product documentation.

- | | |
|---|--|
| <input type="checkbox"/> <i>1700 System Programming Manual</i> | 100014-061 |
| <input type="checkbox"/> <i>2400 System Programming Manual</i> | 100068-027 |
| <input type="checkbox"/> <i>2700 System Programming Manual</i> | 100068-017
or 100068-029
or 100068-033 |
| <input type="checkbox"/> <i>3700 System documentation</i> | 100134-5XX |
| <input type="checkbox"/> <i>4700 System Configuration Manual</i> | 100068-024
or 100068-059 |
| <input type="checkbox"/> <i>8700 System Programming Manual</i> | 100068-036 |
| <input type="checkbox"/> <i>8700 System Interface Module (SIM) Manual</i> | 150502-052 |

Preface
Why Read This Manual?

Overview

This chapter introduces you to the requirements of the PMS interface from the standpoint of cabling, transmission characteristics, and basic message protocol.

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Communications Channel Characteristics

The PMS Computer communicates to the POS System through a standard EIA RS232C communications interface. Some of the controllable factors regarding the interface are listed below:

❑ **Transmission Mode**

The transmission mode over the RS232C communications channel is asynchronous, serial binary, and full duplex.

❑ **Baud Rate**

The transmission baud rate may be selected (if the POS System and the PMS Computer agree) as 300, 600, 1200, 2400, 4800, or 9600 baud.

❑ **Character Format**

The transmission character format may be selected, if the POS System and the PMS Computer agree. The character type is 7-bit ASCII (or 8-bit for international characters); the character length may be set at 7 or 8 bits with an even, odd, or no parity bit. Each character will include a single start bit and 1 or 2 stop bits for character framing.

❑ **Line Connection**

The POS System may interface to the PMS Computer using an EIA standard RS232C D-type female connector, either 9 or 25 pin at the POS. The PMS computer may connect to the POS System directly (hard-wired) or through asynchronous short-haul modems to overcome possible line distance limitations. The following tables describe the pin-outs for the alternatives. Refer to the PMS documentation for guidance about the specific pin-outs at the PMS Computer.



Note

The CTS signal must be true to enable the POS System to transmit data to the PMS Computer. The DSR and DCD signals must both be true to enable the POS System to receive data from the PMS Computer.

3700/4700/8700 (COM Port) Cable Pin-outs (25 pin Female) for Direct Connection to PMS Computer (via RS232 Connector)

Signal	Pin Number		Function
TxD	2	(BA)	Data to Computer
RxD	3	(BB)	Data from Computer
RTS	4	(CA)	
CTS	5	(CB)	
GND	7	(AB)	Signal Ground
DSR	6	(CC)	Optional DTR Signal
DCD	8	(CF)	Optional DTR Signal
DTR	20	(CD)	Optional DTR Signal

3700/4700/8700 (COM Port) Cable Pin-outs (25 pin Female) for Short-haul Modem Connection to PMS Computer (via RS232 Connector)

Signal	Pin Number		Function
TxD	2	(BA)	Data to Modem
RxD	3	(BB)	Data from Modem
RTS	4	(CA)	Request to Send to Modem
CTS	5	(CB)	Clear to Send from Modem
GND	7	(AB)	Signal Ground
DSR	6	(CC)	Data Set Ready from Modem
DCD	8	(CF)	Data Carrier Detect from Modem
DTR	20	(CD)	Data Terminal Ready to Modem

1700/2000/3700/4700/8700 (COM Port) Cable Pin-outs (9 pin Female) for Direct Connection to PMS Computer (via RS232 Connector)

Signal	Pin Number		Function
RxD	2	(BB)	Data from Computer
TxD	3	(BA)	Data to Computer
RTS	7	(CA)	
CTS	8	(CB)	
GND	5	(AB)	Signal Ground
DCD	1	(CF)	Optional DTR Signal
DTR	4	(CD)	Optional DTR Signal
DSR	6	(CC)	Optional DTR Signal

1700/2000/3700/4700/8700 (COM Port) Cable Pin-outs (9 pin Female) for Short-haul Modem Connection to PMS Computer (via RS232 Connector)

Signal	Pin Number		Function
RxD	2	(BB)	Data from Modem
TxD	3	(BA)	Data to Modem
RTS	7	(CA)	Request to Send to Modem
CTS	8	(CB)	Clear to Send from Modem
GND	5	(AB)	Signal Ground
DCD	1	(CF)	Data Carrier Detect from Modem
DTR	4	(CD)	Data Terminal Ready to Modem
DSR	6	(CC)	Data Set Ready from Modem

Message Format

The format of all messages initiated by the MICROS POS System and the PMS Computer have the following form:

SOH	<ID>	STX	<DATA>	ETX	<CKSUM>	EOT
-----	------	-----	--------	-----	---------	-----

The following are descriptions of the individual message components:

❑ **SOH**

The SOH character (start of header) is a message lead-in character that identifies the start of a new message. The SOH character is represented by the 7-bit hexadecimal value 01_{16} (or Hex 01), plus a parity bit, if applicable.

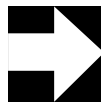
□ **<ID>**

The <ID> character field identifies the source (when sent by the POS System) and the destination of a message (when sent by the PMS Computer).

For the 1700, 2000 series, 4700 and 8700, the <ID> field contains 18 characters: the User Workstation or System Unit Number (2 characters) followed by the Comms System Name (16 characters).

For the 3700, the <ID> field contains either 18 or 25 characters. The interface definition record may be configured to supply either a two-character or a nine-character User Workstation Number, which is followed by the Outgoing Message Name (16 characters).

The User Workstation or System Unit Number is a 2 byte numeric character field in the range 1 through 64 (in the 8700, it is 1 through 99). It is represented by ASCII character codes in the range Hex 30 through Hex 39, plus parity bits, if applicable. This field is represented by a U2 type format (see Message Data Block Field Types section for a complete explanation of type formats).



Note

In the 8700, a UWS may have a number up to 999999999, but only the last 2 digits are transmitted.

