

**INSTALLATION  
and  
OPERATING  
INSTRUCTIONS  
for the  
ELTERM 24  
REMOTE OPERATOR  
PANEL**



RECORD OF REVISIONS		
Revision	Date	Description
A	1/24/2000	Initial Release

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**CAUTION:**

**This unit is designed for 24 VDC maximum input only (see Section 4.2, Electrical Specifications).**

**WARRANTY RESTRICTIONS**

Reconfiguration of the unit in any fashion not shown in this manual will void the Warranty.

Failure to follow the installation guidelines as described in Section 3 will void the Warranty.

## **SECTION 1: INTRODUCTION**

### **1.1 USING THIS MANUAL**

It is important that you understand how the ELTERM 24 Operator Interface panel is installed and operated before you attempt to use it. **We strongly recommend that you read this manual completely before proceeding with the installation of this unit.**

This manual is an installation and operating guide to the ELTERM 24 Operator Interface panel. Section 1 gives an overview of the panel and its features. Section 2 describes the steps necessary to place it into operation. General wiring guidelines as well as the physical mounting of the unit and connections are covered in Section 3.

Complete specifications, listed in Section 4, provide easily referenced information concerning electrical, mechanical and environmental specifications.

Sections 5 - 7 describe the transmit character codes and programming commands required in order to communicate with the ELTERM 24 display terminal.

Appendix A provides sample programs and the "Include" file which are provided with the ELTERM 24 Operator Interface panel.

## 1.2 PRODUCT FEATURES

The ELTERM 24 is a compact operator interface panel which is pre-configured for use with Superior Electric's Warpdrive™ Series Step Motor Controls, TD Series Servo Controls, and MX2000 Series Multi-axis Controls. It features an easy to read back-lit LCD display (4 x 20 characters) and 24 tactile keys. A variety of subroutines (Appendix A) are available for use in programming the associated controls.

Additional Features include:

- IP66 rated when mounted with supplied gasket
- 4 line 20 character display
- RS485 serial link to associated control
- Full numeric key pad with tactile response
- 4 function keys
- Up-Down and Left-Right keys
- Input Power 12-24 VDC, 300mA
- (Optional supply, P/N 227928-001 may be used)
- Compact space saving size
- Subroutines for common tasks available
- Includes pre-wired interface cable 4.6 ft (1.4m)

## 1.3 FUNCTIONAL DESCRIPTION

### ELTERM 24 Operator Interface Terminal

The ELTERM 24 is a simple operator interface "dumb" terminal designed to operate with an intelligent control. The Terminal has two primary functions; display data/messages sent from the control on its screen and transmit keypresses to the control via its keypad.

All display maintenance is provided by the control. This includes displaying characters, erasing characters, and cursor positioning. The ELTERM 24 does not echo keypresses to its display. Therefore the control must transmit all characters received from the ELTERM 24 back to the terminal for display.

The ELTERM 24 also has a key repeat feature which can not be disengaged. When a key is pressed, the character is transmitted, then after a delay of about 0.5 seconds, if the key is still depressed, the same character is re-transmitted at a speed of 10 per second.

### Power Supply

The ELTERM 24 Operator Interface requires a 12-24VDC 300mA power source. The recommended power supply is Part Number 227928-001 which is a 24VDC 300mA switching supply. Wiring connections and dimensions are given in Section 3, additional specifications are provided in Section 4.

## SECTION 2: EXPRESS START UP PROCEDURE

The following instructions define the minimum steps necessary to make your **Operator Interface Terminal** operational with the recommended power supply.

### CAUTION:

**Always disconnect the power to the unit and be certain that the "DC ON" LED, located on the power supply, is OFF before connecting or disconnecting the interface cable leads. FAILURE TO DO THIS MAY DAMAGE THE TERMINAL.**

1. Check to see that the control used is compatible with the terminal. Refer to Section 6 for a list of controls.
2. Program the control to accept and display keypresses from the terminal. Refer to Sections 6, 7 and Appendix A.
3. Install/mount the ELTERM 24 and power supply. See Section 3.1 for panel cutout and mounting information.
3. Connect the AC power source to the AC input terminals on the power supply, see Section 3.2 for connections. Verify the output power is 24VDC (between -V and +V) and adjust as necessary using the V.ADJ potentiometer. Once output voltage is adjusted correctly disconnect AC input.
4. Wire the Terminal per the "Connections" description in Section 3.2.
5. Apply the AC power source to the AC input terminals .

