This section contains information for the use of MDP-LINK software.

A personal computer (PC), along with MDP-LINK, provide local user interface to the relay for operating personnel. This interface is available in two different serial communications protocols (RS232 and RS485). To determine if your MDP contains this interface check the MDP model number as shown:

- **MDP4xxxxxxDA** – RS232

- **MDP5xxxxxxDA** – RS485

x = don't care

6.2 SYSTEM REQUIREMENTS

a) HARDWARE

The minimum PC hardware requirements consists of the following components.An IBM-AT or compatible (Compaq, Dell, HP, etc.) with one parallel port, a minimum of 500 KB of free memory (RAM) to run the program in, 40 MB hard drive, low density 3 1/2 inch floppy drive, and VGA monitor. See Figure 6–1: RS232 CABLE CONNECTION and Figure 6–2: RS485 CABLE CONNECTION for proper PC to MDP wiring.

b) SOFTWARE

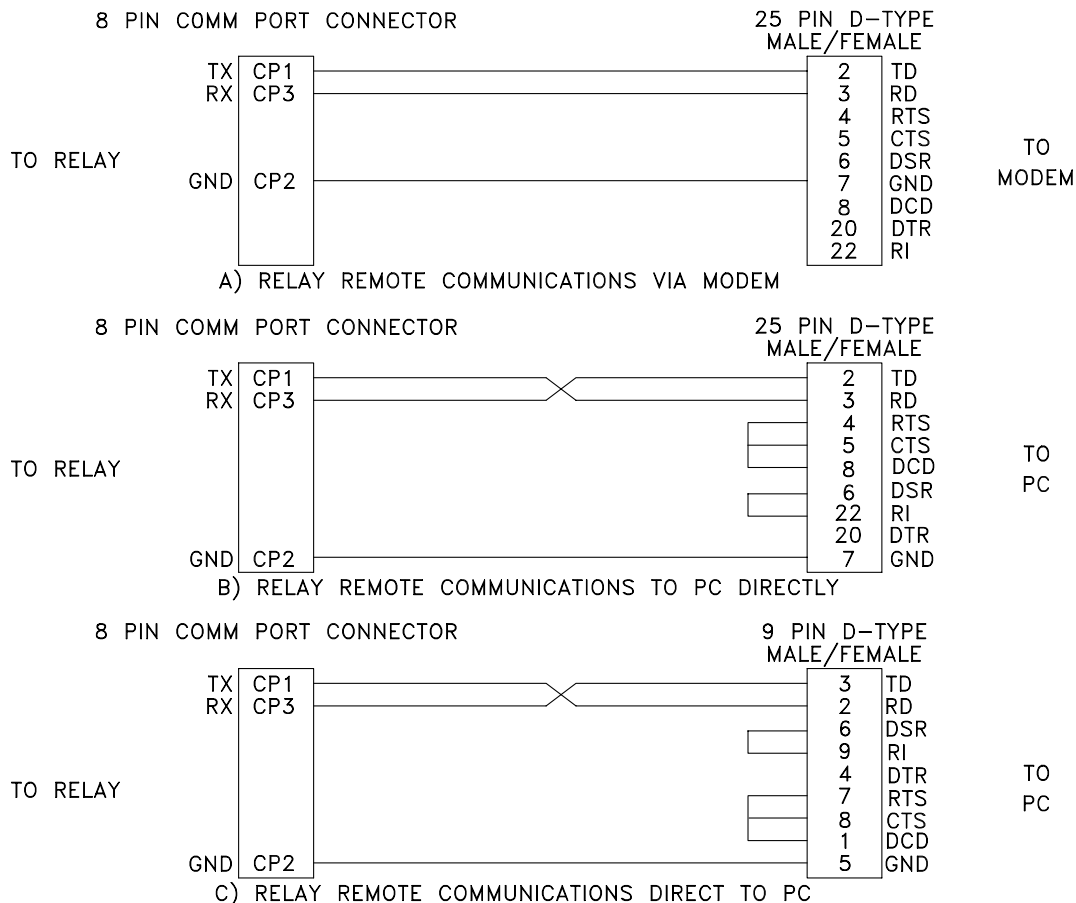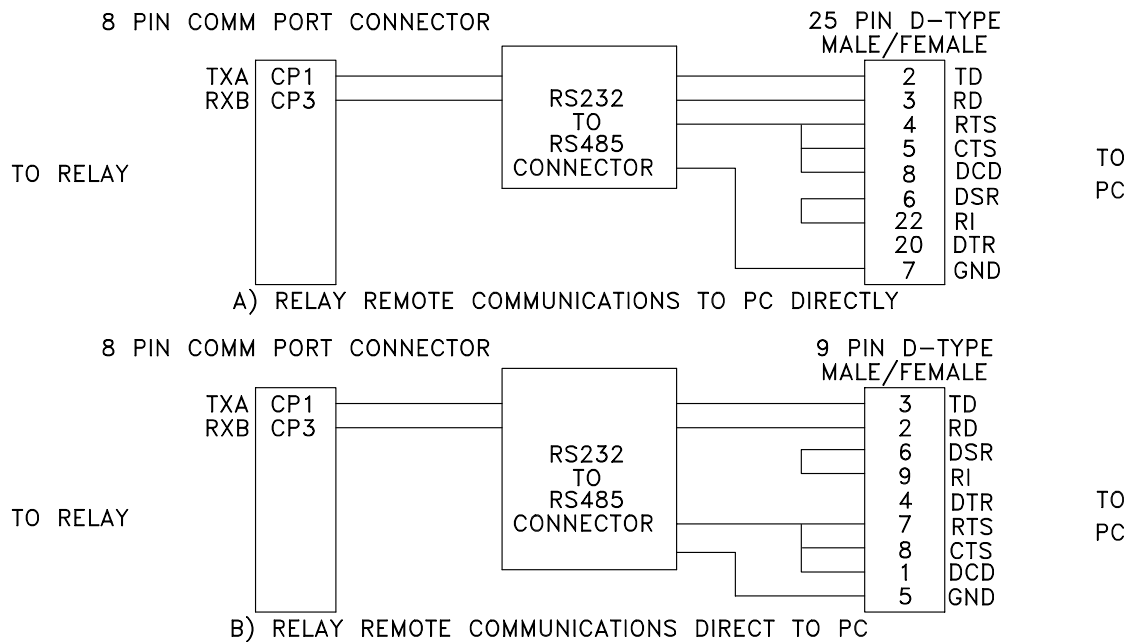Requires MS-DOS 3.1/Windows 3.1/ Windows 95 or above for the PC operating system.

