

G5250 Terminal Emulation

User Guide

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FOR FURTHER INFORMATION

If you want more information about GCOM products, contact us at:

GCOM, Inc.
1776 E. Washington Street
Urbana, IL 61801
(217) 337-4471
FAX: (217) 337-4470
e-mail: support@gcom.com
homepage: <http://gcom.com>

CONTENTS

SECTION 1

11 *Getting Started*

- 11 Purpose of This Guide
- 13 Understanding This Product
- 13 Technical Requirements
- 15 Starting a Session
- 16 Ending a Session
- 16 Control vs. Escape Key Sequences

SECTION 2

17 *Keyboard Mapping*

- 17 EBCDIC Character Representation
- 18 5250-to-ASCII Keyboard Mapping

APPENDIX A

23 *Error Codes and Recovery Procedures*

FIGURES

12	Figure 1	Typical G5250 Terminal Emulation Environment
14	Figure 2	Typical AS/400 Login Screen

TABLES

17	Table 1	EBCDIC Character Representation— Exceptions
18	Table 2	5250-to-ASCII Keyboard Mapping <i>(1 of 5)</i>
23	Table 3	Error Codes and Recovery Procedures <i>(1 of 3)</i>

SECTION 1

Getting Started

Purpose of This Guide

This document describes how to use the G5250 Terminal Emulator product in GCOM's NPI/SNA product line.

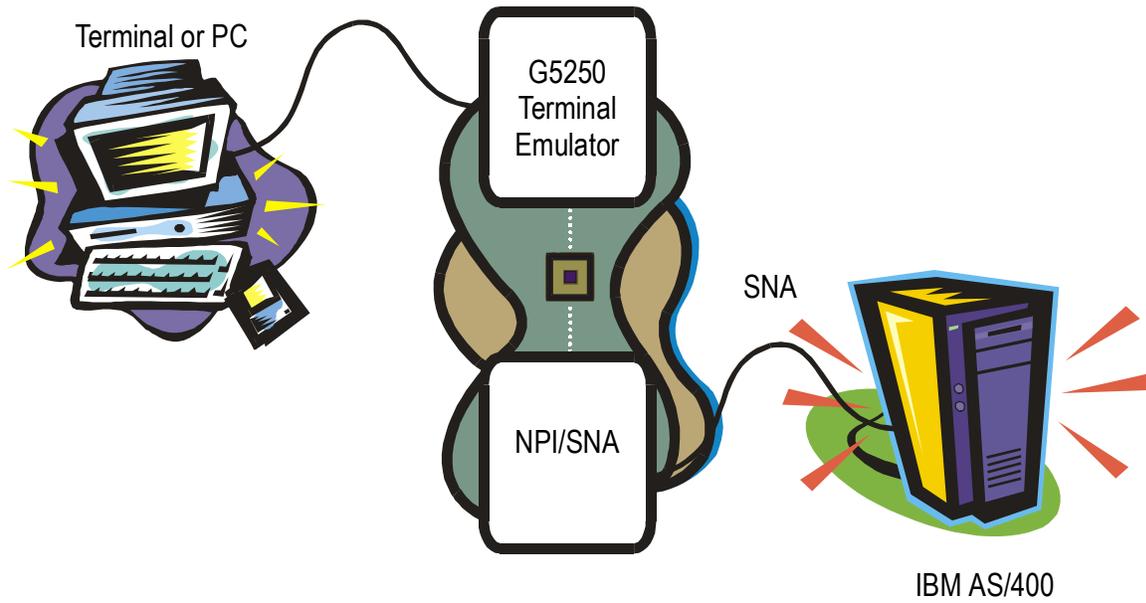


Figure 1 Typical G5250 Terminal Emulation Environment

Understanding This Product

The G5250 terminal emulator shown in Figure 1 emulates an IBM 5251 Model 11 terminal. It uses the NPI/SNA driver to communicate with a remote SNA host.

Technical Requirements

To use the G5250 terminal emulator software, you must fulfill the following requirements:

- You must be using an ASCII terminal or a workstation connected to the UNIX system as shown in Figure 1.

