# Datapanel

*Operator Interface Products*

# *VT100 Terminal Emulator for Datapanels*

## *User's Manual*

*GFK-1698* *July 1999*

# *Warnings, Cautions, and Notes as Used in this Publication*

## Warning

**Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.**

**In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.**

## Caution

**Caution notices are used where equipment might be damaged if care is not taken.**

## Note

Notes merely call attention to information that is especially significant to understanding and operating the equipment.

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## Content of This Manual

This manual describes the VT100 Emulation software for Datapanel models 150, 160 and 240E. The VT100 software package provides a set of ANSI standard VT100 commands that allows the Datapanel to function as a dumb terminal with a host computer or other intelligent device.

**Chapter 1.** **Getting Started:** Describes how to configure the Datapanel for use with the VT100 Emulation Software.

**Chapter 2.** **Terminal Commands:** Provides a reference guide to the VT emulation terminal commands.

## Related Publications

| | |
|---|---|
| GFK-1528 | ***Datapanel 100 Range Operator's Manual*** |
| GFK-1656 | ***Datapanel Model 240E User's Manual*** |
| GFK-1657 | ***Datapanel 30 and 50 Series User's Manual*** |

# *Contents*

Chapter 1

# Getting Started

## Introduction

The Datapanel series is a family of rugged LCD display workstations for use in industrial applications. The VT100 Datapanel acts as a dumb terminal supporting the VT100 command set. As a terminal it sends key presses (Touchscreen presses on the 240E model) to a host and displays what the host sends it. The host is responsible for display formatting, including cursor positioning, text placement, etc.

VT100 Terminal Emulation software allows Datapanel models 240E, 150, and 160 to communicate with a host computer, including PLCs, via a standard serial terminal communications link. The VT100 software provides a subset of the standard VT100 commands.

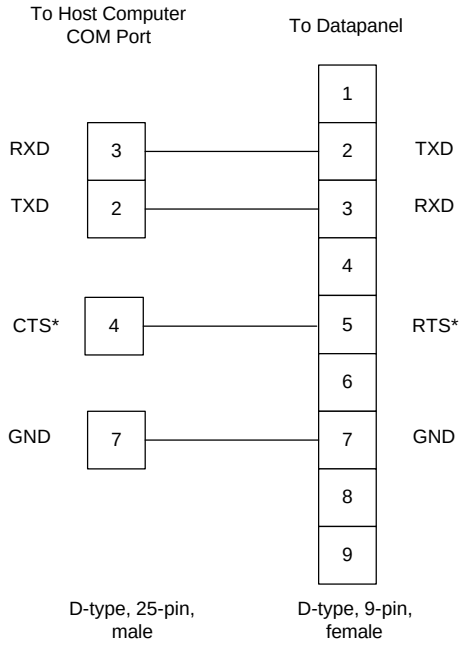
This manual describes how to use the VT100 software.

# Installation

VT100 software is pre-installed on your Datapanel.

# Connecting the Datapanel to the Host Computer

The Datapanel is connected to the host computer using the following cable.




*CTS/RTS signal is ignored if No Flow Control (or Xon/Xoff) is selected.

# Configuring the Datapanel

A special local configuration mode is built into the VT100 software. This permits configuration of the serial port parameters as well as the backlight and contrast on the LCD display.

To access configuration mode, power up the Datapanel and press F6.

**Note**

The opportunity to press F6 is only available for a short period of time after powering up the Datapanel. If you wait too long before pressing F6, the power must be removed, then reapplied to the Datapanel to get another chance to press F6.

The following options will be presented on the screen.

| Function Key | Definition | Option |
|---|---|---|
| F1 | Port 1 | Configure Port 1 |
| F3 | Screen | Configure screen contrast and backlight |
| F6 | Exit | Exits setup mode |

## Port Configuration

To set serial port configuration, press F1 from the main configuration menu.

Default parameters are:

| | |
|---|---|
| Baud Rate | 19200 |
| Parity | None |
| Data Bits | 8 |
| Stop Bits | 1 |

To set flow control, press Enter when you have finished configuring the port settings.

