IQ 135

OPERATOR'S REFERENCE

GUIDE

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SOROC TECHNOLOGY, INC.

CHARACTER FONT
5x9 character in a 7x10 dot matrix

DISPLAY CHARACTER SET
96 character ASCII upper and lower case
alphanumeric characters.
24 special control and graphics characters
8 video attribute codes
24 lines of 80 characters.
25th line of status, mode, or user message display
dual intensity
reverse, blinking, underline, and combination
fields

CRT
12 inch diagonal
P4 phosphor with non-glare faceplate
refresh rates - 50hz or 60hz

KEYBOARD
55-key main module
8-key cursor control
14-key numeric entry
8-key edit and clear
4-key special function
4-key block transmission and print control

EDIT FEATURES
type-over
clear all (space or null)
clear foreground (space or null)
clear to end of page (space or null)
clear to end of line (space or null)
character insert and delete (space or null)
line insert and delete (space or null)
insert mode

CURSOR MOTION
forespace
backspace
upline
downline
home
absolute cursor addressing
formatted tab (forward and backward)
typewriter tabs (forward and backward)
new line

PARITY GENERATION
odd, even, always one, always zero, or no parity

WORD STRUCTURE
word structure variable by front panel switches
7 or 8 data bits
1 or 2 stop bits

TRANSMISSION MODES
conversational mode - full or half duplex

(characters transmitted as typed)
block mode - formatted text transmitted by line,
page, or message
either all text or only foreground text.

INTERFACES

RS232 - main port, auxiliary port, printer port
20 ma current loop - main port (optional)

SCREEN FORMATTING FEATURES

set column tab
set typewriter tab
reverse video field
underline field
blinking field
reverse-underline field
reverse-blinking field
blinking-underline field
reverse-blinking-underline field
low intensity field
low intensity reverse field
low intensity underline field
low intensity blinking field
low intensity reverse-underline field
low intensity reverse-blinking field
low intensity blinking-underline field
low intensity reverse-blinking-underline field
LOW and HIGH intensity markers
protected fields
adjustable right margin
Line Graphics option

REPEAT

auto repeat at 20 characters/second
(reprogrammable)
after .5 second key depression

DATA RATES

110, 150, 300, 600, 1200, 1800, 2400, 4800, 9600,
19200
separately selectable for main and printer ports

DIMENSIONS

18 inches wide X 13 inches high X 20.5 inches deep

WEIGHT

45 LBS approx.

ENVIRONMENTAL SPECIFICATIONS

altitude - sea level to 10,000 feet operational
temperature - +5 C to +40 C
humidity - 5% to 90% non-condensing
vibration - 10 hz to 55 hz (.01 in peak-to-peak)

TAB WITH PROTECT MODE SET
        This operation will cause the cursor to skip to the
next unprotected field. If no unprotected or protected
fields exist beyond the cursor, a HOME operation is
performed.

BACKTAB WITH PROTECT MODE SET
        This operation will cause the cursor to skip
backwards to the next unprotected field, or if no
protected or unprotected fields exist beyond the cursor
then the cursor is positioned to the last unprotected
position on the display.

TAB WITH PROTECT MODE NOT SET
        This operation will perform a TYPEWRITER tab if any
are set, or will perform no operation if none are set.
To perform a TYPEWRITER tab the cursor will skip to the
next stop set or if no tab stops exist beyond the
cursor position then a NEWLINE operation is performed.

BACKTAB WITH PROTECT MODE NOT SET
        This operation will perform a TYPEWRITER backtab if
any are set or will position the cursor to the last
position on the display if none are set. To perform a
TYPEWRITER backtab the cursor will move backwards to
the previous tab stop or if none are set between the
cursor and the beginning of the line then a CR
operation is performed.

WRITE LOW. This feature enables the user to write data in
        low intensity. Low intensity data is considered
        protected when PROTECT mode is set and cannot be
        reached or erased except by the CLEAR ALL function. The
        SEND operations also only send unprotected data in
        PROTECT mode except when a SEND ALL has been executed.

        The data written in low intensity is called
background and the unprotected areas of the screen are
called foreground.

BLINK. This function delimits an area of the screen to blink
        on and off. This is useful in calling attention to a
        certain area of the screen.

REVERSE. This function delimits an area of the screen to
        appear in reverse video. If the cursor moves into the
        reverse video block it also reverses from a white block
        to a black block so it is visible within the reverse
        video block.

UNDERLINE. This function delimits an area of the screen to
        appear as underlined. Once designated all characters in
        this field will appear as underlined.

READ CURSOR COORDINATES. The current cursor coordinates may
        be read by an escape sequence from the remote computer.
        The IQ 135 will transmit first LINE, then COLUMN(as
        per TABLE Y), and then a CR code.

FUNCTION KEYS. The   IQ 135 contains 14 function keys which
    may be used to signal events to the remote computer
    regardless of transmission mode. These keys are
    programmable to send a multiple character sequence.
    Utilizing the Control key and any key on the 14 key
    numeric pad or one of the keys ·labeled f1-f4 14
    different character sequences can be sent to the remote
    computer.

VIDEO ATTRIBUTES. From the remote computer areas of the
    display may be set up to have any combination of the
    the 3 video modes:BLINK,UNDERLINE, and REVERSE video.

ROLL. When the IQ 135 is not in PROTECT mode the roll
    function is active. ROLL consists of moving all lines
    on the display up one line(the first line is lost) and
    clearing the bottom line.

MODES. The Mode and Status display appears on the 25th line
    of the screen. Its function is to indicate certain
    modes that are set. The ON indication is REVERSE VIDEO,
    and the OFF indication is LOW INTENSITY UNDERLINED.
    The keyboard lock (KB LOCK) indicator will also blink
    when on.