Note: *The terminal screen must support at least 24 lines of text with 80 characters per line.*

- The GCOM NPI/SNA software package must be installed onto the UNIX system in a directory in your path as described in the GCOM Installation Guide shipped with this user's guide.
- The network administrator must configure NPI/SNA and start the *Gcom_monitor* utility as documented in the *UNIX STREAMS Administrator's Guide*.

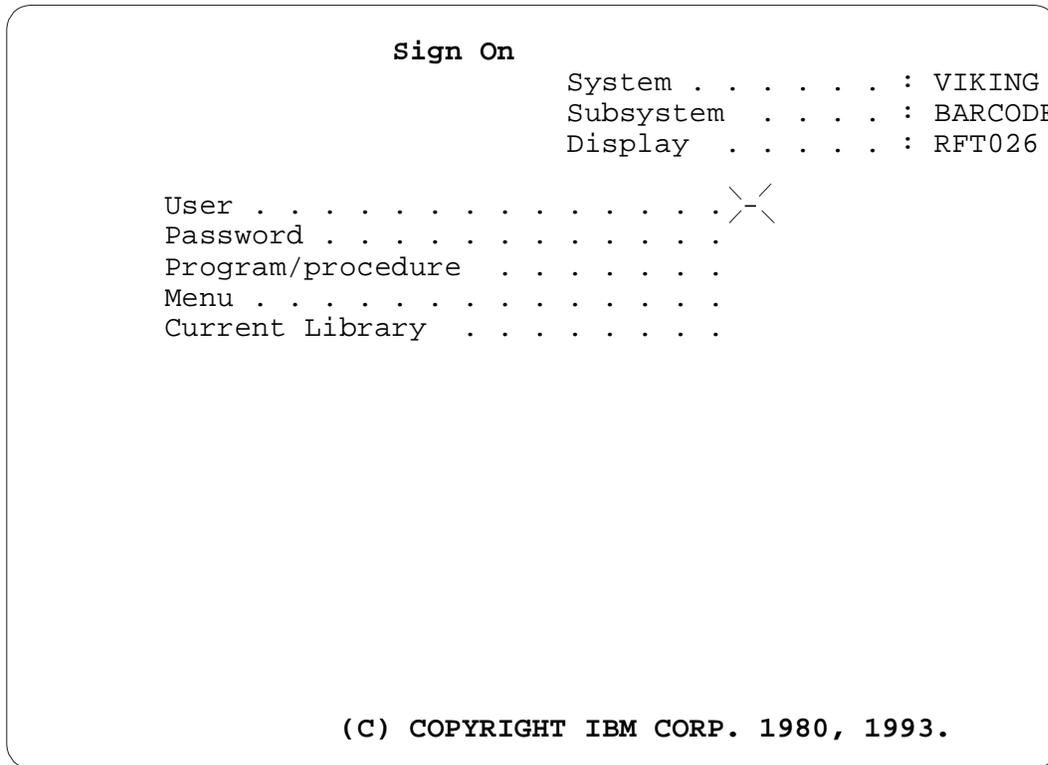


Figure 2 Typical AS/400 Login Screen

Starting a Session

Follow these steps to start a session on your ASCII terminal:

- 1. Make sure you have fulfilled the requirements listed in “Technical Requirements” on page 13 before continuing to step 2.**

If you do not understand all of these requirements, check with your network administrator before continuing.

- 2. Enter the g5250 command at the prompt using the following syntax:**

```
g5250 [ -l $lu\_number$  ] [ -p $pu\_number$  ]
```

The *-l* and *-p* options have the following meaning:

- l* G5250 attempts to connect to the local Logical Unit (LU) *lu_number*. If *-l* is not specified, G5250 attempts to connect to the first available local LU. For a list of valid LU numbers, ask your network administrator.
- p* G5250 attempts to connect to the local Physical Unit (PU) *pu_number*. If *-p* is not specified, G5250 attempts to connect to the first available local PU. For a list of valid PU numbers, ask your network administrator.