Handshaking:

| | |
|---|---|
| None | No flow control |
| XON/XOFF | Software flow control |
| CTS | Hardware flow control |

## Screen Setup

Pressing F3 from the main configuration menu displays the screen display menu. Use the F1 and F2 keys to increase and decrease the contrast on the LCD.

Use F4 to disable the backlight, and F5 to enable the backlight. Press Enter to exit.

# Chapter 2 Terminal Commands

The supported terminal escape sequences conform to ANSI standards for terminals.

All commands are preceded by a leading ESC character (Hex 1B). For example, the complete sequence to enable an underline cursor on the Datapanel is ESC [ > 4 l.

The commands are divided into categories. The categories are:

Text Attributes

Request from Host

Function Key Management

Datapanel Special Functions

Setup/Reset

Cursor Position

Cursor Display

Data Display

### Note

If the VT100 Datapanel receives an invalid command, the buzzer will sound.

The following tables describe the available commands. The top line consists of the command (minus the leading ESC). The following lines define the action performed by that command.

### Note

It is difficult in the escape sequences to distinguish between a 1(one) and the letter "1". Use the following guide to verify the character, remembering that commands are case sensitive:

1 = One

**l = Lower case letter L shown in bold**

# Setup/Reset Commands

| Command (Esc +) | Results |
|---|---|
| c | Reset- Alternate sequence to ESC [Z. Resets Datapanel to power-up configuration. |
| #8 | Screen test-Fills screen with letter E. |
| [>8h | Enable auto line feed on carriage return. |
| [>9h | Enable auto carriage feed on line return. |
| [>14h | Enable echo (half-duplex). |
| [14**l** | Disable echo (half-duplex). |
| [>8**l** | Disable auto line feed on carriage return. |
| [>9**l** | Disable auto carriage return on line feed. |
| [?7h | Enter wrap at end of line mode. |
| [?14h | Enable date display. |
| [?15h | Enable clock display. |
| [?16h | Disable display. |
| [?7**l** | Exit wrap at end of line mode. |
| [?14**l** | Disable date display. |
| [?15**l** | Disable clock display. |
| [?16**l** | Enable display. |
| [Pn;Pn;Pn?s | Set time (hours, minutes, seconds, in military format).<br>Example: To set time to 11:50 PM, type Esc[23;50;0?s |
| [Pn;Pn;Pn?t | Set date (month, day, year-all numerals). |
| [20h | Enable auto carriage return on line feed. |
| [20**l** | Disable auto carriage return on line feed. |
| [2**l** | Enable keyboard input. |
| [2h | Disable keyboard input. |
| [r | Reset system to full screen scroll. |
| [Pt; Pb r | Define Scrolling Region- Sets top of region to Pt, and bottom of region to Pb, where the line numbers are from 1 to 8 on the DP150/160 and 1 to 16 on the DP240E. The region must be at least two lines wide.<br>Example: ESC [5;10 r will define the scrolling region to be lines 5 through 10 inclusive. If the cursor is on line 10 when a line feed occurs, line 5 will be erased, line 6 through 10 will scroll up on line, and the cursor will be positioned on line 10. Direct cursor addressing must be used to move the cursor outside the region.<br>***Note: Must set cursor within region first.*** |
| [z | Reset to power-up configuration. |

# Cursor Positioning Commands

| Command (Esc +) | Results |
|---|---|
| D | Index- Moves cursor down one row and scrolls screen if at bottom of screen scrolling region. It will move cursor to beginning of line if AUTO CR on LF is enabled. |
| E | New Line- Performs Index; automatically positions cursor at beginning of line. |
| M | Reverse index (reverse scroll). |
| 7 | Save Cursor Position - Alternate sequence to ESC [s. Saves the cursor's X and Y coordinates. The Unsave Cursor or Restore Cursor Position command will return the cursor to the saved position. The saved coordinates can be overwritten only by the Esc 7 or Esc [s commands. |
| 8 | Unsave Cursor- Alternate sequence to ESC [u. Returns the cusor to the coordinates saved by Esc 7 or Esc [s. This command can be used repeatedly to return the cursor to the saved coordinates. |
| [(parameter)A | Cursor up (e.g. ESC [2A moves cursor up two lines). |
| [(parameter)B | Cursor down. |
| [(parameter)C | Cursor right. |
| [(parameter)D | Cursor left. |
| [H | Home cursor. |
| [line #;col #)H | Position cursor; columns 1 to 40, lines 1 to 8 on 150/160 and 1 to 16 on 240E. |
| [f | Home cursor. |
| [(line #);col #)f | Position cursor (see ESC[Pn;PnH). |
| [s | Save cursor position. (See 7) |
| [u | Restore cursor position. (See 8) |