KEYBOARD OPERATION
     The IQ 135 alphanumeric keyboard also has keys that
perform certain functions such as clearing the display,
and many other functions. These KEYS are discussed in
more detail below.

CLEAR ALL. Clears all memory to space codes. With SHIFT
     keys, clears all memory to NULL codes. Unconditionally
     resets WRITE LOW mode and PROTECT mode.

CLEAR FG. Clears all unprotected data to spaces or with
     SHIFT keys to NULLS. Reset WRITE LOW mode if set.

CLEAR EOP. Clears from cursor position to end of screen with
     spaces(unshifted) or NULLS(shifted). Resets WRITE LOW
     mode if set.

CLEAR EOL. Clears from cursor position to end of the current
     line with SPACES(unshifted) or NULLS(shifted). If WRITE
     LOW mode is set the characters are written in low
     intensity.

INS LINE.   Inserts   a   line   of   SPACES(unshifted)   or
     NULLS(shifted) at the current cursor line. All data is
     moved down one line and the cursor is positioned to the
     beginning of the new line. (The bottom line is lost) If
     PROTECT mode is set Insert Line is ignored.

DEL LINE. Deletes the entire line on which the the cursor is
     positioned. All lines below the cursor move up one
     line. The bottom line is cleared to SPACES(shifted) or
     NULLS(shifted). If PROTECT mode is set the Delete Line
     is ignored.

INS CHR. Inserts a character at the current cursor position.
     All data moves forward one character   position. (Any
     data shifted off the end of the line is lost) The
     characte   under   the   cursor   is   cleared   to
     SPACES(unshifted) or NULLS(shifted). If in PROTECT mode
     the insert operation will stop at any protected field
     on the line instead of the end of the line, and data
     will not be shifted beyond the protected field.

DEL CHR. Deletes a character at the current cursor position.
     All data moves to the left, and the last character on
     the line is cleared to SPACES(unshifted) or
     NULLS(shifted). If PROTECT mode is set and there is a
     protected field on the current line the operation will
     terminate at the last unprotected character instead of
     the end of the line.

SEND PAGE. Used without shift (SEND PAGE FOREGROUND) will
     send all data except protected characters from the
     beginning of the screen to the current cursor position
     followed by a CR code. Each protect field skipped is
     marked by a FS code and the end of each line is
     indicated by a US code.

        Used with shift (SEND PAGE ALL) will send all data
between the beginning of the screen to the current
cursor position to be sent. Protected fields are
bracketed by ESC) before and ESC (after.

SEND LINE. Used without shift (SEND LINE FOREGROUND) will
        send all unprotected data from the beginning of the
        current line to the current cursor position followed by
        a CR code. Each protected field skipped is indicated by
        a FS code.

        Used with shift (SEND LINE ALL) will send all data
from the begin of the current line to the current
cursor position followed by a CR code. Each protected
field is bracketed by a ESC) before it and an ESC (
after it.

SEND MSG. Used without shift (SEND MSG FOREGROUND) will
        cause a backward search until a SOM code or start of
        screen. All unprotected characters from that point
        until an EOM code or end of screen is found followed by
        a CR code. Each protected field skipped is indicated by
        a FS code.

        Used with shift (SEND MSG ALL) will cause a backward
search until a SOM or start of screen is found. All
characters from that point until a EOM or end of screen
are transmitted followed by a CR code. Protected fields
are bracketed by a ESC) before them and an ESC (after
them.

PRINT
        When used without shift (FORMATTED PRINT) all data
between the home position and the cursor position is
transmitted to the printer. At the start of the
operation and at the end of each line the CR LF NUL
sequence is sent. Trailing spaces and NULLS are not
sent with the exception of the last line to to be
printed. On this line all data from the beginning of
line to the cursor position is sent unconditionally.
During the PRINT all control characters are translated
to spaces codes so the printout will have the same
formatting as the display.

        When used with shift (UNFORMATTED PRINT), printing
begins at the cursor location and continues to a stop
code (EM) or end of screen. All data (except NULLS) is
transmitted without any additional codes inserted in
the data stream i.e. no CR LF sequences. When a stop
code is reached, the printing stops but the stop code
is not overwritten. The Unformatted Print operation
allows greater flexibility in preparing copy for
printers, especially for printers having lines greater
than 80 characters. It also allows the transmission of
control codes embedded in the text that some printers
use to perform special operations.

Switches on the front panel control printer word structure, busy or ready control, and internal delay. These functions will be covered in the front panel section.

BREAK. Causes the IQ 135 transmission line to go into the spacing condition for approximately 250 ms. The BREAK key is only activated when used with the shift key.

RESET
Unshifted causes the immediate termination of all block transmissions, and the PRINT operation. No modes are affected, however, KB LOCK will be reset.

Shifted causes the IQ 135 to return to the initialize state. This means screen cleared to nulls, all modes are reset, and BLOCK, HDX, or FDX is set depending on the switch on the rear of the unit. The Function key memory is reloaded thus destroying any special programming. The TYPEWRITER tabs are all reset.

HOME. Will cause the cursor to move to the first unprotected position of the screen.

NEWLINE. Causes the cursor to move to the first unprotected position of the next line. If in PROTECT MODE a newline at the bottom line will cause the cursor to move to the HOME position, otherwise will cause a ROLL operation. If in HDX will also send the NEWLINE code(US) to the computer or if FDX will not perform the function but will send the US code to the computer.

BACKSPACE. Moves the cursor left to the next unprotected position. If done at the first position of a line causes the cursor to wrap to the end of the previous line, or if done at the HOME position will cause a wrap to the last unprotected position on the screen.

FORESPACE. Moves the cursor forward to the next unprotected position on the screen. If at the last position on the line will cause a NEWLINE operation.