Note: *If you encounter any unexpected error messages while trying to connect, refer to Table 3 on page 23 for assistance. If problems persist, contact your network administrator.*

Several operator messages are displayed on the terminal screen as G5250 opens an NPI/SNA stream, establishes an LU connection and exchanges a series of messages with the SNA host. Finally, the initial 5250 screen appears, usually with a login screen as shown in Figure 2.

- 3. Begin your session as you normally would.**

See Table 1 on page 17 for a list of valid 5250 keys available from your ASCII terminal.

Ending a Session

To end a session, first sign off of your host session and then press Esc, Q to terminate G5250.

Control vs. Escape Key Sequences

Escape key sequences are considered two or more keystrokes (indicated by a comma between the keys), because you must press and release Escape before pressing the next key, such as Esc, &. *Control key sequences* are considered one keystroke (indicated by a dash between the keys) because you hold Control down while pressing the related key, such as Control-H.

Examples

Esc, F, +	Press and release the Escape key, press and release the “F” key and then press and release the “+” key.
Control-H	Press and hold down the Control key while pressing “H”.

SECTION 2

Keyboard Mapping

The keyboard layout of the 5250 and ASCII terminals are fairly similar. Both terminals have keys that correspond to the digits 0 through 9 and the 26 letters of the alphabet in similar locations on the board itself. However, some 5250 keys are not found on an ASCII keyboard.

This section lists EBCDIC character representation and 5250-to-ASCII keyboard mapping.

EBCDIC Character Representation

Most EBCDIC characters have direct ASCII equivalents (see Table 2 on page 18), so they appear on an ASCII terminal just as they would on a 5250 terminal. Table 1 lists a few exceptions and shows how G5250 displays them.

Table 1 EBCDIC Character Representation—Exceptions

<i>EBCDIC Character</i>	<i>5251 Terminal</i>	<i>G5250</i>
Not	¬	[
Solid Vertical Bar]
DUP (Duplicate)	⌘	*
Cent Sign	¢	^

5250-to-ASCII Keyboard Mapping

Table 2 lists the 5250 keys that are not usually found on ASCII keyboards along with the ASCII keyboard equivalent. Any special 5250 keys not mentioned in the “5250 Key” column are unsupported at this time.

Table 2 5250-to-ASCII Keyboard Mapping (1 of 5)

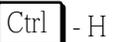
5250 Key	5250 Key Functionality	ASCII Key Equivalent
	<i>Attention.</i>	 , a or  , A
	<p><i>Backspace.</i> Removes the character to the left of the cursor and moves the cursor one position to the left. All characters to the right of the deleted character in the current field are shifted one space to the left if they are on the same line. Characters are not shifted if they are in a different field or different line.</p> <p>In the following example, when Backspace is pressed, the cursor moves from the first position of field B to the last position of field A:</p> <div style="text-align: center;">  </div> <p>Note: For a non-destructive backspace, press <i>Cursor left</i>.</p>	 or 
	<i>Clear.</i> Blanks the display by clearing the entire display buffer when the display station is not under program control.	 , c or  , C
	<i>Cursor Up.</i> Press this key to move the cursor one line up. If the cursor was on the top line, it reappears on the same vertical column at the bottom of the screen.	
	<p><i>Cursor Down.</i> Press this key to move the cursor one line down. If the cursor was on the bottom line, it reappears on the same vertical column at the top of the screen.</p> <p>You cannot move the cursor:</p> <ul style="list-style-type: none"> • After you press the SysRq key on some host systems. Refer to the host system’s operating manual for details. • Out of a self-check field that does not pass the self-check test. • From an input field while the display station is in insert mode. • From a partially filled mandatory fill field. 	