## Cursor Display

| Command (Esc +) | Results |
|---|---|
| [>4h | Set block cursor. |
| [>5h | Disable cursor. |
| [>11h | Set non-blinking cursor. |
| [>11**l** | Set blinking cursor. |
| [>4**l** | Set underline cursor. |
| [>5**l** | Enable cursor. |

## Text Attributes

| Command (Esc +) | Results |
|---|---|
| #0. | Reset all line based attributes. |
| #3. | Set this line to double high tops and double wide. |
| #4. | Set this line to double high bottoms and double wide. |
| #5. | Set this line to single high and single wide. |
| #6. | Set this line to double wide. |
| [0m | Normal video display (resets operations marked *). |
| [4m | Underscore *. |
| [5m | Blink on. |
| [7m | Reverse video: Foreground attributes are changed to background and vice versa. Normal intensity areas become blank and blank areas change to normal intensity.* |
| [15m | Double wide (on per character basis) on succeeding characters and lines*. |
| [22m | End Double wide. |

*0m command resets these attributes to normal video display.

# Data Display

| Command (Esc +) | Results |
|---|---|
| [=Pr; Pc b Pf | Fill region with character Pf.<br>Pr = Number of rows to include in box.<br>Pc = Number of columns to include in box |
| [=Pr; Pc d | Draw box outline around region.<br>Pr = Number of rows to include in box.<br>Pc = Number of columns to include in box |
| [=Pr; Pc e | Draw box outline around region and erase background.<br>Pr = Number of rows to include in box.<br>Pc = Number of columns to include in box |
| [=P1; P2; P3 h | Draw horizontal bar graph. (See Figure 2-1.)<br>P1 = Number of characters to display as a filled bar.<br>P2 = Percentage of character following last full character to display as a filled bar(0 - 100).<br>P3 = Total size of bar graph. This must be equal or greater than (P1 + P2/100). |
| [= P1; P2; P3 v | Draw vertical bar graph.<br>P1 = Number of characters to display as a filled bar.<br>P2 = Percentage of character following last full character to display as a filled bar(0 - 100).<br>P3 = Total size of bar graph. This must be equal or greater than (P1 + P2/100). |
| [J or [OJ | Erase from cursor to end of screen. |
| [1J | Erase from beginning of screen to cursor. |
| [2J | Clear Screen. |
| [K or {OK | Erase from cursor to end of line. |
| [1K | Erase from beginning of line to cursor. |
| [2K | Clear line. |
| [(parameter)L | Insert a line at cursor. |
| [(parameter)M | Delete line at cursor. |
| [(parameter)P | Delete character at cursor. |
| [4h | Enter insert character mode. |
| [4**l** | Exit insert character mode. |