DOWNLINE. Moves the cursor down one line. If character under cursor is protected causes the cursor to move forward until an unprotected position is found. If on last line of screen and PROTECT MODE is set moves to the same position on the first line. If PROTECT MODE is reset it causes a ROLL operation.

UPLINE. Moves the cursor up one line. If character under cursor was protected it causes a BACKSPACE operation to be performed. If done at first line on screen the cursor moves to same position on the last line of the screen.

RETURN. Moves the cursor to the first unprotected position of the current line. If HDX a CR code is also sent to the computer. If FDX cursor does not move but the CR

code is sent to the computer.

CTRL FUNCTIONS

Some of the control codes from the ASCII chart
(TABLE Y) indicate special operation to the IQ135.
These include the LEADIN code (ESC), the cursor
movement functions, and other functions. These
functions and the codes used to generate them are
listed in the table below.

FUNCTION	ASCII CODE	DECIMAL VALUE
LDIN	ESC	27
BEEP	BEL	7
BACKSPACE	BS	8
SKIP(TAB)	HT	9
DOWNLINE	LF	10
UPLINE	VT	11
FORESPACE	FF	12
RETURN	CR	13
HOME	RS	30
NEWLINE	US	31

ESC FUNCTIONS FROM LINE
        When executing an escape sequence from the remote
computer, the computer must transmit the ASCII ESC code
followed by one or more characters identifying the
function to be performed by the IQ 135. Note that the
ESC code may be reprogrammed (INTELLIGENT FLEXIBILITY)
to be any code and the user must take this into account
in reading this manual if the LDIN is reprogrammed by
the user.

ESC FUNCTIONS FROM KEYBOARD
        When executing an escape sequence from the
keyboard, the user must hit the ESC key if unshifted
LDIN is selected on the front panel switches, or SHIFT
ESC if shifted LDIN is selected. This causes an
internal LEADIN operation. This allows the user to
perform any of the ESC functions in TABLE 1 from the
keyboard.

VIDEO ATTRIBUTES CODES

        UNDERLINE(CTRL U)   — 0001 0101
        REVERSE(CTRL W)   — 0001 0111
        BLINK(CTRL V)   — 0001 0110
        BLINK/UNDERLINE(CTRL Q)   — 0001 0001
        REVERSE/UNDERLINE(CTRL R)   — 0001 0010
        REVERSE/BLINK(CTRL S)   — 0001 0011
        REVERSE/BLINK/UNDERLINE(CTRL P)   — 0001 0000

        ALL FIELDS OFF(CTRL D)   — 0000 0100

INTELLIGENT FLEXIBILITY (software adjustable features)
        This will describe the features and capabilities of
the IQ 135 intelligent flexibility. These allow
operational characteristics of the IQ 135 to change to
accommodate non standard usage.

        The flexibility is programmed by sending a multiple
character sequence consisiting of the following:
          <ESC>.<nn><mm><SO> or
          <ESC>.<nn><c><SO>

        the <ESC> indicates the escape code, the '.'
        indicates the period, <nn> indicates a number from
        the table following which selects which byte to
        load and <mm> is a number in the range 00 to 99,
        or <c> optionally may be an ASCII character from
        the ASCII chart, and <SO> is the SO code from the
        ASCII code chart. <nn> must be in the range of 00
        to 27. When the sequence is executed from the line
        the <mm> or <c> may be repeated as many times as
        desired and each <mm> or <c> will be loaded into
        the next sequential byte. This allows loading of
        the entire flexibility with one escape sequence or
        any section of the flexibility.

        The INTELLIGENT FLEXIBILITY may also be loaded
        from the keyboard with two variations on the
        sequence from the line. First the <SO> character
        on the end of the sequence is not required. And
        second the multiple loading feature does not apply
        to the keyboard programming and thus items may be
        changed only by individual escape sequences.

        For example: <ESC>.00~<SO> would set to LEADIN
        character to ~

FLEXIBILITY FEATURES
        00. LEADIN. This will allow the LEADIN character from
            the line to accept another LEADIN character in
            place of ESCAPE.

        01. END BLK 1
        02. END BLK 2   These bytes are sent out at the end of
            every SEND operation and are normally set to CR
            (END BLK 1), and NULL (END BLK 2). If a byte has a
            NULL code loaded nothing is transmitted for that
            byte.

        03. END PROT 1
        04. END PROT 2   These bytes are sent out at the
            beginning of each protected field skipped while
            performing a SEND operation. They are normally
            set to FS (END PROT 1), and NULL (END PROT 2). If
            a byte has a NULL code loaded nothing is
            transmitted for that byte.

        05. END LINE 1
        06. END LINE 2   These bytes are sent out at the end

of each line transmitted during a SEND operation.
They are normally programmed to US (END LINE 1),
and NULL (END LINE 2). If a NULL code is loaded
nothing is transmitted for that byte.

07. START FIELD   1   This will   allow   the START
    PROTECTED field character for SEND ALL to be
    changed. This byte is initially set to an ESC
    code. If NULL is loaded nothing is transmitted.

08. START FIELD   2   This will   allow   the START
    PROTECTED field character for SEND ALL to be
    changed. This byte is initially set to an ')'
    character. If   NULL   is   loaded   nothing   is
    transmitted.

09. END FIELD 1   This will allow the END PROTECTED
    field character for SEND ALL to be changed. This
    byte is initially set to an ESC code. If NULL is
    loaded nothing is transmitted.

10. END FIELD 2   This will allow the END PROTECTED
    field character for SEND ALL to be changed. This
    byte is initially set to an '(' character. If NULL
    .is loaded nothing is transmitted.