The Comms System Name (formerly called the POS System Name) or Outgoing Message Name is a 16 byte alphanumeric character field stored in the 1700's Alpha Descriptors File, the 2400/2700/4700's Parameters File, the 3700's Interface Definition, and the 8700's PMS Definition File. This field is represented by ASCII character codes, plus parity bits, if applicable. It identifies and differentiates the source(s) of the communications message(s) if more than one system is posting to the PMS Computer.

□ **STX**

The STX character (start of text) is a data field lead-in character that identifies the start of the message data block. The STX character is represented by the 7-bit hexadecimal value 02, plus a parity bit, if applicable.

□ **<DATA>**

The <DATA> field contains the message data block and is represented by ASCII character codes in the range Hex 20 through Hex 7F, plus parity bits, if applicable. The length of the <DATA> field is variable and is determined by each individual message.

❑ **ETX**

The ETX character (end of text) serves as a data field lead-out character that identifies the end of the message data block. The ETX character is represented by the 7-bit hexadecimal value 03, plus a parity bit, if applicable.

❑ **<CKSUM>**

The <CKSUM> field contains the checksum characters of the message. This field is 4 numeric ASCII-HEX characters represented by the ASCII character codes in the range Hex 30 through Hex 39 (0 through 9) and Hex 41 through Hex 46 (A through F), plus parity bits, if applicable. The <CKSUM> field always follows the ETX character.

The checksum (initially set to zero) is a 16-bit binary addition (excluding parity bits, if applicable) of all characters after, but not including, the SOH character and through, including, the ETX character. The checksum accumulation is then encoded into the "equivalent" ASCII-HEX character representations (plus parity bits, if applicable) so that the <CKSUM> field is suitable for transmission over the communications channel.

For example, if the resulting 16-bit checksum has the hexadecimal value of D2B9, it would be encoded into ASCII characters "D" (Hex 44), "2" (Hex 32), "B" (Hex 42), and "9" (Hex 39) with the character "D" transmitted first.

❑ **EOT**

The EOT (end of transmission) character serves as a message lead-out character and identifies the end of a message. The EOT character is represented by the 7-bit hexadecimal value 04, plus a parity bit, if applicable.

Link Control Characters

Link control characters are used by the recipient of a message to manage the transfer of messages over the communications line and to provide for reliable exchange of information.

The following paragraphs describe link control characters used to manage the flow of messages over the communications channel.

□ **ACK**

The ACK (acknowledgment) character is a positive acknowledgment to a received message. It indicates the successful receipt of a message (with no framing, parity, overrun, or block check code errors detected). The ACK character is represented by the 7-bit hexadecimal value 06, plus a parity bit, if applicable.



Note

The positive acknowledgment character does not imply the proper context or formatting of a <DATA> field for a particular message. It merely implies that the overall message format met the protocol requirements for reliable data exchange over the communications channel.

□ **NAK**

The NAK (non-acknowledgment) character is a negative acknowledgment to a received message. It indicates the unsuccessful receipt of a message (with framing, parity, overrun, and/or block check code errors detected). The NAK character is represented by the 7-bit hexadecimal value 15, plus a parity bit, if applicable.

The message sender, upon receipt of a negative acknowledgment, should send the message again. If the message is "refused" after 1 attempt and 3 retries, the message should be aborted and application-dependent error handling should be performed.

❑ **XOFF**

The XOFF character (transmission off) allows the message recipient to request temporary suspension of a message transmission from the message sender. The XOFF character is represented by the 7-bit hexadecimal value 13, plus a parity bit, if applicable.

The XOFF character should be sent at least 8 characters before a "receiving buffer full" condition actually occurs; this will allow for the receipt of characters already buffered by communications hardware circuitry. If an XON is not received within 5 seconds, message transmission will resume.

❑ **XON**

The XON character (transmission on) allows the message recipient to request the continuation of a message transmission from the message sender after having been suspended through the use of an XOFF character. The XON character is represented by the 7-bit hexadecimal value 11, plus a parity bit, if applicable.

The XON character should be sent after the receiving buffer full condition has been relieved by about 50% to reduce XON/XOFF transmission oscillations around a buffer full point.

Message Processing Considerations

Observe the following considerations to ensure reliable information exchange and to manage message transfer over the full duplex communications line.

1. A message sender (at network level) may not send a message until a previous message has been acknowledged (positive or negative acknowledgment) or an acknowledgment response timeout has occurred.
2. A message sender (at network level), upon receipt of a negative acknowledgment, should retransmit the message (without changing the Message Retransmit Flag). If the message is "refused" after 1 attempt and 3 retries, the message should be aborted. An applications level timeout should occur to initiate appropriate error handling. The retransmission flag in the Data Block of each Request Message will not be set unless an applications software timeout occurs.
3. A message sender (at network level), upon the occurrence of an acknowledgment timeout, should abort the message. An applications level timeout should occur to initiate the appropriate error handling.
4. A message sender (at network level) should wait 5 seconds for a message acknowledgment before aborting the message (acknowledgment timeout).
5. The applications level timeout at the PMS Computer should be 30 to 45 seconds before initiating an error handling procedure. The applications level timeout at the POS System is programmable between 0 and 255 seconds for the 2400, 2700, 4700, and 8700; it is programmable between 0 and 99 seconds for the 1700, and between 0 and 9,999 seconds for the 3700.
6. Network level communications handling processing should initialize in the XON condition.
7. To avoid a possible "hung" transmission line condition after the receipt of an XOFF character, a 5 second timeout should be used to continue transmission in the absence of a received XON character (at network level).

8. Due to the nature of full duplex communications, it is possible that link control characters (ACK, NAK, XON, and XOFF) will be interspersed within data messages. The message receiver interface (network level) must screen all incoming characters to determine if the character is a link control character (to gate the character to link control processing) or a data message character (to gate the character to message accumulation processing).

