

# REMOTE FRONT PANEL EMULATION

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## **USER REFERENCE GUIDE**

**2500 Application Software Series**

**Part Number: 3-9003-170**

**Revision 1.0**

**MARCH 1991**

***DANIEL***

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**DANIEL INDUSTRIES, INC.  
REMOTE FRONT PANEL EMULATION  
USER REFERENCE GUIDE**

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## **INTRODUCTION**

This guide provides information necessary to emulate the DANIEL INDUSTRIES MODEL 2500 INSTRUMENTATION SYSTEM MICROCOMPUTER's front panel from a remote display. Specifically, this guide will allow a user to enter keyboard data from a remote display, and have the MODEL 2500 respond just as if its front panel was being operated directly.

Being able to enter keyboard data from a display other than the MODEL 2500's own front panel enables the user's personal computer (PC) to be linked locally or at a distance. A local connection to a remote display can be made through the EIA Standard RS-232C (or RS-232) Communication Port, or a distant connection to a remote display can be made through phone lines by way of a modem connection.

For further details concerning the MODEL 2500, refer to the MODEL 2500 MICROCOMPUTER HARDWARE MANUAL, DANIEL PART NO. 3-9000-590, and the MODEL 2500 INSTRUMENTATION SYSTEM USER REFERENCE MANUAL, DANIEL PART NO. 3-9000-591.

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### **SET UP**

Before emulating the MODEL 2500 front panel, certain set-up requirements and procedures are necessary. These include computer system requirements, local (or direct) and distant remote-display, connection procedures, and software preparation procedures for the MODEL 2500.

### **COMPUTER SYSTEM REQUIREMENTS**

In order to emulate the DANIEL INDUSTRIES MODEL 2500 INSTRUMENTATION SYSTEM MICROCOMPUTER's front panel from a local (direct) or distant remote-display device, certain computer system requirements must be met.

For a local (or direct), remote-display connection, these requirements include

- an IBM or IBM-compatible personal computer (PC), or Laptop computer
- a copy of the MODEL 2500 FRONT PANEL EMULATION SOFTWARE, including the 25 PANEL.EXE and the 25 PANEL.TXT files,
- MS DOS operating system software, version 3.1 (or later)
- 640K of random access memory (RAM)
- a 360K floppy disk drive - 3 1/2" or 5 1/4"
- a Monochrome, RGB, CGA, EGA, or VGA monitor
- a download cable, DANIEL PART NO. 3-2500-365 (or suitable substitute), which is provided with the MODEL 2500.

For a distant, remote-display connection, these requirements include

- an IBM or IBM-compatible personal computer (PC), or Laptop computer
- a copy of the MODEL 2500 FRONT PANEL EMULATION SOFTWARE, including the 25 PANEL.EXE and the 25 PANEL.TXT files,
- MS DOS operating system software, version 3.1 (or later)
- 640K of random access memory (RAM)
- a 360K floppy disk drive - 3 1/2" or 5 1/4"
- a Monochrome, RGB, CGA, EGA, or VGA monitor
- two download cables, DANIEL PART NO. 3-2500-365 (or suitable substitutes), one of which is provided with the MODEL 2500.
- two (2) compatible modems.

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### **CONNECTION PROCEDURES**

To make a LOCAL (or DIRECT), REMOTE-DISPLAY EMULATION CONNECTION between the MODEL 2500 and an IBM or IBM-compatible personal computer, or Laptop computer, requires a download cable, DANIEL PART NO. 3-2500-365 (or suitable substitute). This cable is provided with the MODEL 2500.

One end of the download cable should be connected to a serial port on the IBM or IBM-compatible personal computer, or Laptop, and the other end should be connected to an available RS-232C (or RS-232) serial port on the MODEL 2500. For further details concerning this connection, refer to DANIEL DRAWING, NO. DE-10485 and DANIEL DRAWING, NO. CE-10174 in APPENDIX B of the MODEL 2500 MICROCOMPUTER HARDWARE MANUAL, DANIEL PART NO.3-9000-590.

If the connection is being made to the MODEL 2500's RS-232C (or RS-232) SERIAL PORT NUMBER ONE, then the white, red and black wires from the download cable, DANIEL PART NO. 3-2500-365 (or suitable substitute), should be connected to terminals 63, 64, and 67 respectively, as indicated in the following chart, and terminals 65 and 66 should be jumpered together.