Table 2 5250-to-ASCII Keyboard Mapping (2 of 5)

<i>5250 Key</i>	<i>5250 Key Functionality</i>	<i>ASCII Key Equivalent</i>
	<i>Cursor Left.</i> Press this key to move the cursor one space left. If the cursor is at the left-most position on the screen, this key will move the cursor to the right-most position on the previous line. If the cursor was in the home position, it moves to the right-most position of the bottom line.	 - S
	<i>Cursor Right.</i> Press this key to move the cursor one space right. If the cursor is at the right-most position on the screen, this key will move the cursor to the left-most position on the next line. If the cursor was on the bottom line, it will move to the home position on the top line.	 - F
	<i>Delete</i> Removes the character at the cursor. All characters to the right of the deleted character in the current field are shifted one space to the left if they are on the same line. The cursor itself does not move. Nulls (zero characters in the buffer that are displayed as blanks) are inserted at the end of the field as the characters are shifted left.	
	<i>Dup.</i> Press this key in a field that allows duplication to enter a duplicate character into the display buffer. A Dup character, which appears as an asterisk on the screen, is placed in the cursor position and all the following positions of that field. This symbol represents a request for the program to duplicate the information from the same field in the previous record. That is, it tells the application program that a duplicate operation is indicated for the rest of the field. The application program determines the use of the Dup key. An error will be displayed if you try to duplicate a field not programmed for duplication.	 , 
	<i>Enter/Rec Adv.</i> This key indicates that the entered data is ready to be sent to the system. An error code will appear if you press Enter/Rec Adv under the following circumstances: <ul style="list-style-type: none"> • No data has been entered in a mandatory field, but data has been entered elsewhere. • A mandatory fill field contains some data but is not completely filled. • A self-check field is not correct. • The cursor is in a field exit required field. To recover from these errors, refer to Table 3 on page 23 and take the recommended corrective action.	 , 
	<i>Erase Input.</i> Clears all unprotected characters and moves the cursor to the home position, which is usually the first input position of the first input field. In a buffer with only protected data fields, nothing is cleared and the cursor is moved to the home position. If the display contains no field, the entire buffer is cleared to nulls and the cursor is moved home.	 , e or  , E

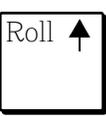
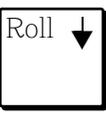
Table 2 5250-to-ASCII Keyboard Mapping (3 of 5)

<i>5250 Key</i>	<i>5250 Key Functionality</i>	<i>ASCII Key Equivalent</i>
	<p><i>Field Advance.</i> This “forward tab” key moves the cursor to the first position of the next legal field on the screen. If the cursor is in the last field on the screen, it moves to the first field on the screen.</p> <p>In automatic enter fields, the auto enter function is not performed when you move the cursor through that field using the Field Advance key.</p>	 or  - I
	<p><i>Field Backspace.</i> This “backwards tab” key moves the cursor to first position of the previous legal field on the screen. If the cursor is in the first field on the screen, it moves to the last field on the screen.</p>	 ,  or  ,  - I
	<p><i>Field Exit.</i> Use this key to exit input fields that are specified by a program as right-adjust or field exit required fields. When pressed, nulls (displayed as blanks) are inserted from the cursor to the end of the field. In a right-adjusted field, the data to the left of the cursor is shifted to the end of the field.</p> <p>The vacated positions are then filled with zeroes or blanks as specified by the field’s format and the cursor advances to the next input field.</p> <p>When you press this key in a signed numeric field, a blank is inserted in the last position of the field.</p> <p>An error message is displayed if your press this key in the following circumstances:</p> <ul style="list-style-type: none"> • When the cursor is in the first position of a mandatory entry field. • When the cursor is in any position of a mandatory fill field other than the first position or the last position if the cursor is blinking. • While the cursor is in a non-input position. 	
	<p><i>Field+.</i> This key operates as a field exit key in all fields. See Field Exit in this table for further information.</p>	 , F, + or  , f, +
	<p><i>Field-.</i> This key operates the same as Field+ and Field Exit except it can only be used in signed numeric and numeric only fields. An error occurs if Field- is used with any field not programmed to accept negative input. Pressing this key inserts a minus (-) sign in the last position of a signed numeric field or it changes the last position of a numeric only field to an alpha character.</p>	 , F, - or  , f, -
 to 	<p><i>Function keys 1 through 9.</i> Function keys send a message to the host and perform the functions assigned to them by the application that is currently running. The Function keys perform different functions for different applications. For example, F1 might get help while F3 exits the application.</p>	 , 1 to  , 9