Figure 6–1: RS232 CABLE CONNECTION

8 PIN COMM PORT CONNECTOR   25 PIN D—TYPE
                                              MALE/FEMALE

TXA | CP1 | RS232 | 2 | TD
RXB | CP3 | TO | 3 | RD   TO
                           RS485 | 4 | RTS   PC
TO RELAY   CONNECTOR | 5 | CTS
                                          | 8 | DCD
                                          | 6 | DSR
                                          | 22 | RI
                                          | 20 | DTR
                                          | 7 | GND

A) RELAY REMOTE COMMUNICATIONS TO PC DIRECTLY

8 PIN COMM PORT CONNECTOR   9 PIN D—TYPE
                                              MALE/FEMALE

TXA | CP1 | RS232 | 3 | TD
RXB | CP3 | TO | 2 | RD
                           RS485 | 6 | DSR
TO RELAY   CONNECTOR | 9 | RI   TO
                                          | 4 | DTR   PC
                                          | 7 | RTS
                                          | 8 | CTS
                                          | 1 | DCD
                                          | 5 | GND

B) RELAY REMOTE COMMUNICATIONS DIRECT TO PC

2 WIRE CONFIGURATION *

JUMPER	2 WIRE RS485
P1	YES
P8	YES
P9	YES

TERMINATION *

JUMPER	NO TERMINATION	120 OHM TERMINATION
P2	NO	YES
P3	NO	YES
P4	NO	YES
P5	NO	YES
P6	NO	YES
P7	NO	YES

* SEE INSTALLATION REPLACEMENT PROCEDURE FOR COMMUNICATION
  CARD TO CHANGE JUMPER POSITION.