### NOTES:

Turning the V.ADJ potentiometer clockwise increases the output voltage, counterclockwise decreases the output voltage. Adjustment range is  $\pm 10\%$  of the nominal output voltage.

## SECTION 3: INSTALLATION GUIDELINES

### 3.1 MOUNTING

#### ELTERM 24 Operator Interface Terminal

The terminal is mounted by inserting it into a panel cutout then using the supplied mounting brackets and gasket to keep it in place.

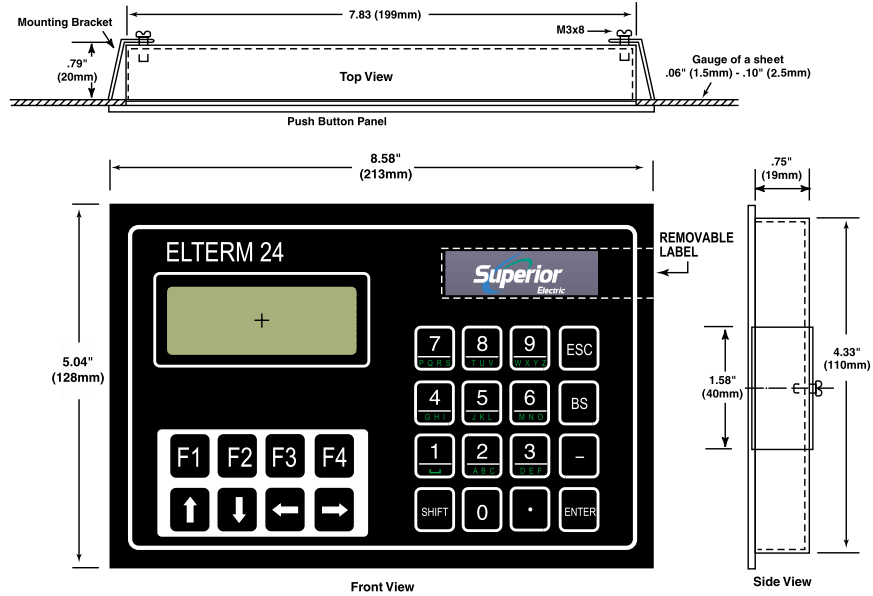
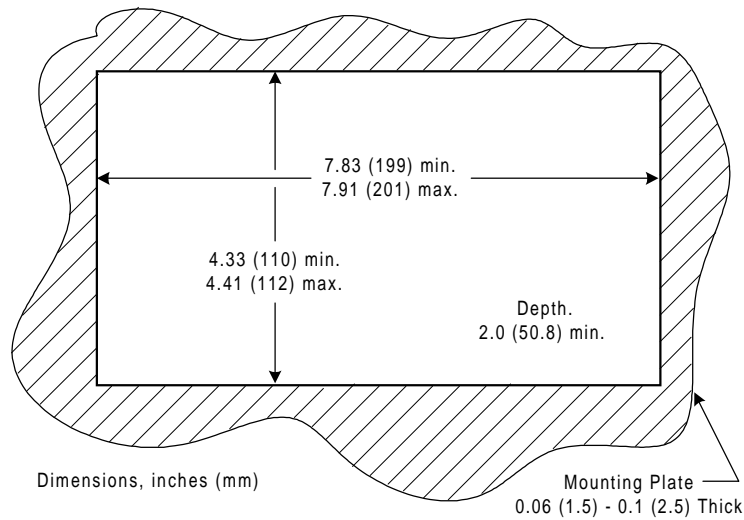


Figure 3.1a, ELTERM 24 Mounting Diagram

When selecting a mounting location, it is important to leave at least two inches (51mm) of space around the top, bottom and sides of the unit to allow proper airflow for cooling. Refer to cutout diagram below.