Message Data Block Field Types

Message data block field types for both request and response messages are detailed in terms of field description, field size, and field format. The field description identifies the way in which the data is interpreted (e.g., employee number, revenue center number, etc.). The field size indicates the number of ASCII characters that are in the given field. The field format describes the field in terms of data type.

The following is a description of the five basic field format data types:

□ **U_x**

Unsigned numeric ASCII character field (without decimal point). All numeric characters are represented by the ASCII characters 0 through 9. The value, *x*, defines the number of digits possible in the field. The digits are right justified within the field with leading blanks (ASCII space character, Hex 20) and most significant digit first. Leading blanks appear only if the number of characters in the field is less than the total field size. The total field size is defined by the value, *x*.

For example, a U4 format defines a 4 character field size with a maximum of 4 digits possible. In the following examples, "(space)" represents the ASCII space character, Hex 20.

1234
(space)123
(space)(space)12
(space)(space)(space)1
(space)(space)(space)0

□ **Ux.y**

Unsigned numeric ASCII character field (with decimal point). All numeric characters are represented by the ASCII characters 0 through 9. The value, x, defines the number of digits possible in the field. The value, y, defines the number of digits (within x) appearing after the decimal point character (ASCII "." character, Hex 2E). If y=0, the decimal point will still be present to keep the field size the same length for all cases. The digits are right justified within the field with leading blanks (ASCII space character, Hex 20) and most significant digit first. Leading blanks appear only if the number of characters in the field is less than the total field size. The total field size is defined by the value, x+1. For example, a U4.2 format defines a 5 character field size (maximum 4 digits plus a decimal point) with 2 of the digits appearing after the decimal point. In the following examples, "(space)" represents the ASCII space character, Hex 20.

12.34
(space)1.23
(space)(space).12
(space)(space).01
(space)(space).00

The same example with a U4.0 format would appear as follows:

1234.
(space)123.
(space)(space)12.
(space)(space)(space)1.
(space)(space)(space)0.

□ **Sx**

Signed numeric ASCII character field (without decimal point). All numeric characters are represented by the ASCII characters 0 through 9. The value, x, defines the number of digits possible in the field. The digits are right justified within the field with leading blanks (ASCII space character, Hex 20) and most significant digit first. The sign precedes the most significant digit and is represented by an ASCII space character, Hex 20 for positive numbers or an ASCII "-" character, Hex 2D for negative numbers. Leading blanks appear only if the number of characters in the field is less than the total field size. The total field size is defined by the value, x+1.

For example, an S4 format defines a 5 character field size (maximum 4 digits plus the sign). In the following example, "(space)" represents the ASCII space character, Hex 20.

(space)1234	(space)1234
(space)(space)123	(space)-123
(space)(space)(space)12	(space)(space)-12
(space)(space)(space)(space)1	(space)(space)(space)-1
(space)(space)(space)(space)0	(space)(space)(space)-0

□ **Sx.y**

Signed numeric ASCII character field (with decimal point). All numeric characters are represented by the ASCII characters 0 through 9. The value, x, defines the number of digits possible in the field. The value, y, defines the number of digits (within x) appearing after the decimal point character (ASCII "." character, Hex 2E). If y=0, the decimal point will still be present to keep the field size the same length for all cases.

The digits are right justified within the field with leading blanks (ASCII space character, Hex 20) and most significant digit first. The sign precedes the most significant digit and is represented by an ASCII space character, Hex 20 for positive numbers or an ASCII "-" character, Hex 2D for negative numbers. Leading blanks appear only if the number of characters in the field is less than the total field size. The total field size is defined by the value, x+2.

For example, an S4.2 format defines a 6 character field size (maximum 4 digits plus a sign and a decimal point) with 2 of the digits appearing after the decimal point. In the following examples, "(space)" represents the ASCII space character, Hex 20.

(space)12.34	(space)12.34
(space)(space)1.23	(space)-1.23
(space)(space)(space).12	(space)(space)-.12
(space)(space)(space).01	(space)(space)-.01
(space)(space)(space).00	(space)(space)-.00

The same example, but with an S4.0 format, appears as follows:

(space)1234.	(space)1234.
(space)(space)123.	(space)-123.
(space)(space)(space)12.	(space)(space)-12.
(space)(space)(space)(space)1.	(space)(space)(space)-1.
(space)(space)(space)(space)0.	(space)(space)(space)-0.

□ **Ax**

Alphanumeric ASCII character string field. All characters represented by the ASCII characters in the range Hex 20 through Hex 5E will be sent by the 1700, 2400, 2700, 4700, and 8700. In addition, the 3700, 4700 and 8700 are capable of sending ASCII characters Hex 60 through Hex 7F (lower case characters). The 2400, 2700, 3700, 4700 (Versions 3.05E, 5.00 and later), and 8700 can print/display the international characters from the list below (using special ROMs, these 4700 and 8700 versions can also print/display the Extended ASCII Character Set, as well as Greek, Cyrillic and Turkish characters). If the following characters are to be used, the 8-bits/character (no parity) format must be selected.

IBM ASCII Codes

Decimal	Hexadecimal	Character
142	8E	Ä
143	8F	Å
144	90	É
146	92	Æ
148	94	Ö
154	9A	Ü
156	9C	£
165	A5	Ñ
225	E1	ß
237	ED	Ø

The value, x, defines the number of characters possible in the field. The characters are left justified within the field with trailing blanks (ASCII space character, Hex 20).

Trailing blanks appear only if the number of characters in the field is less than the total field size. The total field size is defined by the value, x.

For example, an A16 format defines a field size with a maximum of 16 characters possible:

Character Position -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Example 1 -->	I	N	V	A	L	I	D		A	C	C	T		#		
Example 2 -->	A	U	T	H	O	R	I	Z	E		C	H	A	R	G	E

Messages

This chapter provides details about the contents of the data blocks sent through the PMS interface.

In this chapter

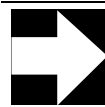
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Computer Inquire Request Message

The Computer Inquire Request Message is sent by the POS System to request the return of information from an on-line PMS Computer in real-time.