PORT ONE

RS-232C	WIRE	TERMINAL
TXD (Data Out)	White	Number 63 (ZA)
RXD (Data In)	Red	Number 64 (ZB)
RTS	-	Number 65 (ZC) (jumpered to Number 66)
CTS	-	Number 66 (ZD) (jumpered to Number 65)
COMMON	Black	Number 67

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If the connection is being made to the MODEL 2500's RS-232C (or RS-232) SERIAL PORT NUMBER TWO, then the white, red and black wires from the download cable, DANIEL PART NO. 3-2500-365 (or suitable substitute), should be connected to terminals 58, 59, and 62 respectively, as indicated in the following chart, and terminals 60 and 61 should be jumpered together.

PORT TWO

RS-232C	WIRE	TERMINAL
TXD (Data Out)	White	Number 58
RXD (Data In)	Red	Number 59
RTS	-	Number 60 (jumpered to Number 61)
CTS	-	Number 61 (jumpered to Number 60)
COMMON	Black	Number 62

If the connection is being made to the MODEL 2500's RS-232C (or RS-232) SERIAL PORT NUMBER THREE, then the white, red and black wires from the download cable, DANIEL PART NO. 3-2500-365 (or suitable substitute), should be connected to terminals 98, 99, and 100 respectively, as indicated in the following chart, and terminals 101 and 102 should be jumpered together.

PORT THREE

RS-232C	WIRE	TERMINAL
TXD (Data Out)	White	Number 98
RXD (Data In)	Red	Number 99
RTS	-	Number 101 (jumpered to Number 102)
CTS	-	Number 102 (jumpered to Number 101)
COMMON	Black	Number 100

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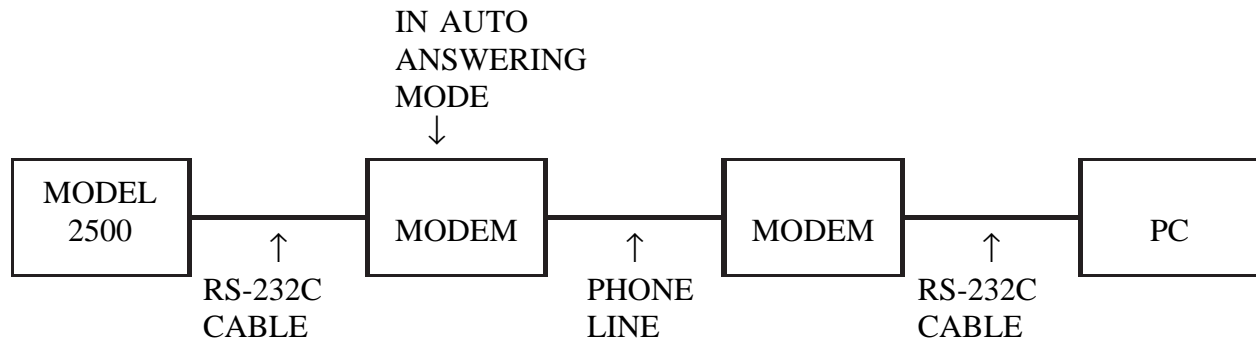
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To make a DISTANT, REMOTE-DISPLAY EMULATION CONNECTION between the MODEL 2500 and an IBM or IBM-compatible personal computer, or Laptop computer, requires a modem connection.

The MODEL 2500's front panel can be emulated from a local (direct) or distant location by using an available telephone system, if

- the phone lines are accessible to both the PC and the MODEL 2500 modems,
- both modems are set to a 1200 baud rate, and
- the modem connected to the MODEL 2500 is set in the Auto Answering Mode.

The following illustration represents a standard, but not necessarily exclusive, configuration for connecting the MODEL 2500, and an IBM or IBM-compatible personal computer, or Laptop computer, through a telephone system.



## SOFTWARE PREPARATION

To further prepare the MODEL 2500 for emulation through a local (direct) or distant, remote display, a software application program must be resident on the microcomputer. The remote front panel can then be selected by assigning it to a RS-232C (or RS-232) serial port through one of the PORTUSE options in the resident software's SERIAL PORTS sub-menu. More complete details concerning MODEL 2500 application software can be found in the MODEL 2500 INSTRUMENTATION SYSTEM USER REFERENCE MANUAL, DANIEL PART NO. 3-9000-591.