11. SOM   This will allow   the   start of message
    character in SEND MESSAGE to be changed.

12. EOM   This will allow the end of message character
    for SEND MESSAGE to be changed.

13. PAD CHARACTER   This byte is sent out on the SEND
    operation when block mode pad switch is up three
    times between the last data character sent and the
    END OF BLOCK code for delay time before clearing
    the echoed data from the receive buffer. This
    byte is initially loaded to a NULL code.

14. PRT EOL 1
15. PRT EOL 2   These bytes are sent out at the end of
    each PRINT LINE and are normally programmed as
    CR(PRT EOL 1) and LF(PRT EOL 2), if programmed to
    NULL nothing is transmitted for that byte.

16. # OF NULLS   This will set the number of NULLS
    sent after the CR LF sequence described above.

17. INT PRT DELAY   This will set the number of
    milliseconds to delay at end of line for the
    FORMATTED PRINT operation in increments of 16.67
    milliseconds (1/60 of a second).

        For example: 60 is one second,
                 90 is one and a half seconds

            This byte is initially set to 30 or
half a second.

18. AUX PORT PRT   This byte controls whether print
    output is sent to the PRINTER port or the AUX
    port. If loaded with a 00 then output is sent to
    the PRINTER port if set to a 01 then output is
    sent to the AUX port.

19. RIGHT MARGIN   This will select the column at
    which the terminal will wrap to the next line.
    This is a number in the range of 0 to 79 where 79
    is the initialized value.

20. BLINK ON   This will select the length of time
    data in a blink field will appear on the screen.
    The timing is the same as INT PRT DELAY time
    above.

21. BLINK OFF   This will select the length of time
    data in a blink field will not appear on the
    screen. The timing is the same as the INT PRT
    DELAY time above.

        For example BLINK ON loaded with a 90,
    and BLINK OFF loaded with a 30 will cause
    data to blink such that it is on for one and
    a half seconds then off for half a second and
    then on again for a second and a half, etc.

        The standard times loaded are 45 for
    BLINK ON, and 10 for BLINK OFF.

22. KB RPT RATE   This will select the rate at which
    the keyboard will repeat. This can be selected to
    be a widely varying rate.

        For example: a 04 loaded would be 15
    characters per second and a 01 loaded would
    be 60 character per second. The default is 03
    which is 20 characters per second.

        The repeat rate is calculated by dividing
    60 by the number loaded in this byte.

        For example: 60/3=20 characters per second

23. BRK TIME   This will select the length of time a
    BREAK is generated on depression of the BREAK KEY.
    The time is programmed the same way as INT PRT
    DELAY above. The initial value is 16 which is 250
    milliseconds.

24. RTS TRAILING   This will select the time RTS is
    held up after the end of the transmission on the
    SEND operations. The timing is again programmed
    the same as INT PRT DELAY above. The intial value
    is 17. or about 266 milliseconds.

25. RESERVED FOR FUTURE USE

26. ENABLE CURSOR   This will enable or disable cursor
     display. If loaded with a 00 the cursor will not
     appear on the display, if loaded with a 01 the
     cursor will appear on the display.

27. PROG SWITCHES   This is where the program switches
     for the IQ135 are stored upon power up or whenever
     a switch value changes. By loading this byte the
     user may set- the up the switch configuration from
     the remote computer or from the keyboard.   Each of
     the low six bits is a program switch and all six
     switches must be loaded at the same time.

                        where bit 0 is the least
               significant bit

                    PRT ALL is bit 0
                    SEAM is bit 1
                    SWPAD is bit 2
                    SW135 is bit 3
                    SWFHS is bit 4
                    SWLDIN is bit 5

              See the section   on FRONT PANEL
          SWITCHES for further information on the
          usage of the individual switches named
          above.

TABBING MODES AND FUNCTIONS
      There are two modes of tabbing on the IQ135. These
are FORMATTED and TYPEWRITER tabs. The FORMATTED tabs
are columns of protected spaces ˙that are set by <ESC>V
from either the keyboard or remote computer. The skip
(TAB) and backskip (BACKTAB) functions are then used to
skip to the next field or the previous field,
respectively. PROTECT mode is automatically set by this
operation.

      The TYPEWRITER tabs are much more flexible in that
unlike formatted tabs they use no character position to
mark the tab stops and since PROTECT mode is not set
the user may scroll or utilize any of the editing
function without destroying the tab stops set
previously. The TYPEWRITER tabs are set in two
different ways. From the keyboard the user simply
positions the cursor over the desired tab stop and then
holds the CONTROL key then strikes the TAB key. If the
SHIFT key is held down any tab stop at the cursor
position is cleared. From the remote computer the user
simply sends the sequence <ESC>¦, or <ESC>\ followed by
the positions at which to set tab stops, or clear tab
stops, respectively. The sequence is terminated by a
RUB code or illegal position. The positions are the
same as those of the LOAD CURSOR operation and can be
found in TABLE 1 in the back of this manual. These tabs
become inactive upon setting PROTECT MODE.

LOAD CURSOR

The LOAD CURSOR command allows the user to position the cursor at any line and column of the screen by its address. The address consists of two ASCII letters describing the line and column as shown in TABLE 2 in the back of this manual. If the cursor is loaded into a protected field the cursor is skipped forward to the first unprotected character.

The format of the LOAD CURSOR command is <ESC>=<y><x> where <y> is the character describing the line number, and <x> is the character describing the column number.