Message Data Block Format

Message Data Block Format	Number of Characters	Field Type
Message Type (1)	2	U2
Message Retransmit Flag	1	A1
Account ID Information, either of 2 choices: □ 1700/2400/2700/3700/4700E/4700/8700 □ 4700/8700	16 (19)	A16 (A19)
Employee Number	4	U4
Total	23 or 26	



Note

Total depends on the Account ID field.

The following is a description of the fields in the message data block of the Computer Inquire Request Message:

- **Message Type**
This field will be set to (space)1 (a space followed by 1, ASCII characters with Hex values 20 and 31) to identify a Computer Inquire Request Message.
- **Message Retransmit Flag**
This field will be set to (space) (one space, 20₁₆ or Hex 20) for all initial Computer Inquire Request messages. This field will be set to R (Hex 52) to identify the applications-level retransmission of a previously sent Computer Inquire Request message (not a network-level retransmission).
- **Account ID Information**
This field is entered by the POS operator and generally contains any information necessary to identify the nature of the computer inquiry, such as an account number. The field contents and syntax are defined and interpreted by the PMS Computer. The POS System does not perform any edit checking of this field.

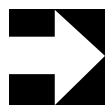
In certain products, the Inquire key can send an Inquiry Message string that is either 16 or 19 digits long, based on an option. In the 3700, the string is always 16 digits long. In the 4700 (Version 5.00 or later), it is Option bit #88 in the first Revenue Center; in the 8700, it is the PMS File's Type Definition #4.

In the 4700 (Version 6.01 or later), there is an additional option to read all data from Track-2 of a swiped card and send it to the PMS. This option is used when cards are encoded with the guest's room and/or reservation number. The Inquire Request Message will include this extra data if: 1) the card is swiped through the card reader (as opposed to manually entered), and 2) Tender/Media Type Definition bit S12-8 is set to 1 for **any** Tendering key. If either of these conditions is not met, the Account ID field will be defined by Option bit #88. For a complete description of this feature, see the definition of the Account ID Information field for the Outlet Charge Posting Request Message.

□ **Employee Number**

This field identifies the employee who performed the computer inquiry transaction. The valid employee number range is 1 through 9999.

In certain products, Employee Number 0 will be sent if no employee is signed in at the time the Inquire key is used. This option is only available in the 4700 (Version 5.00 or later; see Revenue Center Option bit #97) and the 8700 (see PMS Configuration #6).



Note

In the 8700 database, this field can be up to 999999999 but only the last four digits will be transmitted.

Computer Inquire Response Message

The Computer Inquire Response Message is sent by the PMS Computer to supply information in response to an information request from an on-line POS System (in the form of a Computer Inquire Request Message) in real-time.

Message Data Block Format

Message Data Block Format	Number of Characters	Field Type
Message Type (1)	2	U2
Information Message 2 (optional)	16	A16
Information Message 3 (optional)	16	A16
Information Message 4 (optional)	16	A16
Information Message 5 (optional)	16	A16
Information Message 6 (optional)	16	A16
Information Message 7 (optional)	16	A16
Information Message 8 (optional)	16	A16
Total	130	

The following is a description of the fields in the message data block of the Computer Inquire Response Message:

❑ **Message Type**

This field must be set to (space)1 (a space followed by 1, ASCII characters with Hex values 20 and 31) to identify a Computer Inquire Response Message.

❑ **Information Messages 1 - 8**

These fields are used by the PMS Computer to supply information to the POS operator to satisfy the computer inquiry request. The POS System presents these fields to the POS display for POS operator review.

Each field is limited to a total of 16 characters each; likewise, if you want the folios or account names to appear on different lines at the POS System, you must pad each message line out to 16 characters.

Up to 8 of these fields may be returned in the message data block of the response message. The first field is required and the remaining fields are optional. Although the PMS may respond with more than 8 message fields, the POS System will not reliably display line 9 or above.

Messages

Outlet Charge Posting Request Message

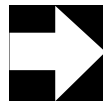
Outlet Charge Posting Request Message

The Outlet Charge Posting Request Message is sent by the POS System to post outlet charges to an on-line PMS Computer in real-time.

Message Data Block Format

Message Data Block Format	Number of Characters	Field Type
Message Type (2)	2	U2
Message Retransmit Flag	1	A1
Account ID Information, either of 2 choices:		
❑ 1700/2400/2700/3700/4700E/4700/8700	16	A16
❑ 3700/4700/8700	(19)	(A19)
Expiration Date (<i>mmyy</i>)	4	U4
Selection Field Information	16	A16
Selection Field Number	1	U1
Transaction Employee Number	4	U4
Check/Order Employee Number	4	U4
Store/Revenue Center Number	3	U3
❑ 1700 (Store Number)		
❑ 2700/3700/4700/8700 (Revenue Center Number)		
❑ 2400 (0 or Credit Card Type, by option)		
Serving Period/Cashier/Shift Number	3	U3
❑ 1700 (0)		
❑ 2700/2400/2700/3700 (Cashier/Shift Number)		
❑ 4700/8700 (Serving Period Number)		
❑ 4700 (Tender/Media Report Group, by option)		

Message Data Block Format	Number of Characters	Field Type
Guest Check/Order Number <input type="checkbox"/> 1700/2700/3700/4700/8700 (Guest Check Number) <input type="checkbox"/> 2400 (Order Number)	4	U4
Transaction Number <input type="checkbox"/> 1700/2400/2700/3700/4700 <input type="checkbox"/> 8700 (0)	4	U4
Number of Covers/Guests/Customers <input type="checkbox"/> 1700/2400/2700/3700/4700/8700 <input type="checkbox"/> 4700/8700 (by option)	4 (5)	S3 S4)
Current Payment Number	3	U3
Current Payment Amount	10	S8.y
Sales 1 Total	10	S8.y
Sales 2 Total (1700 = 0)	10	S8.y
Sales 3 Total (1700 = 0)	10	S8.y
Sales 4 Total (1700 = 0)	10	S8.y
Discount Total (1700 = 0)	10	S8.y
Service Charge Total, keyboard entered (1700 = 0)	10	S8.y
Service Charge Total, automatic (1700/2400 = 0)	10	S8.y
Tax 1 Total (or VAT 1 Gross Total)	10	S8.y
Tax 2 Total (or VAT 2 Gross Total)	10	S8.y
Tax 3 Total (or VAT 3 Gross Total)	10	S8.y
Tax 4 Total (or VAT 4 Gross Total)	10	S8.y
Previous Payment Total	10	S8.y
Total (depends on the Account ID and Covers fields)	199, 200, 202 or 203	