To select the remote front panel option from MODEL 2500's software application program,

- use the DOWN ARROW KEY to scroll through the MAIN MENU until the SERIAL PORTS sub-menu is reached
- press the ENTER key
- use the DOWN ARROW KEY to scroll through the SERIAL PORTS sub-menu until the PORTUSE"X" option is displayed ("X" represents serial port 1, 2 or 3)
- press the ENTER key
- use the DOWN ARROW KEY to scroll through the PORTUSE"X" options until REMOTEFP is displayed
- press the ENTER key.



After the remote front panel has been selected,

- the MODEL 2500 displays the following illustrated message,
- keyboard operation I/O is transferred to the selected serial port, and
- the MODEL 2500 is ready for remote front panel operation.

REMOTE FRONT  
PANEL SELECTED

Control is returned to the front panel of the MODEL 2500 from the remote front panel by changing the PORTUSE selection to another option other than REMOTEFP.

Response time may be as long as 30 seconds when selecting the REMOTEFP option, or returning control to the front panel of the MODEL 2500. In addition, the remote front panel responds more slowly than the front panel of the MODEL 2500 to both keyboard commands and display refreshing.

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**NOTE:** If the remote front panel fails when the remote unit is in control (or if for some other reason, communications is lost between the on-site unit and the remote front panel), control can be returned to the front panel of the on-site unit by simultaneously depressing the zero, decimal, and minus keys.

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## **OPERATION**

Operation of the remote front panel through an IBM or IBM-compatible personal computer, or Laptop computer, includes a front-panel display simulation that is similar to the front panel on the MODEL 2500, the designation of certain control, numeric entry, and emulator function keys in order to manipulate and configure the MODEL 2500 or the MODEL 2500 FRONT PANEL EMULATION SOFTWARE, and the steps involved in initial operation procedures.