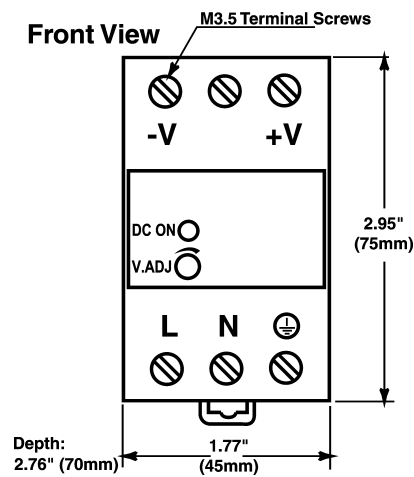
It is also important to keep the terminal away from obvious sources of electrical noise. If possible, locate it in its own metal enclosure to shield it and its wiring from electrical noise sources. If this cannot be done, keep it at least three feet from any noise sources.



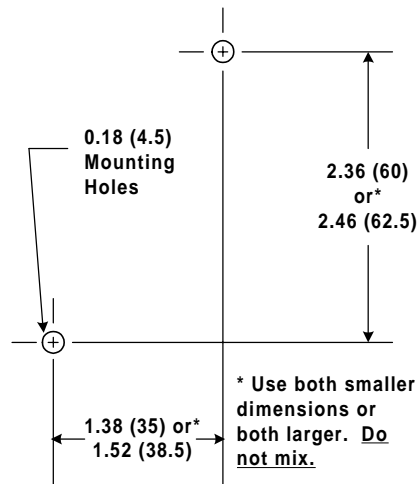
**Figure 3.1b, ELTERM 24 Panel Cutout Diagram**

### Power Supply

The 24VDC switching power supply can either be mounted using a standard DIN rail, 1.39" (35.3mm) wide, or panel mounted using the mounting holes provided. The following diagrams provide overall dimensions and mounting hole layout.



**Figure 3.2a,  
Power Supply Dimensions**



**Figure 3.2b,  
Panel Mounting Hole Layout**

### 3.2 CONNECTION DIAGRAMS

Figures 3.3a - 3.3c show connections between the ELTERM 24 and a control. Refer to the figure for the applicable control. Power connections are also provided.