Table 2 5250-to-ASCII Keyboard Mapping (4 of 5)

<i>5250 Key</i>	<i>5250 Key Functionality</i>	<i>ASCII Key Equivalent</i>
	<i>Function key 10.</i>	 , 0
	<i>Function key 11.</i>	 , -
	<i>Function key 12.</i>	 , =
	<i>Function key 13.</i>	 , !
	<i>Function key 14.</i>	 , @
	<i>Function key 15.</i>	 , #
	<i>Function key 16.</i>	 , \$
	<i>Function key 17.</i>	 , %
	<i>Function key 18.</i>	 , ^
	<i>Function key 19.</i>	 , &
	<i>Function key 20.</i>	 , *
	<i>Function key 21.</i>	 , (
	<i>Function key 22.</i>	 ,)
	<i>Function key 23.</i>	 , _ (underscore)
	<i>Function key 24.</i>	 , +

Table 2 5250-to-ASCII Keyboard Mapping (5 of 5)

5250 Key	5250 Key Functionality	ASCII Key Equivalent
	<i>Help.</i> Press this key to get the description of a current error condition or when you need further assistance from the system. Help cannot be provided unless you are signed onto a system that has been programmed to provide help. Error conditions are described in Table 3 on page 23.	 , h or  , H
	<i>Home.</i> This key moves the cursor to the home position, which is usually the first input position of the first input field or the first input position on line one. If the cursor is already in the home position when you press this key, a message is sent to the host requesting that the previous record be displayed.	 , 
	<i>Insert mode.</i> Allows you to insert characters at the cursor without overwriting existing characters. Existing characters are shifted to the right along with the cursor. There must a null (a zero character in the buffer displayed as a blank) in the right-most position in the field where the insert is being performed. Furthermore, you cannot insert characters in the last position of an input field. If you try to insert more characters than there are nulls in a field, the keyboard locks and an error message is displayed. Note: <i>To disable insert mode, press Reset (Ctrl-R) or any key that sends data to the host, such as the Enter/Rec Adv key.</i>	 , i or  , I
	<i>Newline.</i> Pressing this key moves the cursor to the first input position of the first input field on a new line. If the cursor is on the last input line on the screen, the cursor moves to the first input position of the display screen.	 - J
	<i>Print.</i> A print request is sent to the system. The system program selects the printer that prints the data being displayed.	 , p or  , P
	<i>Reset.</i> This key unlocks the keyboard when it is locked due to an error condition. It also resets the insert mode, system request and command modes. Note: <i>Do not press Reset to unlock a keyboard that is locked by the system.</i>	 , r or  , R
	<i>Roll Up.</i> Moves the information on the display up. This repositions the information on the screen and allows you to view data above what is normally viewed. The system program controls the use of this key for each individual job.	 , u or  , U
	<i>Roll Down.</i> Moves the information on the display down. This repositions the information on the screen and allows you to view data below what is normally viewed. The system program controls the use of this key for each individual job.	 , d or  , D
	<i>System Request.</i> To cancel the SysRq key, press the Reset key before pressing the Enter/Rec Adv key.	 , s or  , S

APPENDIX **A**

Error Codes and Recovery Procedures

This appendix lists the 5250 error codes that could occur when using this GCOM software.

Why do Error Codes Occur?

If you make an entry error, the keyboard locks up and a blinking cursor indicates where the error occurred. The associated four-digit error code appears on the bottom line of the screen.

Getting Help

After you have signed-on, you can press the Help key to get a description of the error code. To return to entry mode, press the Reset key.

Table 3 shows the error codes that you might encounter.