A special form of the LOAD CURSOR command is used to write to the user message area on the status line. This is a 36 character area located on line 25. To position the cursor to the user message the user simply loads the cursor to line 25 at any column position. The user message area is automatically cleared and the user may write to the user message.
NOTE: To move the cursor out of the user message area the user must perform: another LOAD CURSOR, a HOME, a LINEFEED, a UPLINE, or a NEWLINE operation

LOW AND HIGH INTENSITY MARKERS

These commands allow the user to quickly and easily cause data on the display to change intensity. LOW MARKERS and HIGH MARKERS have the same basic format: <ESC>-1<y1><x1><y2><x2> for LOW MARKERS, and for HIGH MARKERS the sequence is <ESC>-2<y1><x1><y2><x2>. <y1><x1> and <y2><x2> are the starting and ending position, respectively, for the data whose intensity is to be changed and is expressed as line and position from the LOAD CURSOR positioning chart (TABLE 1) in the back of this manual.

WRITE MULTIPLE CHARACTERS

This command allows the user to write from 1 to 96 characters repetitively on the screen. The format of the command is <ESC>-3<m><n> where <m> is the number of times to write the character <n>. The value of <m> is selected from TABLE 1 in the back of this manual.

For example to write the character H on the screen 20 times the user would
send the sequence: <ESC>-33H

LINE GRAPHICS MODE (OPTION)

This command allows the user to write certain control characters to the display without preceeding them by a LEADIN code. This is to facilitate the use of the 11 special graphics characters. Graph mode is set by the sequence <ESC>-4 and reset by the sequence <ESC>-5. The following control characters generate the 11 graphics characters.

        Control-A   ⌐
        Control-E   ¬

Control-F ⊤
Control-N ∟
Control-O ⌐
Control-T ⊥
Control-X +
Control-Y —
Control-Z |
Control-\ ├
Control-] ┤

FUNCTION KEYS

        The IQ135 has 14 special functions that cause data
to be sent to the
remote computer upon activation. These functions are
generated by holding the
CONTROL key and depressing one of the keys on the 14
key numeric pad consisting
of the number 0-9, the ., the , the -, and the RETURN
key. Each of these will
generate a unique code consisting of the three
characters. The first is the
SOH code (CONTROL A), then a character from @-M, and
lastly a CR code. The
codes generated by each key are listed below.

KEY	CODES TRANSMITTED
f1 or CONTROL 1	<SOH>@<CR>
f2 or CONTROL 2	<SOH>A<CR>
f3 or CONTROL 3	<SOH>B<CR>
f4 or CONTROL 4	<SOH>C<CR>
CONTROL 5	<SOH>D<CR>
CONTROL 6	<SOH>E<CR>
CONTROL 7	<SOH>F<CR>
CONTROL 8	<SOH>G<CR>
CONTROL 9	<SOH>H<CR>
CONTROL 0	<SOH>I<CR>
CONTROL .	<SOH>J<CR>
CONTROL RETURN	<SOH>K<CR>
CONTROL ,	<SOH>L<CR>
CONTROL -	<SOH>M<CR>

FUNCTION KEY DISPLAY AND PROGRAMMING

        These Function keys can be reprogrammed from the
keyboard or the remote   computer to transmit any
sequence of characters. 128 characters may be divided
among the 14 function keys in any way, but no more than
128 characters may be used total.

        To display these Function codes the user or remote
computer sends an <ESC>/ which causes the IQ135 to
display the 14 function keys text on the first 14 lines
of the display and fill the rest of the display with
protected '-' characters.

        To reprogram these Function keys the user simply
puts the desired codes for the first Function key on
the first line of the display, and the codes for the
second Function key on the second line of the display,
etc. The user or remote computer sends an <ESC>! to
program the Function keys. Any space or NULL characters
after the last visible character on the display are not
programmed into the Function key but are ignored. Note
that the Function keys only transmit to the remote
computer the codes that are programmed. The IQ135 does
not execute any functions unless the computer echoes

the codes from the Function keys.

FRONT AND BACK PANEL SWITCH CONFIGURATION

The IQ135 has 3 sets of switch banks used in configuring the unit for different operating environments. The usage of each of these switches is detailed below. Note that bank K8 is the far left switch bank, K10 is the center switch bank and K12 is the far right switch bank. The MAIN port baud rate switch is on the rear of the unit between the brightness control and the PRINTER port. The PRINTER baud rate switch is to the right of K12 on the front panel.

BACK PANEL

ON/OFF SWITCH

This two position switch controls AC power to the terminal. Setting the switch to the ON position will reset the circuitry, position the cursor to home and clear the display to unprotected nulls, and reset all modes. It will also set the transmission mode to the one selected by the three position switch on the rear panel.

BRIGHTNESS CONTROL

This potentiometer controls the brightness of the CRT display. The brightness is usually adjusted so that the raster (background) is just below the level of visibility.

CONTRAST CONTROL

This potentiometer controls the character brightness relative to the background. Contrast adjustment is usually made just after brightness adjustment.

BAUD RATE SWITCHES

These rotary switches select independently any one of ten baud rates for the MAIN or PRINTER port transmission. The following is a list of the switch positions and the associated baud rates:

0 = 110	5 = 1800
1 = 150	6 = 2400
2 = 300	7 = 4800
3 = 600	8 = 9600
4 = 1200	9 = 19200

TRANSMISSION MODE SWITCH

This three position switch controls the mode the IQ135 will power up to the three position are labeled FDX for FULL DUPLEX, HDX for HALF DUPLEX, and BLOCK for BLOCK mode operation.

RS232 OR CURRENT LOOP SWITCH

This three position switch controls whether the IQ135 transmission lines will be RS232 or CURRENT LOOP compatible(optional). The center position causes all data transmitted from the IQ135 to be looped back into the terminal instead

of being transmitted to the remote computer.

IQ135 TURN ON PROCEDURE

1. Ensure the IQ135 is plugged into a grounded 115
Vac outlet.
2. Set the ON/OFF switch on the IQ135 to the ON
position.
3. Wait approximately 20 seconds for the IQ135 to
warm up. The cursor should then appear at the home
position with the rest of the screen clear.