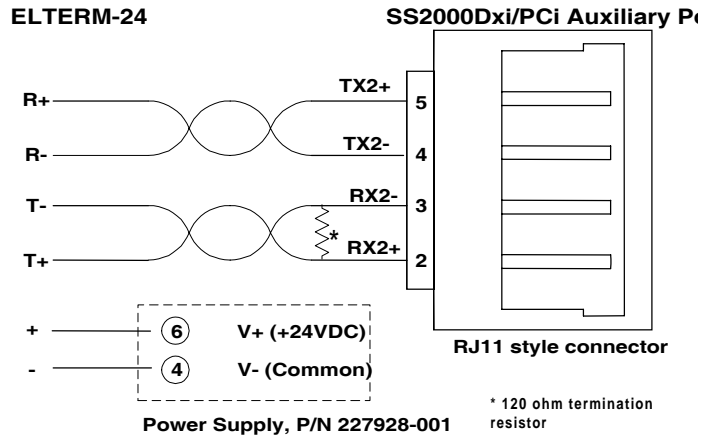


Figure 3.3a, SS2000D3i/D6i/PCi Connections

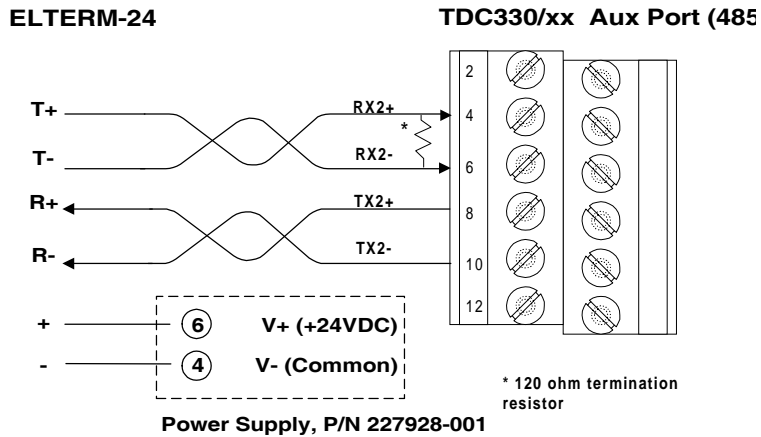
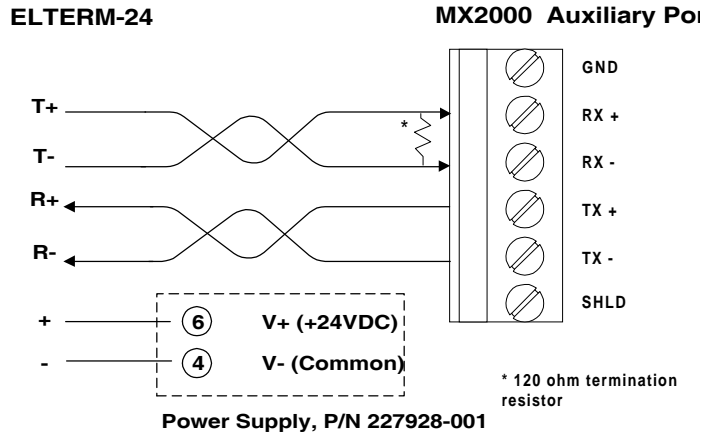


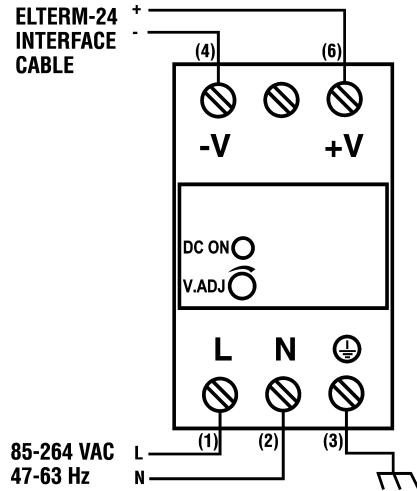
Figure 3.3b, TDC330/04, TDC330/08 Connections



**Figure 3.3c, MX2000-xx Connections**

**POWER SUPPLY CONNECTIONS**

The dc output power is connected to pins 6 (V+) and 4 (V-). Figure 3.4 provides dc power connections to the ELTERM 24 terminal from the 24VDC switching power supply (P/N 227928-001) and AC power connections to the power supply.



**Figure 3.4  
Power Supply Connections**

## SECTION 4: SPECIFICATIONS

### 4.1 MECHANICAL SPECIFICATIONS

	ELTERM 24	Power Supply, 227928-001
Size (Inches)	5.04 H x 8.58 W x 0.75 D	2.95H x 1.77W x 2.76D
Size (mm)	128 H x 213 W x 20 D	75H x 45W x 70D
Weight	2.2 pounds (1 Kilogram)	5.0 oz (141.7 gram)

### 4.2 ELECTRICAL SPECIFICATIONS

	ELTERM 24	Power Supply, 227928-001
Input Range	12-24 VDC	85 – 264 VAC
Frequency	N/A	47 – 63HZ
Current	300mA	0.17A

### 4.3 ENVIRONMENTAL SPECIFICATIONS

	ELTERM 24	Power Supply, 227928-001
Operating Temperature	23° F to +122° F (-5° C to +50° C) free air ambient, Natural Convection	14° F to +140° F (-10° C to +60° C)
Humidity	<70% relative	20 - 90 % RH
Altitude	6,562 feet (2000 m) max	6,562 feet (2000 m) max

## SECTION 5: ELTERM 24 TRANSMIT CHARACTER CODES

The following table lists the keys on the operator interface panel and the corresponding ASCII code which will be transmitted to the control.