Note

The decimal fields displayed above all have the format S8.y which means that these fields contain up to 8 digits, regardless of the placement of the decimal point (actually, up to 10 characters are transmitted, including the decimal point and sign, e.g., -1234567.8 or 12345.678); the number of digits after the decimal (y) may be set to 0, 1, 2, or 3 in the 2400, 2700, 4700, and 8700 products. In the 1700, your only choices are 0 or 2 digits after the decimal point. In the 3700, this field may be set to 0, 2 or 3 digits after the decimal point.

The following is a description of the fields in the message data block of the Outlet Charge Posting Request Message:

❑ **Message Type**

This field will be set to (space)2 (a space followed by 2, ASCII characters with Hex values 20 and 32) to identify an Outlet Charge Posting Request Message.

❑ **Message Retransmit Flag**

This field will be set to (space) (one space, Hex 20) for all initial Outlet Charge Posting Request messages. This field will be set to R (Hex 52) to identify the retransmission of a previously sent Outlet Charge Posting Request message.

❑ **Account ID Information**

This field, entered by the POS operator, generally contains the posting account number and any other information necessary to identify the posting account. The field content and syntax is defined and interpreted by the PMS Computer. The POS System does not perform any edit checking of this field. If this message is being forwarded back to the PMS Computer as the result of a "list" selection (see Outlet Charge Posting Response Message), this field will still contain the original information entered by the POS Operator.

The size of the field is defined by the POS System: the 4700 (Version 4.00 or previous) always sends a 16 character Account ID, while the 1700, 2400, 2700, 3700, 4700E, 4700 (Version 5.00 or later), and 8700 can send either a 16 or 19 digit entry. The programming of this option is as follows:

Product	Field/Bit
1700	System Unit Option Bit #6F
2400/2700	Tender/Media Type Def. bit #30

Product	Field/Bit
3700	Tender/Media PMS Option "Allow 19 reference characters"
4700E	Tender/Media Type Def. bit S9-8
4700 (Version 5.00 or later)	Tender/Media Type Def. bit S9-8
8700	Tender/Media Type Def. #31

In the 4700 (Version 6.01 or later), there is an additional option to read all data from Track-2 of a swiped card and send it to the PMS. This option is used when cards are encoded with the guest's room, reservation number, and/or other information. The Posting Request Message will include this extra data if: 1) the card is swiped through the card reader (as opposed to manually entered), and 2) Tender/Media Type Definition bit S12-8 is set to 1. If either of these conditions is **not** met, the Account ID field will be defined by bit S9-8. When the two conditions are met, the Account ID field is as follows:

- ❑ the first character is always a * symbol (Hex 2A); this will not appear if the card number was manually entered.
- ❑ the first data string is usually the credit card (or account) number; it is usually 13 to 19 digits long.
- ❑ the end of the data string is always marked by the field separator, which is an = symbol (Hex 3D).
- ❑ the next data string may define a reservation number or some other information; it may be any length.
- ❑ the end sentinel is a ? symbol (Hex 3F) which defines the end of the data in this field.

Also see the definition of the Account ID Information field for the Computer Inquire Request Message.

❑ **Expiration Date**

This field is entered by the POS operator (manually or through a magnetic card reader); it contains the expiration date of a credit card in the form *mmyy*. This field only pertains to credit card postings (the field contains zero for all non-credit card postings). The Account ID Information field will contain the credit card number.

This field is only applicable with 4700 system software versions 2.10 and later, and with all versions of the 1700, 2400/2700, 3700 and 8700. Early versions of 4700 system software transmit a zero for this field.

❑ **Selection Field Information**

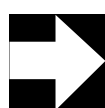
This field is used to support positive posting account identification applications. If this message is being forwarded back to the PMS Computer as the result of a "list" selection (see Outlet Charge Posting Response Message), this field will contain the POS operator's choice, selected from the list provided in the Response Message. This field will be a (space) (Hex 20) for all "initial" issue Outlet Charge Posting Request messages.

❑ **Selection Field Number**

This field is used to support positive posting account identification applications. If this message is being forwarded back to the PMS Computer as the result of a "list" selection (see Outlet Charge Posting Response Message), this field will contain the position number of the field selected by the POS operator that was supplied by the PMS Computer in a previous Posting Response Message. The possible selection field number range is 1 through 8. This field will be set to 0 (Hex 30) for all "initial" issue Outlet Charge Posting Request messages.

❑ **Transaction Employee Number**

This field identifies the Transaction Employee who posted the outlet charge (e.g., cashier, manager, etc.). In the case of the 1700 and 2400, this will be the same number as the Check/Order Employee field. In the 2700, 3700, 4700 and 8700 the Transaction and Check/Order Employees may be different. The range of possible Employee Numbers in the 1700 is 1 through 99. In all other products, the range is 1 through 9999.



Note

In the 3700 database, this field may range up to 9999999, but only the last four digits are transmitted.

In the 8700 database, this field may range up to 999999999 but only the last four digits are transmitted.

❑ **Check/Order Employee Number**

This field identifies the Check/Order Employee responsible for the guest check (in most products) or order (in the 2400). In the case of the 1700 and 2400, this will be the same number as the Transaction Employee field; in the 2700, 3700, 4700, and 8700, the Transaction and Check/Order Employees may be different. The range of possible Employee Numbers in the 1700 is 1 through 99; in all other products, the range is 1 through 9999.