NOTE: Turning the power switch on clear the
display memory. Therefore, if the display contains
information which should be saved, the information
should be transmitted to the remote computer or
otherwise saved before turning the terminal OFF.

4. If the cursor does not appear after the warm-up
period, type the RESET key while depressing SHIFT.

   a. Set the contrast control the the middle
      of it's range.
   b. Turn the brightness control clockwise
      until the screen is bright, then reduce
      brightness slowly until the background is
      barely visible.
   c. Adjust brightness and contrast for
      desired presentation.
   d. If the cursor does not appear, contact
      an authorized service representative.

                  SWITCH BANK K8
SWITCH 1   PRTALL
   UP
          This will   select   PRINT   ALL   mode which
      indicates that both PROTECTED and UNPROTECTED data
      will be transmitted to the PRINTER during a PRINT
      operation.
   DOWN
          This will select PRINT UNPROTECTED mode which
      indicates that UNPROTECTED data only will be
      transmitted to the PRINTER during a PRINT
      operation.

SWITCH 2   SEAM
          This switch controls whether action codes
      (ESC) echoed from the remote computer are
      suppressed or accepted. This mode causes the IQ135
      to check if the first character received after
      striking the ESC key is an ESC code that has been
      echoed by the computer. If enabled the ESC is not
      recognized.
   UP
          This will enable SEAM mode. Echoed ESC codes
      will be recognized by the IQ135.
   DOWN

This will deselect SEAM mode. Echoed ESC codes will be recognized by the IQ135.

SWITCH 3   BLKPAD

This switch allows better utilization of BLOCK mode operation on those computers that echo the data (FULL DUPLEX operation) by suppressing the echoed data. This is accomplished by sending three NULL codes (reprogrammable) after the last data character in the SEND operation. This gives the computer time to echo the rest of the data to the IQ135 after which time the data is cleared from the receive buffer and the end of message code is sent to the computer.

UP

This enables the block mode pad feature.

DOWN

This disables the block mode pad feature.

SWITCH 4   SW135
UP

This will select IQ135 mode in which certain operations are functionally different. In IQ135 mode the cursor position is not modified by a SET PROTECT MODE operation.

DOWN

This will select IQ120 mode in which certain operations are functionally different. In IQ120 mode the cursor will home upon a SET PROTECT MODE operation.

SWITCH 5   CONV FDX
UP

This will select that upon an <ESC>C operation from the computer FDX mode will be set.

DOWN

This will select that upon an <ESC>C operation from the computer HDX mode will be set.

SWITCH 6   SH LEADIN
UP

This will select that the ESC key used without shift will transmit an ESC code in FDX or HDX mode or no operation in BLOCK mode. The ESC key used with shift will generate a internal LEADIN described as in section A.B of this manual.

DOWN

This will select that the ESC key used without SHIFT will generate an internal LEADIN as described in the section ESC FUNCTIONS FROM KEYBOARD of this manual. The ESC key used with shift will transmit an ESC code.

SWITCH 7   EN BEEP
UP

This will enable the audible tone.

DOWN

This will disable the audible tone.

SWITCH 8 DIS BREAK

UP

    This will disable the BREAK key.

DOWN

    This will enable the BREAK key.

SWITCH BANK   K10

	UP	DOWN
SW 1	50 hz.	60 hz.
SW 2	indicator line	no indicator line
SW 3	RTS	no RTS
SW 4	MAIN bit 8 1	MAIN bit 8 0
SW 5	MAIN 8 bits	MAIN 7 bits
SW 6	MAIN EVEN PAR	MAIN ODD PAR
SW 7	MAIN NO PAR	MAIN PAR ENABLE
SW 8	MAIN 2 STOP	MAIN 1 STOP

SWITCH BANK   K12

	UP	DOWN
SW 1	CURSOR NO BLINK	CURSOR BLINK
SW 2	CURSOR BLOCK	CURSOR UNDERLINE
SW 3	RDY CTRL	NOT RDY CTRL
SW 4	BUSY CTRL	NOT BUSY CTRL
SW 5	POR AUX PRINT	POR NORMAL PRINT
SW 6	PRTR EVEN PAR	PRTR ODD PAR
SW 7	PRTR NO PAR	PRTR PAR ENABLE
SW 8	PRTR 2 STOP	PRTR 1 STOP

MAIN PORT CONNECTION
        The IQ135 MAIN communications port is the
center female DB25 connector. The pinouts for the
MAIN port are listed below:
PIN NO   SIGNAL NAME   BELL SYSTEM CODE

PIN NO	SIGNAL NAME	BELL SYSTEM CODE	
1	Frame Ground	AA	
2	Transmit Data	BA	
3	Receive Data	BB	
4	Request To Send	CA	
5	Clear to Send	CB	
6	Data Set Ready	DSR	
7	Signal Ground	AB	
8	Carrier Detect	CF	
9	Current Loop supply		
10	Current Loop OUTPUT	receive	
11	Current Loop RETURN		
12	Current Loop INPUT	transmit	
13	Current Loop RETURN		
20	Data Terminal Ready	CD	

AUX PORT CONNECTION
        The IQ135 AUX port is the female DB25
connector located between the MAIN port and the
three position transmission mode select switch.
This can be used to connect to any RS232 serial
device. The AUX port is enabled on POWER UP if in
IQ135 mode, and is disabled if in IQ120 mode,
however it may be turned on or off remotely by
software control. The pinouts for the AUX port
are as follows.
NOTE: All signals are refernced with respect to
the auxiliary device.