Table 3 Error Codes and Recovery Procedures (1 of 3)

<i>Error Code</i>	<i>Description</i>	<i>Recovery Action</i>
0004	<i>I/O field—Keyboard entry not allowed.</i>	Press Reset and move the cursor to a field where keyboard data can be entered.
0005	<i>Cursor in an output or bypass field.</i> You tried to enter data in a field that does not accept input, such as a protected area of the screen display.	Press Reset and move the cursor to a field that accepts input.
0006	<i>Invalid key in SysRq state or SysRq key when SSLU write pending.</i> You pressed an illegal key after pressing SysRq but before pressing the Enter/Rec Adv or Reset key.	Press Reset and then press a legal sequence of keys.
0007	<i>An unmodified mandatory enter field exists.</i> Data must be entered into the field before pressing the 5250 Enter key.	Press Reset and entered the needed data.

Table 3 Error Codes and Recovery Procedures (2 of 3)

<i>Error Code</i>	<i>Description</i>	<i>Recovery Action</i>
0008	<i>Invalid character in alphabetical-only field.</i> You entered non-alphabetic data in an alphabetic-only field. Legal characters include A through Z, hyphen, period, comma and blank.	Press Reset and enter valid characters.
0009	<i>Invalid character in numeric-only field.</i> You tried to enter non-numeric data in a numeric field. Legal characters include 0 through 9, period, comma, blank, plus and minus.	Press Reset and enter valid characters.
0010	<i>Invalid character in digits-only or signed numeric field.</i> You tried to enter non-signed numeric data in a signed numeric field. Valid characters are 0 through 9.	Press Reset and enter valid digits.
0011	<i>Entry illegal in sign position of signed numeric field.</i> You tried to enter data in the last position of a signed numeric field.	Press Reset and ensure that the data is correct in the field before exiting using the Field-, Field+ or Field Exit key.
0012	<i>No room to insert data in insert mode.</i> While in insert mode, you tried to enter data in a full field or when the cursor was in the last position of the field. Note: <i>Do not use insert mode to modify data or to enter the last character in this field.</i>	Press Reset and correct the field before continuing.
0013	<i>Only data keys allowed in insert mode.</i> You tried to exit a field while the display station was still in the insert mode.	Press Reset and exit the field normally.
0014	<i>Exit from an unfilled mandatory fill field not allowed.</i> You have attempted to exit a mandatory fill field with a function key that would move the cursor out of the field. You can only do this from the first position in the field.	Press Reset and enter the rest of the field or move to the start of the field and use Field-, Field+ or Field Exit to erase the field.
0015	<i>Contents of self-check field failed check.</i> You entered data in a self-check field that failed the self-check algorithm.	Press Reset and ensure that you have correctly entered the data into the self-check field.
0016	<i>Field- key invalid in this field.</i> You pressed the Field- key in a non-signed numeric field. For some systems, a numeric-only field is also valid.	Press Reset and continue entering data or press Field Exit to exit the field.
0017	<i>Mandatory fill field.</i> Field exit keys not allowed except from first position. You have pressed Field-, Field+ or Field Exit in an unfilled mandatory fill field. You can only do this from the first position in the field.	Press Reset and fill the field before exiting, or move to position one and exit.

Table 3 Error Codes and Recovery Procedures (3 of 3)

<i>Error Code</i>	<i>Description</i>	<i>Recovery Action</i>
0018	<i>Data key exit invalid in this field.</i> You have pressed a data key when a non-data key (such as Field Exit) was required.	Press Reset and then press a non-data key to exit this field.
0019	<i>Dup key in non-Dup-enabled field.</i> You pressed the Dup key in a field where that key is illegal.	Press Reset and continue as before without pressing the Dup key in this field.
0020	<i>Key invalid in right adjust field.</i> You have pressed a function control key, which is not allowed in this field. You would get this error code in a right-adjust or signed numeric field. You must exit such a field before pressing the following function control keys: command function keys, Test Request, Clear, Enter/Rec Adv, Print, Help, Roll up or down and Home (when the cursor is already in the home position).	Press Reset and continue by pressing Field-, Field+ or Field Exit.
0021	<i>Attempted exit from unmodified mandatory enter field.</i> You tried to exit from an unmodified mandatory enter field.	Press Reset and enter the required data.
0026	<i>Field- key in numeric-only field, last character non-digit.</i> You pressed Field- to exit a numeric-only field, but the last position of the field was not a valid numeric character (0 through 9).	Press Reset and correct the last position of the field or leave the field by pressing Field+ or Field Exit.