Note

In the 3700 database, this field may range up to 9999999, but only the last four digits are transmitted.

In the 8700 database, this field may range up to 999999999 but only the last four digits are transmitted.

❑ **Store/Revenue Center Number**

For the 2700, 3700, 4700, and 8700, this field identifies the Revenue Center Number of the outlet from which the charge originated. Since the 1700 does not use Revenue Centers, the Store Number programmed in the System Unit's Setup Code D5 will be transmitted. The 2400 usually transmits a 0 in this field; in versions 1.14 or later, Tender/Media Type Definition bit #37 was added to optionally send the single-digit Credit Card Type used in Finland.

This field may be used in conjunction with the POS System ID in the Message <ID> field to determine the specific origin of the Charge Posting Request. The range of acceptable numbers in each product is:

Product	Range
1700	1-99
2400	0
2700	1-8
3700	1-999
4700	1-255
8700	1-999



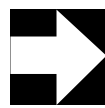
Note

In the 3700 database, this field may range up to 9999999, but only the last three digits are transmitted.

❑ **Cashier/Serving Period Number**

In the 1700 (Version 1.10), 2400, 2700 and 3700, this field identifies the active Cashier/Shift Number. In the 1700 (Version 1.00), the field is 0.

In the 4700 and the 8700, this field identifies the Serving Period Number that is active when the charge is posted (4700 = 1 through 255; 8700 = 1 through 999). Based on Revenue Center Option bit #112 in the 4700 (Version 5.10 or later), this field can identify the Tender/Media Report Group, 1 through 99, instead (if Japanese tax is disabled).



Note

In the 8700 database, this field can be up to 999999999 but only the last three digits will be transmitted.

❑ **Guest Check/Order Number**

In the 1700, 2700, 3700, 4700, and 8700, this field identifies the guest check number of the check being settled (in partial or whole) by the charge posting. In the 2400, this field identifies the Order Number. The guest check/order number entry range is 1 through 9999.

❑ **Transaction Number**

This field identifies the transaction number assigned to the transaction in which the charge posting is being performed; this is used as a cross reference to an audit trail maintained by the POS System (if configured to maintain an audit journal). The transaction number range is 1 through 9999. In the 2400 (Version 1.10 or later), the transaction number range extends to 999999999, but only the last four digits will be transmitted. In the 8700, this field is 0.

❑ **Number of Covers/Guests/Cst.**

This field identifies the number of guests/customers recorded on the guest check or order. In all products, the range for this field is 1 through 999 (if positive) or -999 (if negative). In the 2400, in particular, this number might be negative in the case of a Refund or Overring.

In the 4700 and 8700, the following programming optionally provides the ability to send 5 characters (9999 to -9999) instead of 4:

Product	Field/Bit
4700 (Version 5.00 or later)	Revenue Center Option bit #107
8700	PMS File Type Def. #7

❑ **Current Payment Number**

This field identifies the Tender/Media Number assigned to the payment key through which the charge is being posted. For each product, the following ranges apply:

Product	Range
1700	1-16
2400/2700	1-255
3700	1-999
4700	1-255
8700	1-999

 **Note**

In the 3700 database, this field may range up to 9999999 but only the last three digits are transmitted.

In the 8700 database, this field may range up to 999999999 but only the last three digits are transmitted.

❑ **Current Payment Amount**

This field identifies the actual amount being posted to the PMS. This amount may represent either a payment-in-full towards the transaction or a partial payment amount (as in the case of a split tender transaction). In all products, there is an option to post either the payment-in-full or the total amount tendered, depending on the appropriate Tender/Media Type Definition bit listed below:

Product	Bit
1700 (Version 1.10 or later)	S8-8
2400	#33
2700 (Version 2.00 or later)	#33
3700	Tender/Media PMS form "Post gross rcpts to PMS"
4700 (Version 4.00 or later)	S8-4
8700	#32

The following totals represent either the entire guest check or the current transaction, depending on whether you have chosen to prorate the totals or not. After the definition of the last total (Previous Payment Total), you will find a complete definition of the non-prorated versus prorated distribution of these totals.

❑ **Sales Totals 1 through 4**

These fields identify the breakdown of the sales item amounts for the transaction and may represent such breakdowns as food, liquor, beer, wine, etc. in Full Service products, depending on the POS System's Menu Item File programming. Although the 8700 database contains 16 Sales Totals and the 2700 V5 contains 8, only the first four will be sent; if you need these Sales Totals, consider using the System Interface Module (SIM). The 1700 combines all sales into the first Sales Total. In all products except the 2700 and 3700, this total is net of Item Discounts. When Value Added Tax (VAT) or US-inclusive tax is enabled, each total represents the total sales amount (inclusive of tax) for each of the chosen categories.

❑ **Discount Total**

This field identifies the total amount of any discounts taken against the transaction sales total amount. The 1700 does not use this field and will transmit a zero (0). In all products except the 2700 and 3700, this figure does not include Item Discounts; the 2700 and 3700 include Item Discounts here.

❑ **Service Charge Total (kybd)**

This field identifies the total amount of any add-on amounts to the transaction total such as tips, cover charges, large group Service Charge, etc. that would not normally be included in the sales total breakdown. The 1700 does not use this field and will transmit a zero (0).

❑ **Service Charge Total (auto)**

This field identifies the total amount of any automatic percentage add-on amounts to the transaction total such as an automatic service charge or gratuity that would not normally be included in the sales total breakdown. The 1700 and 2400 do not use this field and will transmit a zero (0).

❑ **Tax Totals 1 through 4**

These fields identify the breakdown of the transaction tax amounts for up to 4 different tax rates and/or tax categories for all POS Systems (1700 Version 1.15 or later, 2400, 2700, 3700, 4700, and 8700).

When Value Added Tax (VAT) is enabled, these totals represent the total sales amounts (inclusive of VAT) for each of the VAT categories. The tax must be calculated at the PMS. When US-inclusive tax is enabled, the total associated with each rate will be zero (0). The 1700 (Version 1.0X) uses only the first two Tax Totals to send the net tax amounts; the 1700 (Versions 1.10 through 1.14) sends zero (0).