Figure 6–2: RS485 CABLE CONNECTION

a) MOUSE/KEYBOARD USAGE

Either the mouse or the keyboard can be used to access all items in menus, dialog boxes and list boxes. For a description of how to use the mouse and keyboard in the various boxes and menus, refer to the following sections for menus and dialog boxes. For full manipulation of graphical data, the mouse is required.

b) MAIN HORIZONTAL MENU BAR

Items in the main horizontal menu are selected in one of three ways:

1. Position the mouse cursor on top of the menu item and click the left button.

2. Use a hot key. The hot key is the combination of the ALT key and the letter that is highlighted in the item description (blue).

3. Once either of the above methods has been used to select an item on the menu, indicated by one item being highlighted, the RIGHT and LEFT arrow keys can be used to go to adjacent menu items.

If the menu is not visible, use the DOWN arrow key to display the menu.

c) PULL-DOWN MENUS

Pull-down menu items are selected with the mouse or the keyboard:

*   With the mouse, position the mouse cursor on top of the menu item then press the left button once and release it (hereafter known as clicking on the mouse button) to display the pull-down menu. If the user wishes to select an item in the pull-down menu, position the mouse over the desired item and click on the left mouse button.

    Both may be done at once by positioning the cursor over the menu item on the menu bar and holding the left mouse button down, moving the mouse cursor to the desired entry and the releasing the mouse button.

*   With the keyboard, activate the hot key by holding the ALT key and striking the highlighted key. Using a hot key will activate the associated menu or dialog box. If there is no hot key for a desired menu item, use the UP and DOWN arrow keys to highlight the desired item, then press the ENTER key. Pressing the ENTER key will activate the associated menu or dialog box.

d) DIALOG BOXES

Dialog boxes are generally characterized by a title bar, a grey box, and OK and CANCEL buttons. The dialog box cannot be moved or resized. In addition, when a dialog box is displayed, the user can only access items in the dialog box, not any other items on the screen.

If an item in the dialog box has a title with a highlighted character (blue in the default color scheme), the user can access this item from the keyboard by using the ALT key with the highlighted character (the hot key).

Items in a dialog box can also be accessed from the keyboard by using the cursor keys: UP/DOWN/LEFT/ RIGHT arrow keys, PAGE UP/DOWN keys and the TAB/SHIFT TAB keys. In any dialog box the TAB key will move sequentially in one direction, or the SHIFT TAB key in the opposite direction, selecting items in the dialog box with each keystroke. The other cursor keys will generally move within a selected item.

Buttons in the dialog box can be accessed from the keyboard by using the UP/DOWN arrow keys, the TAB/ SHIFT TAB keys, or if the button has a highlighted character, the hot key. If the buttons require the user to make a selection, the selection is made by using the ENTER key.

To exit from the dialog box and clear it from the screen, the user selects either the OK button or the CANCEL button. The mouse can be used to select these buttons by moving the mouse cursor over the button and clicking the left mouse button. In addition, the keyboard can be used to select these buttons by using their hot keys. The hot key for the OK button is ALT-O and the hot key for the CANCEL button is ALT-C.

The mouse can be used to select any item in a dialog box by moving the cursor with the mouse to the desired item and clicking on it with the left mouse button.

The OK button accepts the selection(s) made by the user and allows the program to use these selections. The CANCEL button does not accept the selections made by the user and thus the program uses the previous selections. Any highlighted button can be selected by striking the ENTER key.

e) LIST BOXES

A list box is another box within a dialog box that lists all choices for an item in the dialog box (for example, a list of file names). If the list of available entries is longer than the displayed list box, the list box has a vertical scroll bar that allows the user to scroll through the list.

To operate the scroll bar with the mouse, place the tip of the pointing arrow cursor in the gray hatched area, or on the arrows at the top and bottom of the scroll bar and click on the left mouse button. If the mouse arrow cursor is in the grey hatched area, then the contents of the list box will move a section at a time. If the mouse cursor is on one of the arrows at the top or bottom, the contents of the list box will move one line at a time. Holding down the mouse button will cause the movement to be repeated until the mouse button is released.

Once the desired item can be seen, click on the item with the left mouse button to select it. Once an item has been selected it will be highlighted.

To operate the scrolling of the list box with the keyboard, use the PAGE UP/DOWN keys to move the contents of the list box a section at a time and the UP/DOWN arrow keys to move the contents one line at a time. Holding down the keys will cause the movement in the list box to repeat until the key is released.

Use the UP/DOWN arrow keys to select the desired item. The selected item is the highlighted one.