Index

Numerics

5250-to-ASCII Keyboard Mapping 18

a

alphabetical-only field error code 24
AS/400 Login Screen 14
ASCII terminal requirements 13
ASCII-to 5250 Keyboard Mapping 18
Attention key, defined 18

b

Backspace key, defined 18
bypass field error code 23

c

Cent Sign EBCDIC character equivalents 17
Clear key, defined 18
Control key sequences, defined 16
Ctrl-D 18
Ctrl-E 18
Ctrl-F 19
Ctrl-H 18
Ctrl-I 20
Ctrl-J 22
Ctrl-S 19
Cursor Down key, defined 18
Cursor Left key, defined 19
Cursor Right key, defined 19
Cursor Up key, defined 18

d

Delete key, defined 19
digits-only field error code 24
down
 key, defined 18, 22
Dup key
 defined 19
 error code 25
Duplicate key
 EBCDIC character equivalents 17

e

EBCDIC character representation, exceptions 17
Enter
 key, defined 20
 Rec Adv 5250 key, defined 19
Erase Input key, defined 19
ErInp key, defined 19
error code listing 23–25
Esc, 22
Esc, - 21
Esc, ! 21
Esc, # 21
Esc, \$ 21
Esc, % 21
Esc, & 21
Esc, (21
Esc,) 21
Esc, * 21
Esc, = 21
Esc, @ 21
Esc, ^ 21
Esc, _ (underscore) 21
Esc, 0 21

Esc, 1 through Esc, 9 20
 Esc, a or Esc, A 18
 Esc, c or Esc, C 18
 Esc, Ctrl-I 20
 Esc, d or Esc, D 22
 Esc, e or Esc, E 19
 Esc, Enter 19
 Esc, F, +/- or Esc, f, +/- 20
 Esc, h or Esc, H 22
 Esc, i or Esc, I 22
 Esc, p or Esc, P 22
 Esc, r or Esc, R 22
 Esc, s or Esc, S 22
 Esc, Space 19
 Esc, Tab 20
 Esc, u or Esc, U 22
 Escape key sequences, defined 16
 exit error code 25

f

F1 through F9 20
 F10 through F24 21
 Field
 + key, defined 20
 Advance key, defined 20
 Backspace key, defined 20
 Exit key, defined 20
 Field-
 key, defined 20
 Field- key invalid error code 24
 Function keys, defined 20–21

g

g5250 command syntax 15
 G5250 terminal emulator, described 13
 Gcom_monitor utility requirements 13

h

Help key
 defined 22
 using 23
 Home key, defined 22

i

I/O field error code 23
 Insert mode
 key, defined 22
 insert mode
 error code 24

k

keyboard layout 17

l

-l option 15
 left key, defined 19
 LU, connect to 15
 lu_number argument, described 15

m

mandatory enter field error code 23, 25
 mandatory fill field error code 24
 mode, insert 22

n

Newline key, defined 22
 Not EBCDIC character equivalents 17
 NPI/SNA driver 13
 numeric-only field error code 24, 25

o

output field error code 23

p

p option 15

Print key, defined 22

PU, connect to 15

pu_number argument, described 15

r

Rec Adv key, defined 19

requirements, technical 13

Reset key, defined 22

right adjust field error code 25

right key, defined 19

Roll Down key, defined 22

Roll Up key, defined 22

s

self-check field error code 24

session

ending 16

starting 15

signed numeric field error code 24

Solid Vertical Bar EBCDIC character equivalents
17

SSLU write pending error code 23

SysRq key

defined 22

error code 23

SysRq state error code 23

System Request key, defined 22

t

tab key, defined 20

terminal screen requirements 13

u

up

key, defined 18

roll key, defined 22