❑ **Previous Payment Total**

This field identifies any previous amounts paid against the transaction total exclusive of the amount being posted.

Programmer's Note

The PMS interface can operate in one of two modes: non-prorated (traditional) or prorated. In non-prorated mode, the values in the totals fields reflect the entire guest check. In prorated mode, the totals fields only reflect the prorated amounts attributable to the Current Payment Amount field's share of the guest check.

When reading the formulas presented below for non-prorated and prorated guest check totals, keep in mind these points:

- ❑ The first arithmetic operator indicates the operation that the PMS should perform on the total field. The second arithmetic operator (in parentheses) indicates the normal sign of the total field as presented in the message data block by the POS System.
- ❑ If Value Added Tax (VAT) is being used, the tax totals represent the total sales amounts (inclusive of VAT) for each of the VAT categories and **MUST NOT** be included in the Transaction Total or Current Payment Total equations.
- ❑ In non-prorated mode, if the Current Payment Amount field in the message data block is less than the computed Transaction Total (above), then a partial amount has been tendered.
- ❑ If the US-inclusive tax method is used, the tax total associated with this rate will be zero.

Non-Prorated Guest Check Totals

In this mode, the totals reflect the entire guest check. Partial or voided payments do not affect the value or polarity of these totals. If partial payments are required, it is the responsibility of the PMS to prorate each total, as necessary. This mode is supported by all products (1700, 2400, 2700, 3700, 4700, and 8700).

Messages

Outlet Charge Posting Request Message

The following equations can be used by the PMS Computer to determine the Transaction Total and the Total Amount Due of the transaction being posted:

Transaction Total = + (+) Sales 1 Total
 + (+) Sales 2 Total
 + (+) Sales 3 Total
 + (+) Sales 4 Total
 + (-) Discount Total
 + (+) Service Charge Total (kybd)
 + (+) Service Charge Total (auto)
 + (+) Tax 1 Total (if non-VAT)
 + (+) Tax 2 Total (if non-VAT)
 + (+) Tax 3 Total (if non-VAT)
 + (+) Tax 4 Total (if non-VAT)

Total Amount Due = + (+) Transaction Total
 - (+) Previous Payment Total

Prorated Guest Check Totals

The prorated mode is useful if the PMS is posting sales, discounts, tax, etc. during the charge posting operation. When prorated totals are used, the totals reflect the Current Payment's share of a guest check. If the Current Payment is voided, the totals will have the reversed polarity to reflect this. The only exception (i.e., the total that is not prorated) is the charged tip, which will always be completely attributed to its associated payment. This mode is supported by the 2700 (Version 3.20 or later), 3700, 4700 (Version 6.01 or later), and 8700.

The following equations can be used by the PMS Computer to determine the Current Payment Total of the prorated transaction being posted:

Current Payment Total = + (+) Sales 1 Total
+ (+) Sales 2 Total
+ (+) Sales 3 Total
+ (+) Sales 4 Total
+ (-) Discount Total
+ (+) Service Charge Total (kybd)
+ (+) Service Charge Total (auto)
+ (+) Tax 1 Total (if non-VAT)
+ (+) Tax 2 Total (if non-VAT)
+ (+) Tax 3 Total (if non-VAT)
+ (+) Tax 4 Total (if non-VAT)

The Previous Payment Total is also provided.

In some jurisdictions, the prorated calculations will result in inexact tax totals. This occurs because of rounding errors associated with proration and the methods required to compute tax. As an example, consider three guests paying a \$10.00 check which includes \$1.00 tax. The first two guests will be charged \$0.33 tax and the third \$0.34 tax (the rounding adjustment is included in the last total). These situations are unavoidable; if complete accuracy is required, a Split Check operation should be performed and the resultant checks individually posted to the PMS.

Outlet Charge Posting Response Message

The Outlet Charge Posting Response Message is sent by the PMS Computer to accept, deny, or request further information about an outlet charge posting from an on-line POS System (in the form of an Outlet Charge Posting Request Message) in real-time.

Message Data Block Format	Number of Characters	Field Type
Message Type (2)	2	U2
Acceptance/Denial Message	16	A16
Selection Field Information, Select 1 (optional)	16	A16
Selection Field Information, Select 2 (optional)	16	A16
Selection Field Information, Select 3 (optional)	16	A16
Selection Field Information, Select 4 (optional)	16	A16
Selection Field Information, Select 5 (optional)	16	A16
Selection Field Information, Select 6 (optional)	16	A16
Selection Field Information, Select 7 (optional)	16	A16
Selection Field Information, Select 8 (optional)	16	A16
Total	146	

The following is a description of the fields in the message data block of the Outlet Charge Posting Response Message:

❑ **Message Type**

This field must be set to (space)2 (ASCII characters with Hex values 20 and 32) to identify an Outlet Charge Posting Response Message.

❑ **Acceptance/Denial Message**

This field tells the POS System if an attempted charge posting has been accepted or denied, or if positive account identification is needed from the POS operator to post the requested charge. This field is limited to a total of 16 characters; any unused character positions should be padded with trailing space characters.

❑ **To accept a charge posting:**

A charge posting is accepted by the PMS Computer by putting any character other than "/" or "?" in the first character position of the field. The contents of this field will be printed along with the charge posting amount and settlement key name on the POS printer; it will generally contain the account number and/or account name to identify the posted account on the charge posting receipt.

❑ **To deny a charge posting:**

A charge posting is denied by the PMS computer by placing the "/" character in the first character position of the field. This message is presented to the POS operator in the POS display to identify the reason the charge posting was not accepted (e.g., /INVALID ENTRY, /INVALID ACCT #, /VACANT ROOM, etc.). The POS operator may attempt to post the charge again (to perhaps correct a previous Account ID Information field entry error) at his/her option.