- The following table lists the valid keys and their functions for list boxes:
- UP ARROW   Move up one selection.
- DOWN ARROW   Move down one selection.
- PAGE UP   Move up one page of selections.
- PAGE DOWN   Move down one page of selections.
- HOME   Move to the first selection.
- END   Move to the last selection.
- RETURN   Accept the current selection and exit the list box.
- ALT-X   Exit the list box without making a selection.

f) ENTERING TEXT AND NUMBERS

The following keys are used when entering and editing text and numbers.

- LEFT ARROW   Move the cursor one character to the left.
- RIGHT ARROW   Move the cursor one character to the right.
- DELETE   Delete the character at the cursor.
- BACKSPACE   Delete the character to the left of the cursor.
- INSERT   Toggle between the insert and overwrite mode. Overwrite mode is indicated by an underscore character cursor; Insert mode is indicated by a block character cursor.
- ENTER   Accept the text or number in the field/box
- ESCAPE   Clear the text or number in the field/box.

The first keystroke other than the arrow keys will clear the field/box; this enables a new entry without having to clear the box first. If a minor change is desired and the user does not wish to clear the field/box, move the cursor first and then do the editing to the entry.

a) MAIN MENU

The main horizontal menu has the following items and hot keys.

- Relay Functions   ALT-R

- Local Functions   ALT-L

- Setup   ALT-S

- Help   ALT-H

Each item in the main horizontal menu has a pull-down menu associated with it.

6.5 RELAY FUNCTIONS

Relay functions has the following menu items and associated hot keys:

- Login   ALT-L

- lOgout   ALT-O

- Hang up phone   ALT-H

- request relay Data   ALT-D

- request Fault data   ALT-F

- Reset fault data   ALT-R

- Breaker status   ALT-B

- Trip breaker   ALT-T

- Close breaker   ALT-C

a) LOGIN

Login is used to gain access to the relay. The Login dialog box contains a list of the currently configured relays, a place to enter the unit ID, a button for adding a new MDP relay to the list of configured relays, an OK button and a CANCEL button.

The list of currently configured MDP systems contains the unit description, phone number, baud rate, and multiplexor switch code for each MDP system.

The NEW RELAY button in the dialog box allows the user to add a relay that has not been previously entered into the list of configured relays. The user enters the unit description, the phone number, the multiplexor switch code, the baud rate, the parity and the stop bits for the new relay. The new relay is added to the list of configured relays.

Once a relay has been picked from the list or entered as a new one, the Unit Id must be entered in order to communicate with the correct MDP system. When the correct Unit Id has been entered, click on the OK button with the left mouse button or use the ALT-O hot key to login.

To exit login use the CANCEL button by clicking on it with the left mouse button or using the ALT-C hot key.

b) LOGOUT

Logout is used to end a communications session with an MDP system and prepare MDP-LINK to communicate with another MDP relay. In order to communicate with another MDP system, lOgout must be used. To select lOgout click on the menu item with the left mouse button or use the ALT-O hot key.

6

c) HANG UP PHONE

This selection will disconnect the phone line at the modem. If the user is logged in to the relay, The logout procedure will be completed before hanging up the phone. To pick this selection, use the hot key ALT-H or click on the menu item with the left mouse button.

d) REQUEST RELAY DATA

This item allows the user to display, print and/or file the present relay values of current, LED status and switch status. To choose this item, either click on it with the left mouse button or use the ALT-D hot key. Once this item is selected, a dialog box will appear with three independent choices for displaying, printing and filing the relay data. To change any of the three choices, either click on it with the left mouse button or use the TAB key to highlight the selection and the space bar to change it. An X in the brackets indicates that choice has been selected and no X indicates that choice has not been selected. At least one must be chosen for the relay data to be retrieved from the relay.

If the user chooses to save the report in a file, a file name must be entered in the box supplied. To enter the file name, either move the mouse cursor to the box and click on the left mouse button or use the TAB key to highlight the box. Once the box has been selected, enter the filename followed by the ENTER key.