PIN	SIGNAL
1	Frame Ground
2	Transmit Data
3	Receive Data
4	Request to Send
5	Clear to Send
6	Data Set Ready
7	Signal Ground
8	Carrier Detect
20	Data Terminal Ready

PRINTER PORT CONNECTION
        The PRINTER port is the female DB25 connector
located between the MAIN port connector and the
BAUD rate switch. This port allows the IQ135 to
interface to a any serial printer. The IQ135 has
two forms of PRINT operations as described in
Section a.b of this manual. The PRINTER port baud
rate is separate from the MAIN port baud rate so
the printer may run at a different speed than the
remote computer. The pinouts for the PRINTER port
follow.

PIN NO.	SIGNAL
1	Ground
3	SERIAL DATA
6	IQ135 ready
7	GND
8	IQ135 Ready
20	PRINTER BUSY/READY

ACTION CODE SEQUENCES

	0	1	2	3	4	5	6	7
0	nul	dle REV BLINK UL	SP AUX PORT OFF	0 for test only	@ AUX PORT ON	P PRINT FORMAT PAGE --	' for test only	p PRINT UNFMT PAGE
1	soh	dc1 BLINK UL ATTRIB	! PROG FCN KEYS	1 SEND ONE CHAR	A AUX PORT OFF	Q INSERT SPACE CHAR	a	q INSERT NULL CHAR
2	stx	dc2 REV UL ATTRIB	" UNLOCK KEYBD	2	B SET BLOCK MODE	R DELETE LINE SPACES	b	r DELETE LINE NULLS
3	etx	dc3 REV BLINK ATTRIB	# LOCK KEYBD	3 SEND PAGE UNFMT	C SET CONV MODE	S SEND MSG FGND	c	s SEND MSG ALL
4	eot ALL FIELDS OFF	dc4	$	4 SEND LINE FGND	D START MSG CODE	T ERASE EOL SPACES	d END MGS CODE	t ERASE EOL NULLS
5	enq	nak UL ATTRIB	%	5 SEND PAGE FGND	E INSERT LINE SPACES	U	e INSERT LINE NULLS	u
6	ack	syn BLINK ATTRIB	& SET PROT MODE	6 SEND LINE ALL	F	V TAB COLUMN	f	v
7	bel BEEPER	etb REV ATTRIB	' CLEAR PROT MODE	7 SEND PAGE ALL	G	W DELETE CHAR SPACES	g	w DELETE CHAR NULLS
8	bs BACK SPACE	can	(CLEAR WRITE LOW	8 CLEAR INSERT MODE	H	X	h	x
9	ht TAB (SKIP)	em	) SET WRITE LOW	9 SET INSERT MODE	I BACK TAB	Y ERASE EOP SPACES	i TAB (SKIP)	y ERASE EOP NULLS
A	lf CURSOR LINE FEED	sub	* ERASE ALL NULLS	: ERASE ALL SPACES	J	Z	j	z
B	vt CURSOR UP LINE	esc	+ ERASE FGND NULLS	; ERASE FGND SPACES	K	[SOFT RESET	k	{ POWER ON RESET
C	ff CURSOR FORE SPACE	fs	,	<	L	\ CLEAR TYPEWRTR TAB	l	| SET TYPEWRTR TAB
D	cr CURSOR RETURN	ss	- SPECIAL FUNCTION LEADIN	= LOAD CURSOR	M	]	m	}
E	so	rs CURSOR HOME	. CHANGE TERMINAL VARIB	>	N	^	n	~
F	sl	us CURSOR NEW LINE	/ DISPLAY FUN KEY MSGS	? READ CURSOR	O	ul	o	rub

CURSOR POSITIONING

X/Y	CODE	X/Y	CODE	X/Y	CODE	X/Y	CODE	X/Y	CODE	X/Y	CODE
1	SP	17	0	33	@	49	P	65	'	81	p
2	!	18	1	34	A	50	Q	66	a	82	q
3	"	19	2	35	B	51	R	57	b	83	r
4	#	20	3	36	C	52	S	68	c	84	s
5	$	21	4	37	D	53	T	69	d	85	t
6	%	22	5	38	E	54	U	70	e	86	u
7	&	23	6	39	F	55	V	71	f	87	v
8	'	24	7	40	G	56	W	72	g	88	w
9	(	25	8	41	H	57	X	73	h	89	x
10	)	26	9	42	I	58	Y	74	i	90	y
11	*	27	:	43	J	59	Z	75	j	91	z
12	+	28	;	44	K	60	[	76	k	92	{
13	,	29	<	45	L	61	\	77	l	93	!
14	-	30	=	46	M	62	]	78	m	94	)
15	.	31	>	47	N	63	^	79	n	95	~
16	/	32	?	48	O	64	ul	80	o	96	rub

SWITCHES

------------------------------------ SWITCH LOCATION K8 --------------------------------

SW#	--------SWITCH UP (OFF)----------	---------SWITCH DOWN (ON) -----------
1.	PRINT ALL	PRINT UNPROT ONLY
2.	SUPPRESS ECHOED ACTION CODE	ECHOED ACTION CODE PROCESSED
3.	BLOCK MODE PAD ENABLED	BLOCK MODE PAD DISABLED
4.	IQ135 MODE	IQ 120 MODE
5.	CONVERSATION FULL DUPLEX	CONVERSATION HALF DUPLEX
6.	KEYBOARD LEAD IN SHIFTED	KEYBOARD LEADIN UNSHIFTED
7.	AUDIBLE ALARM ENABLED	AUDIBLE ALARM DISABLED
8.	BREAK KEY DISABLED	BREAK KEY ENABLED