❑ **To request positive posting account identification:**

The PMS Computer can request positive posting account identification from the POS operator by placing a "?" character in the first character position of the field (the rest of the field is ignored by the POS System but should be padded with trailing space characters).

The "?" character tells the POS System that up to 8 selection information fields have been supplied in the message data block. The POS System presents these fields to the POS operator for positive account posting identification and selection. These fields may represent a list of names in a room share situation in a hotel front desk charge posting application.

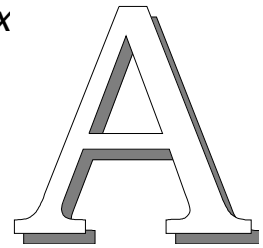
If the POS operator elects not to select any of the returned fields, the operation can be aborted. If the POS operator selects one of the returned fields, the POS System will supply the selected field (exactly as it was formatted by the PMS Computer) in the Selection Field Information field of a new Outlet Charge Posting Request Message along with the position number of the

field in the Selection Field Number field of the new request message (all other fields in the request message will be the same as the previous message).

- **To override the tender amount (1700 only):**
When using the 1700 (Version 1.14 or later), a PMS Computer can optionally override the tender amount by placing a "!" (exclamation point) character in the first character position of the Acceptance/Denial Message and providing a payment amount in Selection Field 1. When this Acceptance/Denial Message is found, the original payment is overridden by the one provided. This feature is often used to exempt tax from PMS charges; the PMS must take the amount provided, exempt the tax, and return the net amount in Selection Field 1.
- **Selection Field Information, Select 1 - 8**
These fields are used by the PMS Computer to request positive posting account identification by the POS operator when a "?" is returned in the Acceptance/Denial Message field (see above). These fields are limited to a total of 16 characters each; any unused character positions in each field should be padded with trailing space characters.

Up to 8 of these fields may be returned in the message data block of the response message. These fields generally contain information necessary to positively identify the posting account(s). The POS System will supply the field selected by the POS operator (exactly as it was formatted by the PMS Computer) in the Selection Field Information field of the new request message (all other fields in the request message will be the same as the previous message).

The presence of any information selection fields will be ignored by the POS System if a "?" is not returned in the Acceptance/Denial Message field.



ASCII Control Codes

This appendix provides a table of ASCII characters. The first 32 characters have corresponding printer control codes to help you troubleshoot.

In this chapter

ASCII Control Codes Table.....	A-2
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ASCII Control Codes Table

Dec.	Hex.	PC Char.	Control Key	Name	Description
0	00		^@	NUL	NULL character
1	01	☺	^A	SOH	Start Of Header
2	02	●	^B	STX	Start Of TeXt
3	03	♥	^C	ETX	End Of TeXt
4	04	♦	^D	EOT	End Of Transmission
5	05	♣	^E	ENQ	ENquire
6	06	♠	^F	ACK	ACKnowledge
7	07	●	^G	BEL	BELL
8	08	■	^H	BS	BackSpace
9	09	▫	^I	HT	Horizontal Tab
10	0A	■	^J	LF	Line Feed
11	0B	♂	^K	VT	Vertical Tab
12	0C	♀	^L	FF	Form Feed (new page)
13	0D	↵	^M	CR	Carriage Return
14	0E	↵	^N	SO	Shift Out
15	0F	☺	^O	SI	Shift In
16	10	▶	^P	DEL	DElete
17	11	◀	^Q	DC1	Device Control 1
18	12	≡	^R	DC2	Device Control 2
19	13	≡	^S	DC3	Device Control 3
20	14	¶	^T	DC4	Device Control 4
21	15	§	^U	NAK	Negative Acknowledge
22	16	■	^V	SYN	SYNchronize
23	17	⤵	^W	ETB	End of Text Block
24	18	↑	^X	CAN	CANcel
25	19	↓	^Y	EM	End of Medium
26	1A	→	^Z	SUB	SUBstitute
27	1B	←	^[ESC	ESCape
28	1C	└	^/_	FS	File Separator
29	1D	↔	^]	GS	Group Separator
30	1E	▲	^^	RS	Record Separator
31	1F	▼	^_	US	Unit Separator

ASCII Control Codes
ASCII Control Codes Table

Dec.	Hex.	Char.
32	20	
33	21	!
34	22	"
35	23	#
36	24	\$
37	25	%
38	26	&
39	27	'
40	28	(
41	29)
42	2A	*
43	2B	+
44	2C	,
45	2D	-
46	2E	.
47	2F	/
48	30	0
49	31	1
50	32	2
51	33	3
52	34	4
53	35	5
54	36	6
55	37	7
56	38	8
57	39	9
58	3A	:
59	3B	;
60	3C	<
61	3D	=
62	3E	>
63	3F	?
64	40	@
65	41	A
66	42	B
67	43	C
68	44	D
69	45	E
70	46	F
71	47	G
72	48	H
73	49	I
74	4A	J
75	4B	K
76	4C	L
77	4D	M
78	4E	N
79	4F	O

Dec.	Hex.	Char.
80	50	P
81	51	Q
82	52	R
83	53	S
84	54	T
85	55	U
86	56	V
87	57	W
88	58	X
89	59	Y
90	5A	Z
91	5B	[
92	5C	\
93	5D]
94	5E	^
95	5F	_
96	60	`
97	61	a
98	62	b
99	63	c
100	64	d
101	65	e
102	66	f
103	67	g
104	68	h
105	69	i
106	6A	j
107	6B	k
108	6C	l
109	6D	m
110	6E	n
111	6F	o
112	70	p
113	71	q
114	72	r
115	73	s
116	74	t
117	75	u
118	76	v
119	77	w
120	78	x
121	79	y
122	7A	z
123	7B	{
124	7C	
125	7D	}
126	7E	~
127	7F	?

Sample Messages

This appendix contains examples of Inquiry and Charge Posting Messages. The characters you see in these messages, including the ASCII characters, were viewed in Procomm Plus® while monitoring transactions from a 2700 System.

In this appendix

Computer Inquire Request Message	B-2
Computer Charge Posting Message	B-3