After all the choices have been made, click on the OK button, or use the ALT-O hot key, to retrieve the report from the relay. Selecting the CANCEL button will return to the Relay functions menu without any further action. If the report is displayed, when finished either click on the small box in the upper left corner with the left mouse button, or use the ALT-F4 hot key (F4 is the Function key F4, not the F key followed by the 4 key.). Once the relay data has been cleared from the screen, the **relay Data** dialog box will be redisplayed. Use the ALT-C hot key or click on the CANCEL button to exit relay Data.

e) REQUEST FAULT DATA

This item allows the user to display, print and/or file the data for the last fault. To select this menu item, either click on it with the left mouse button or use the ALT-F hot key. Once this item is selected, a dialog box will appear with three independent choices for displaying, printing and filing the fault values. To change any of the three choices, either click on it with the left mouse button or use the TAB key to highlight one of the selections and the UP/DOWN ARROW keys to choose one of the three choices. An X in the brackets indicates that choice has been selected and no X indicates that choice has not been selected. Use the space bar to change any of the choices. At least one must be chosen for the fault data to be retrieved from the relay.

If the user chooses to save the report in a file, a file name must be entered in the box supplied. To enter the file name, either move the mouse cursor to the box and click on the left mouse button, or use the TAB key to highlight the box. Once the box has been selected, enter the filename followed by the ENTER key.

After all the choices have been made, click on the OK button or use the ALT-O hot key to retrieve the fault data from the relay. (Selecting the CANCEL button will return to the Relay functions menu without any further action.) To clear the fault data from the screen after it has been displayed, either click on the small box in the upper left corner with the left mouse button or, use the ALT-F4 hot key (F4 is the Function key F4, not the F key followed by the 4 key). Once the fault report has been cleared from the screen, the **Fault data** dialog box will be redisplayed. Use the ALT-C hot key or click on the CANCEL button to exit.

The user may scroll the screen to view any information which may not fit on one screen. To scroll through the report, use the PAGE UP/DOWN keys, or place the mouse on the UP or DOWN ARROW on the scroll bar and use the left mouse button. Clicking the left mouse button will move one line in that direction and holding the button down will cause the scrolling to happen repetitively.

f) RESET FAULT DATA

This item will clear the data associated with the last fault which is stored in the relay. To select this menu item, either click on it with the left mouse button or use the ALT-R hot key.

After the item has been selected, a dialog box will appear to confirm that the data is to be reset. If the data is not to be reset, click on the CANCEL button or use the ALT-C hot key to return to the Relay functions menu. If the data is to be reset, click on the OK button or use the ALT-O hot key to reset the fault data in the relay.

g) BREAKER STATUS

This item menu will display, print, and/or file the status of the Breaker Status input (CP-7 and CP-8). If this input is energized it will report "Breaker Closed", if this input is not energized it will report "Breaker Tripped".

To select this menu item, either click on it with the left mouse button or use the ALT-B hot key. Once this item is selected, a dialog box will appear with three independent choices for displaying, printing and filing the breaker status. To change any of the three choices, either click on it with the left mouse button or use the TAB key to highlight one of the selections and the UP/DOWN ARROW keys to choose one of the three choices. An X in the brackets indicates that choice has been selected and no X indicates that choice has not been selected. Use the space bar to change any of the choices. At least one must be chosen for the breaker status to be retrieved from the relay.

If the user chooses to save the report in a file, a file name must be entered in the box supplied. To enter the file name, either move the mouse cursor to the box and click on the left mouse button, or use the TAB key to highlight the box. Once the box has been selected, enter the filename followed by the ENTER key.

After all the choices have been made, click on the OK button or use the ALT-O hot key to retrieve the breaker status from the relay. (Selecting the CANCEL button will return to the Relay functions menu without any further action.) To clear the breaker status from the screen after it has been displayed, either click on the small box in the upper left corner with the left mouse button or, use the ALT-F4 hot key (F4 is the Function key F4, not the F key followed by the 4 key). Once the breaker status has been cleared from the screen, the **Breaker status** dialog box will be redisplayed. Use the ALT-C hot key or click on the CANCEL button to exit.

h) TRIP BREAKER

This item will operate the K1 and K2 output relays for 1 second (See Figure 6).

To select this menu item, either click on it with the left mouse button or use the ALT-T hot key.

After the item has been selected, a dialog box will appear to confirm that the breaker is to be tripped. If the breaker is not to be tripped, click on the CANCEL button or use the ALT-C hot key to return to the Relay functions menu. If the breaker is to be tripped, click on the OK button or use the ALT-O hot key to trip the breaker.

i) CLOSE BREAKER

This item will operate the K4 output relay for 1 second (See Figure 6).