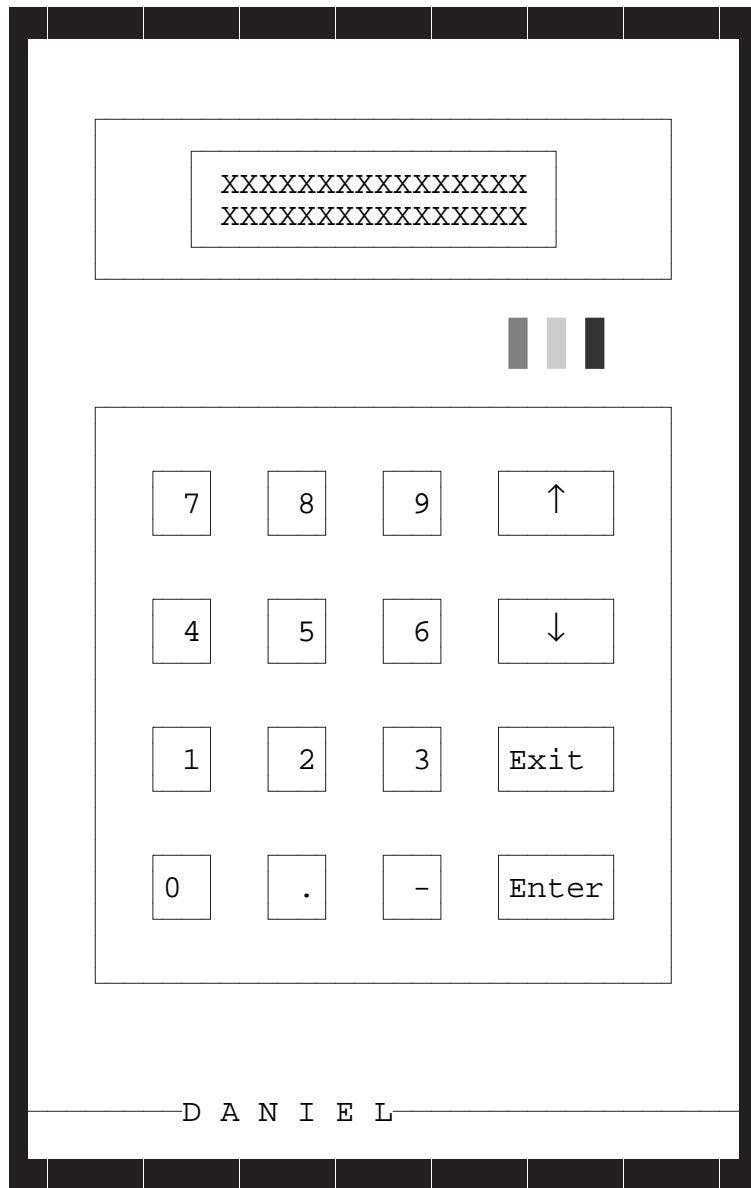
### **FRONT PANEL DISPLAY**

The MODEL 2500 FRONT PANEL EMULATION SOFTWARE produces a front-panel display similar to the following illustration. The "X"'s shown in the simulated liquid-crystal display (LCD) screen located near the top of the illustration represent two lines of alphanumeric characters with 16 characters in each line. These characters provide for readout of data, prompting, system commands, and the display of computation results.

The front-panel display also has three LED (light-emitting diode) status lights arranged horizontally above the keypad, which are colored green, yellow, and red from left to right. The different colors indicate different conditions or situations.

Specifically,

- the green light glows to indicate that the correct password has been properly entered (and not timed out), or that the MODEL 2500 system will accept keyboard entries for modifying application data and system parameters,
- the yellow light glows to indicate that an alarm signal has been sensed, but has not been acknowledged, and
- the red light glows to indicate that an alarm signal is currently active.



COM1|TEL NO X-XXX-XXX-XXXX|FILENAME|PASSWORD|UNACKNOWLEDGED ALARM|CURRENT ALARM

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Color monitors will vividly simulate the three LED (light-emitting diode) status lights, and monochrome monitors will display a change in color intensity when alarms occur. In addition, the status line at the bottom of the front-panel display simulation will indicate

- when an alarm has occurred by displaying the term PASSWORD (for the green light), ACKNOWLEDGED ALARM (for the yellow light), or CURRENT ALARM (for the red light)
- the current port selection (COM1 or COM2)
- the telephone number, if applicable,
- the parameter setting filename.

**MODEL 2500 FUNCTION KEYS**

To operate the MODEL 2500 from a remote front panel through an IBM or IBM-compatible personal computer, or Laptop computer, certain function keys have been designated to control movement through the program menu, and to allow for numeric data entry. The keys designated for control and numeric data entry, along with a brief description of the key functions, are listed in the following table.

<u>KEY</u>	<u>FUNCTION</u>
ENTER Key	The ENTER key functions the same on the PC and the MODEL 2500, and is used to access and move through the program menu, and to enter selections and numeric data.
ESCAPE Key (ESC)	The ESCAPE key on the PC functions the same as the EXIT key on the MODEL 2500, and is used to back out of sub-menus and to cancel entries.
↑	The CURSOR UP key on the PC functions the same as the UP ARROW key on the MODEL 2500, and is used to scroll up through the program menus.
↓	The CURSOR DOWN key on the PC functions the same as the DOWN ARROW key on the MODEL 2500, and is used to scroll down through the program menus.
0-9	The numeric keys on the PC function the same as the numeric keys on the MODEL 2500, and are used to enter numeric data and values.
.	The decimal point key has the same function on the PC as on the MODEL 2500.
-	The negative sign key has the same function on the PC as on the MODEL 2500.

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### **EMULATION SOFTWARE FUNCTION KEYS**

To operate the MODEL 2500 FRONT PANEL EMULATION SOFTWARE, certain function keys have been designated for manipulating it. These keys pertain strictly to the MODEL 2500 FRONT PANEL EMULATION SOFTWARE, and do not affect or control the MODEL 2500 in any manner.

The keys designated for emulation software control, along with a brief description of the key functions, are listed in the following table.

<u>KEY</u>	<u>FUNCTION</u>
P/p Key	The P or p key on the PC is used to change the PC serial port selection.
T/t Key	The T or t key on the PC is used to change the telephone number that the modem dials to the MODEL 2500, and only applies to a distant, remote-display emulation connection.
S/s Key	The S or s key on the PC allows the user to save parameter settings in the MODEL 2500 FRONT PANEL EMULATION SOFTWARE's 25 PANEL.TXT file. These settings include the communications port designation and the modem telephone number.
Q/q Key	The Q or q key on the PC allows the user to exit or quit the emulation program.