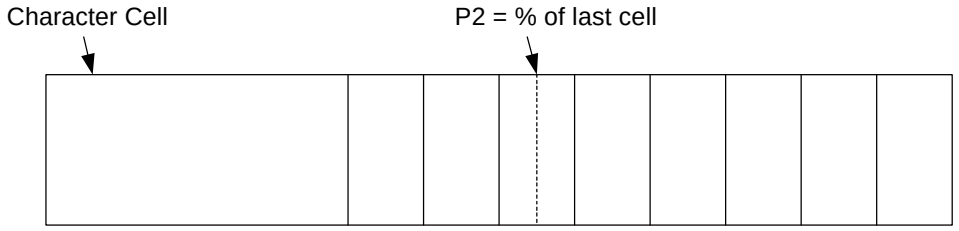



**Figure 2-1. Bar Graph**

## Function Key Management

| | |
|---|---|
| [> Pn t <data> ETX | Save <data> as function key PN (1-15) ETX is Control-C.<br>**Note:** The Datapanel only supports function keys F1 through F6. The maximum amount of <data> that can be programmed on a key is 256 characters.<br>The default programming for the function keys returns the following:<br>F1 Esc O P<br>F2 Esc O Q<br>F3 Esc O R<br>F4 Esc O S<br>F5 Esc O T<br>F6 Esc O U<br>The other keys return the following (non-programmable)<br>Up Arrow ESC [A<br>Down Arrow ESC [ B<br>Del ESC [ P<br>Return CR – This return is just the value of 13 (0dH). |

## Data Request from Host

| | |
|---|---|
| [?7n | Request time (Transmits "HH:MM:SS"<CR>). |
| [?8n | Request date (Transmits "ddmmmyy"<CR>). |
| [Oc or [c | What Are You- Returns ESC [ ? 1 ; 2 c to indicate that terminal will operate as VT100 with Advanced Video option. |
| [5n | Status Report- Returns ESC [On. |
| [6n | Report cursor position. Same as Esc[y pos; x pos R. |

# Datapanel Special Commands

These commands are not part of the standard VT100 command set.

| | |
|---|---|
| > P1 b | Sets the backlight mode as follows:<br>P1 = 0 Enable backlight timeout after 10 minutes of no keyboard activity<br>P1 = 1 Disable backlight timeout<br>P1 = 2 Turn backlight off<br>P1 = 3 Turn backlight on |
| ESC > P1 c | Sets special double wide font for numbers 0 to 9, -, + and.<br>P1 = 0 Turn double wide off<br>P2 = 1 Turn double wide on |
| P1 t | *Available only on the Model 240E (See Figure 2-2.)*<br>Activates touch pad entry.<br>P1 = 1 Enable default touch input functions. Returns a number that represents row/column in touch screen.<br>P1 = 2 Disable touch and keep disabled after power reset<br>P1 = 3 Disable touch - restore on power reset<br>P1 = 4 Enable numeric pad touch input<br>P1 = 5 Same as 4<br>The number pad touch input changes columns 3-4 and rows 6-9 to return 0-9 instead of touch region coordinates. |

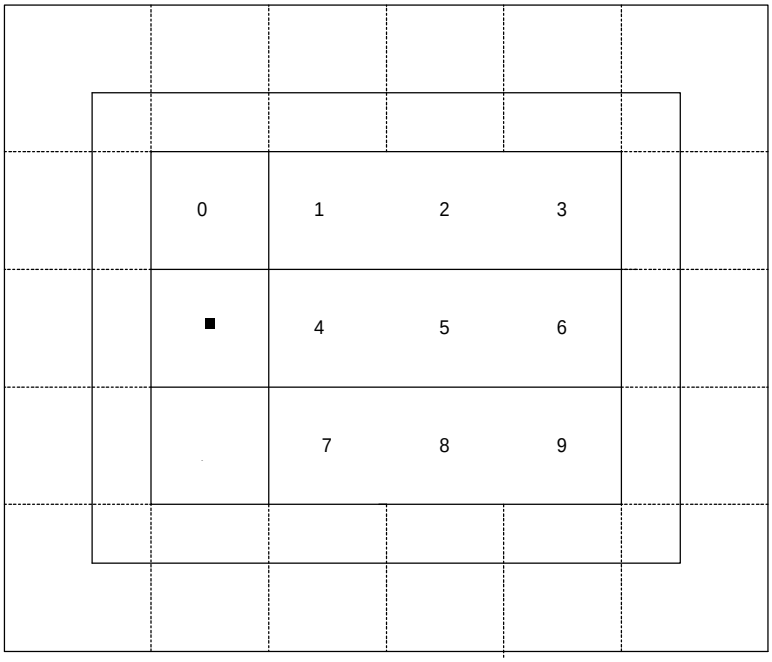



**Figure 2-2. Key pad in Model 240E**

## C



## D



## F



## G



## I



## P



## S



## T