To select this menu item, either click on it with the left mouse button or use the ALT-T hot key.

After the item has been selected, a dialog box will appear to confirm that the breaker is to be closed. If the breaker is not to be closed, click on the CANCEL button or use the ALT-C hot key to return to the Relay functions menu. If the breaker is to be closed, click on the OK button or use the ALT-O hot key to close the breaker.

6

The Local functions menu has the item and hot key:

- go to <u>D</u>OS   ALT-D

- go to <u>D</u>OS

This choice enables the user to temporarily leave MDP-LINK and go to the DOS prompt to execute DOS commands. Any program or command that can run in the available memory can be executed. To return to the program, type EXIT at the DOS prompt.

The **Setup** menu has the following items and hot keys.

- <u>C</u>ommunication port number   ALT-C

- <u>D</u>ial Type   ALT-D

- <u>M</u>odem connection time   ALT-M

- <u>R</u>elay parameters   ALT-R

- <u>A</u>dd relay to list   ALT-A

- d<u>E</u>lete relay from list   ALT-E

- d<u>I</u>splay mode   ALT-I

- Memory available   no hot key

a) COMMUNICATION PORT NUMBER

The communication port for the PC is chosen with this selection. To select this item, either click on it with the left mouse button or use the ALT-C hot key. Once this item is selected, a dialog box containing the port number and IRQ number will be displayed. The serial port that is connected to the MDP system, or the modem used to talk to the MDP system, must be entered before logging in to the relay. If the port chosen is not COM1(1) or COM2(2), the IRQ number for the port chosen must be entered. Use the TAB key to move between the port and IRQ fields and the buttons, or click on the desired field with the left mouse button.

Once a field has been selected, use the editing keys to change and/or enter data. When the port and IRQ numbers are correct, select the OK button to save the numbers. If the CANCEL button is selected, the **Setup** menu will be redisplayed without any further action.

b) DIAL TYPE

To select this item, either click on it with the left mouse button or use the ALT-D hot key. Once this item is selected, a dialog box containing the dialing type will be displayed. Either tone or pulse dialing can be chosen. The UP and DOWN ARROW keys will toggle between the tone and pulse choices. The TAB key will move between the selected dialing type and the OK and CANCEL choices in the box. Once the dialing type has been chosen, selecting the OK button will store the change. Selecting the CANCEL button will exit Dial type without any further action.

c) MODEM CONNECTION TIME

This item will change the time-out period for MDP-LINK to wait for the modem to make a connection. To select this item, either click on it with the left mouse button or use the ALT-M hot key. The modem connection time can be set for any time up to 999 seconds, provided the modem being used will accommodate that long a time-out period. This setting is useful for applications where the modem is set to pickup after a large number of

rings, especially if the phone system has a lot of delay in making the initial connection. Once a connection time has been set, selecting the OK button with the left mouse button or the ALT-O hot key will store the new time-out period. Selecting the CANCEL button will exit this item without any further action.

d) RELAY PARAMETERS

Relay parameters allows the communication parameters for a specific relay unit description to be changed or viewed. An entry in the list must be selected first, by clicking on it with the mouse or using the UP and DOWN ARROW keys to highlight the selection, and pressing the ENTER key.

Once a relay unit description has been picked, another window appears with the phone number, switch code, baud rate, number of stop bits, parity, and the serial communications protocol for the selected relay unit description. Any of the entry values may be selected by clicking on it with the mouse or using the TAB key to move between the items, and then using the UP and DOWN ARROW keys to select the value for that item. To exit the dialog box for that unit description, select either the OK button or the CANCEL button. The OK button will accept the values in the dialog box and store them. Selecting the CANCEL button will exit the dialog box and will use the values that were already present when the unit description was selected.

The user should note that once a unit description has been picked, there are no more hot keys available to select items. The TAB key may be used to move from item to item, or the mouse may be used to select a specific item at any time.

To enter or change the phone number, select it by clicking on it with the left mouse button or use the TAB key to move the cursor to the phone number box. The normal text editing keys may be used to enter or modify the phone number. This is an optional item, and should only be filled in if MDP-LINK is using a modem for the unit being described.