------------------------------------ SWITCH LOCATION K12 -----------------------------

SW#	--------SWITCH UP (OFF)----------	---------SWITCH DOWN (ON)-----------
1.	50 HZ REFRESH ENABLED	60 HZ REFRESH ENABLED
2.	INDICATOR LINE DISPLAYED	INDICATOR LINE DISPLAY OFF
3.	RTS ALWAYS ON	RTS CONTROLLED
4.	MAIN PORT BIT 8 "MARKING"	MAIN PORT BIT 8 "SPACING"
5.	MAIN PORT 8 DATA BITS	MAIN PORT 7 DATA BITS
6.	MAIN PORT EVEN PARITY	MAIN PORT ODD PARITY
7.	MAIN PORT PARITY DISABLED	MAIN PORT PARITY ENABLED
8.	MAIN PORT 2 STOP BITS	MAIN PORT 1 STOP BIT

------------------------------------ SWITCH LOCATION K13 -----------------------------

SW#	---------SWITCH UP (OFF)----------	---------SWITCH DOWN (ON)-----------
1.	NON-BLINKING CURSOR	BLINKING CURSOR
2.	BLOCK CURSOR	UNDERLINE CURSOR
3.	PRINTER PIN20 READY CONTROL	INTERNAL DELAY (if SW4 down)
4.	PRINTER PIN20 BUSY CONTROL	INTERNAL DELAY (if SW3 down)
5.	POWER ON AUX PRINT	POWER ON NORMAL PRINT
6.	PRINTER EVEN PARITY	PRINTER ODD PARITY
7.	PRINTER PARITY DISABLED	PRINTER PARITY ENABLED
8.	PRINTER 2 STOP BITS	PRINTER 1 STOP BIT

1.   ANSWER BACK
         SEQUENCE = ESC   -   0
         DESCRIPTION - This sequence activates the transmission of the canned
                       "answer back" message.

2.   LOW MARKERS
         SEQUENCE = ESC   -   1 y1   x1   y2   x2
         DESCRIPTION - The receipt of this sequence causes all of the data
                       between the starting coordinates, y1x1, and the ending
                       coordinates, y2x2, to be rewritten in low intensity,
                       The coordinates are described in the CURSOR POSITIONING
                       CHART.

3.   HIGH MARKERS
         SEQUENCE = ESC   -   2   y1   x1   y2   x2
         DESCRIPTION - The functioning of "high markers" is identical to that
                       described above for "low markers" with the exception that
                       the data is unconditionally rewritten in high intensity.

4.   WRITE MULTIPLE CHARACTERS
         SEQUENCE = ESC   -   3 n1   c1
         DESCRIPTION - This function allows the writing of muliple characters
                       with a five character sequence.
                       n1 = number of characters to be written (1 to 96)
                            (send ASCII char - SPACE=1 thru RUB=96)
                       c1 = ASCII character to be written

5.   SET GRAPHICS MODE
         SEQUENCE = ESC   -   4
         DESCRIPTION - Setting this mode allows the entry of the eleven control
                       characters used for line drawing without preceeding them
                       with an ESC character. This mode is also active with the
                       standard character generator.

6.   CLEAR GRAPHICS MODE
         SEQUENCE = ESC   -   5
         DESCRIPTION - This sequence clears the mode describe above.

GENERAL -
  This function allows the user to change many operating characteristics.
  The general sequence required is shown below:
              ESC   ID#   NEW VALUE
ID#
  This is sent in the sequence as two ASCII numerals.
  Decimal two digit number is drawn from the chart below:
NEW VALUE
  Any ASCII code excluding NULL and the numbers 0 thru 9.
  If a decimal number is required, send TWO ASCII numerals.
  Time duration approximately 16.7 ms per count loaded.
TRANSMISSION OR PRINT DELIMITERS -
  If a delimiter is not desired, NEW VALUE consists of 2 ASCII codes 00
CHANGING VALUES
  Keyboard - type in sequence shown above for each change desired.
  Line - SEQUENTIAL values can be changed by designating the
          first ID# and stringing the NEW VALUES.
              ESC   .   ID#   NEW VALUE 1   NEW VALUE 2   ...SO
  Note that the line must terminate with an ASCII SO (OE hex).

ID#	FUNCTION	INITIAL VALUE
00	LEAD IN CODE	ESC

SEND---

ID#	FUNCTION	INITIAL VALUE
01	END OF SEND 1 (all sends)	CR
02	END OF SEND 2 (all sends)	(unused)
03	END OF LINE 1 (send fgnd/all	US
04	END OF LINE 2 (send fgnd/all)	(unused)
05	FIELD SEP 1 (send fgnd)	FS
06	FIELD SEP 2 (send fgnd)	(unused)
07	START PROT FIELD 1 (send all)	ESC
08	START PROT FIELD 2 (send all)	)
09	END PROT FIELD 1 (send all)	ESC
10	END PROT FIELD 2 (send all)	(
11	START OF MSG 1 (send msg)	STX
12	START OF MSG 2 (send msg)	ETX
13	BLOCK MODE PAD CHAR	NULL

PRINT---

ID#	FUNCTION	INITIAL VALUE
14	END LINE/MSG 1 (formatted)	CR
15	END LINE/MSG 2 (formatted)	LF
16	NO. OF NULLS AFTER CR/LF	01
17	INTERNAL PRINTER DELAY	30 (16.7ms/count)
18	AUX PORT PRINT	00 (01 to enable)

MISC---

ID#	FUNCTION	INITIAL VALUE
19	RIGHT HAND MARGIN	79 (00 to 79 legal)
20	BLINK "ON" TIME	45 (16.7 ms/count)
21	BLINK "OFF" TIME	10 (16.7ms/count)
22	KEYBOARD REPEAT TIME	03 (16.7ms/count)
23	BREAK DURATION	16 (16.7ms/count)
24	RTS TRAILING EDGE DELAY	17 (16.7ms/count)
25	(UNUSED)	
26	ENABLE CURSOR DISPLAY	01 (00 to disable)
27	PROGRAM SWITCHES	