## INITIAL PROCEDURES

To operate the emulation program from a distant, remote-display connection, after set-up requirements and procedures have been completed, the user must

- load the MODEL 2500 FRONT PANEL EMULATION SOFTWARE into the IBM or IBM-compatible personal computer, or Laptop computer,
- at the prompt, type the command:  
  
25 PANEL
- press the ENTER key.

This procedure accesses the MODEL 2500 FRONT PANEL EMULATION SOFTWARE program. If the emulation program's TXT file has been configured with a communications port designation and a modem telephone number, the simulated, front-panel display will appear on the PC display screen and the emulation program will automatically begin accessing the MODEL 2500.

However, if the MODEL 2500 FRONT PANEL EMULATION SOFTWARE's TXT file has not been configured with a modem telephone number, the simulated, front-panel display will appear on the PC display screen and the user must enter the telephone number in order to access the MODEL 2500.

To operate the emulation program from a local (or direct), remote-display connection, after set-up requirements and procedures have been completed, the user must use the same procedure as described above for the distant, remote-display connection. However, in this case, the user will have direct and immediate access into the MODEL 2500.



## **WARRANTY CLAIM REQUIREMENTS**

To make a warranty claim, you, the Purchaser, must:

1. Provide Daniel with proof of the Date of Purchase and proof of the Date of Shipment of the product in question.
2. Return the product to Daniel within twelve (12) months of the date of original shipment of the product, or within eighteen (18) months of the date of original shipment of the product to destinations outside of the United States. The Purchaser must prepay any shipping charges. In addition, the Purchaser is responsible for insuring any product shipped for return, and assumes the risk of loss of the product during shipment.
3. To obtain Warranty service or to locate the nearest Daniel office, sales, or service center call (281) 897-2900, Fax (281) 897-2901, or contact:

Daniel Measurement Services  
19203 Hempstead Highway  
Houston, Texas 77065

When contacting Daniel for product service, the purchaser is asked to provide information as indicated on the following "Customer Problem Report".

Daniel Measurement Services offers both on call and contract maintenance service designed to afford single source responsibility for all its products.

Daniel Industries, Inc. reserves the right to make changes at any time to any product to improve its design and to insure the best available product.



**DANIEL INDUSTRIES, INC.  
CUSTOMER PROBLEM REPORT**

FOR FASTEST SERVICE, COMPLETE THIS FORM, AND RETURN IT ALONG WITH THE AFFECTED EQUIPMENT TO CUSTOMER SERVICE AT THE ADDRESS INDICATED BELOW.

COMPANY NAME: \_\_\_\_\_

TECHNICAL CONTACT: \_\_\_\_\_ PHONE: \_\_\_\_\_

REPAIR P. O. #: \_\_\_\_\_ IF WARRANTY, UNIT S/N: \_\_\_\_\_

INVOICE ADDRESS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

SHIPPING ADDRESS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

RETURN SHIPPING METHOD: \_\_\_\_\_

EQUIPMENT MODEL #: \_\_\_\_\_ S/N: \_\_\_\_\_ FAILURE DATE: \_\_\_\_\_

DESCRIPTION OF PROBLEM: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

WHAT WAS HAPPENING AT TIME OF FAILURE? \_\_\_\_\_

\_\_\_\_\_

ADDITIONAL COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

REPORT PREPARED BY: \_\_\_\_\_ TITLE: \_\_\_\_\_

IF YOU REQUIRE TECHNICAL ASSISTANCE, PLEASE FAX OR WRITE THE MAIN CUSTOMER SERVICE DEPARTMENT AT:

DANIEL MEASUREMENT SERVICES  
ATTN: CUSTOMER SERVICE  
19203 HEMPSTEAD HIGHWAY  
HOUSTON, TEXAS 77065

PHONE: (281) 897-2900  
FAX: (281) 897-2901





The sales and service offices of Daniel Industries, Inc. are located throughout the United States and in major countries overseas.

Please contact Daniel Measurement Services at 19203 Hempstead Highway, Houston, Texas 77065, or phone (281) 897-2900 for the location of the sales or service office nearest you.

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Daniel Measurement and Control reserves the right to make changes to any of its products or services at any time without prior notification in order to improve that product or service and to supply the best product or service possible.

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