To enter or change the switch code, select it by clicking on it with the left mouse button or use the TAB key to move the cursor to the switch code box. The normal text editing keys may be used to enter or modify the phone number. This is an optional item, and should only be filled in if a code- operated switch is being used.

The baud rate must be set at 2400 baud. A choice of one stop bit must be made for communications to work properly. The parity must be set to None.

The serial communications protocol depends on which MDP you have. If your model number is MDP3XXXXXXCA then you must select RS485, however, if your model number is MDP4XXXXXXCA then you must select RS232.

e) ADD RELAY TO LIST

Selecting this item will enable the user to add a unit description and the related values to the list of stored relay unit descriptions. The user can either move the mouse cursor to the entry in the menu and click on the left mouse button or use the hot key ALT-A to select this entry. Once the entry has been selected, the user is prompted for a unit description. The description is limited to 20 characters. After the description has been entered, the user can either click on the OK button with the left mouse button or use the ALT-O hot key to accept it. (Selecting the CANCEL button will not add the new unit description and will exit the user from the menu entry.)

After the new unit description has been accepted, a dialog box will appear with the phone number, switch code, baud rate, stop bits, parity, and serial communications protocol items. Each item can be selected with the TAB or SHIFT TAB key and a value chosen with the UP and DOWN ARROW keys, or a value can be chosen by placing the mouse cursor over the desired value and clicking on the left mouse button.

f) DELETE RELAY FROM LIST

This item allows the user to delete a relay unit description from the configuration file. To select this item, either click on it with the left mouse button or use the ALT-E hot key. Once this item has been selected, a dialog box will be displayed containing a list box with all the relay unit descriptions and the OK and CANCEL buttons.

6

The user selects the desired relay from a list box displaying the unit descriptions and logon parameters by using the UP and DOWN ARROW keys to highlight the desired relay and pressing the ENTER key, or moving the mouse cursor to the desired relay and clicking on it with the left mouse button. Selecting the OK button with the ALT-O hot key or clicking on it with the left mouse button will mark the unit description for deletion. Selecting the CANCEL button will exit without deleting any relay unit descriptions. If the OK button is selected, the user is asked to confirm the deletion of the unit description. Selecting the OK button will delete the relay unit description. Selecting the CANCEL button will return to the list box without deleting any relay unit description. Selecting the CANCEL button in the list box will exit from the menu entry.

g) DISPLAY MODE

This item will change the colors of the display to be more compatible with either a color display or a display for a portable or laptop computer. To select this item, use the ALT-I hot key or click on the menu item with the left mouse button. After selecting this item a dialog box will appear with a choice for color mode or black and white mode. To select an item either click on it with the left mouse button or use the TAB key to highlight the choice and use the SPACE BAR to toggle the X on and off. If there is an X next to a choice it has been selected. Only one mode can be selected and once a mode is selected the other mode is automatically deselected.

Once the correct mode has been selected, click OK press the ALT-O hot key. To exit this dialog box without any further action, click on CANCEL with the left mouse button or use the ALT-C hot key.

h) MEMORY AVAILABLE

To display the amount of available memory while MDP-LINK is running either click on this menu item with the left mouse button, or use the UP or DOWN ARROW keys to highlight the menu item, and hit the ENTER key. There is no hot key for this item.

6.8 HELP

This item displays a pull-down menu with a selection of topics for which help exists. This pull-down menu is different from the other pull-down menus in that the items do not have hot keys associated with them. The user must either click on the mouse or use the UP and DOWN ARROW keys followed by the ENTER key, to access the menu items.

6.9 EXITING MDP-LINK

There are two ways to exit MDP-LINK:

1. ALT-F4 produces a dialog box with the exit message. Selecting the OK button with the mouse or using the ALT-O hot key will exit MDP-LINK. Selecting the CANCEL button will return the program without exiting.

2. The ALT key combined with the space bar will produce the System Menu after all menus have been cleared from the screen. Choosing the CLOSE entry, with the mouse or the hot key ALT-C, will produce a dialog box with the exit message. Selecting the OK button with the mouse or using the ALT-O hot key will exit MDP-LINK. Selecting the CANCEL button will return to the program without exiting. NOTE: To exit MDP-LINK, all dialog boxes and list boxes must be cleared from the screen. It is not necessary to clear all the menus from the screen.