ELTERM 24 TRANSMIT CHARACTER CODES			
Key	ASCII Code	Key	ASCII Code
BS	08	7	55
ENTER	13	8	56
ESC	27	9	57
-	45	F1	65
.	46	F2	66
0	48	F3	67
1	49	F4	68
2	50	↑	69
3	51	↓	70
4	52	←	71
5	53	→	72
6	54	SHIFT	128

## SECTION 6: EXPANDED SEBASIC COMMANDS

The commands listed below can be used when programming one of the following SLO-SYN<sup>®</sup> controllers:

MX2000	SS2000D3i
TDC	SS2000D6i
SS2000PCi	

EXPANDED SEBASIC CONTROL COMMANDS	
COMMAND	DESCRIPTION
Cursor_ON	Make cursor visible
Cursor_OFF	Make cursor invisible
CLRSCRN	Clear screen and home cursor
CLRLINE	Clear line and reposition cursor on line
LOCATE	Position cursor
DISP	Position cursor and print text
FLUSH_RX_BUFFER	Clear out receive buffer

**Expanded SEBASIC Control Commands Descriptions including syntax. Refer to Section 7 Programming the Control, for program explanations.**

### Cursor\_ON

Action: Makes the cursor visible.

Program Syntax: Cursor\_ON

Remarks: The cursor will become visible in its current location. Refer to the LOCATE command to position the cursor.

### Cursor\_OFF

Action: Makes the cursor invisible.

Program Syntax: Cursor\_OFF

Remarks: The cursor will become invisible in its current location.

### CLRSCRN

Action: Clears the screen and homes the cursor.

Program Syntax: CLRSCRN

Remarks: Clears the screen of all characters and locates the cursor to the upper left corner of the screen.

## **CLRLINE**

Action: Clears the current line and positions the cursor at the end of that line.

Program Syntax: CLRLINE (line#)

Remarks: The specified line will be cleared (erased) with the cursor positioned to the end of that line.

Example: CLRLINE 3  
Clears all characters on line 3 of the display and positions the cursor at the end of line 3.

## **LOCATE**

Action: Position the cursor at a specified row and column position.

Program Syntax: LOCATE row#,column#

Remarks: Positions the cursor at the specified row and column.

Example: LOCATE 2,4  
Positions the cursor on row 2 in column 4.

## **DISP**

Action: Displays text starting from a specified cursor position.

Program Syntax: DISP row#, column#, "Text message"

Remarks: Display text starting from a specified cursor position.

Example: DISP 2,1,"Enter Speed"  
Displays/prints the text "Enter Speed" on the second row starting in column 1.

## **FLUSH\_RX\_BUFFER**

Action: Clears all characters in the receive buffer.

Program Syntax: FLUSH\_RX\_BUFFER

Remarks: Any characters in the receive buffer will be erased/flushed.

## SECTION 7: PROGRAMMING THE CONTROL

### "Include" File- ELTERM24.INC

Define statements allow the programmer to substitute keywords in place of ELTERM 24 escape codes. These define statements, listed below, have been provided in the "Include" file named ELTERM24.INC on the 3.5" disk supplied with the unit . To use the Include file perform the following steps:

Using Windows® Explorer drag the ELTERM24.INC file to the MCPI or MCPI-MA directory, as applicable, depending on which control is being used.

The first line of your task must be: #INCLUDE C:/MCPI/ELTERM24.INC  
(Replace MCPI with MCPI-MA if applicable)

### Define Statements

The following define statements MUST be included in your program if the include file, ELTERM24.INC is not used/available, in order for Expanded SEBASIC commands to compile.

```
#DEFINE CURSOR_ON      PRINT#COM,CHR$(27)+"e";
#DEFINE CURSOR_OFF    PRINT#COM,CHR$(27)+"f";
#DEFINE CLRSCRN       PRINT#COM,CHR$(27)+"E";
#DEFINE CLRLINE @1 LC @1 "          ";
#DEFINE LOCATE @1,@2  PRINT#COM,CHR$(27)+"Y"+CHR$(31+@1)+CHR$(@2+31);
#DEFINE DISP @1,@2,@3 LOCATE @1,@2,@3;
#DEFINE FLUSH_RX_BUFFER DO : KEYPRESS=INCHAR(COM)
                        : LOOP UNTIL KEYPRESS=0
#DEFINE LC @1         PRINT#COM,CHR$(27)+"Y"+CHR$(31+@1)+CHR$(32);
```

Note: In the CLRLINE define statement there are 20 spaces between the quotes corresponding to the display width of 20 characters.

## APPENDIX A: PROGRAMMING ROUTINES

The following routines have been provided on the enclosed 3.5" floppy disk.

### Jog Routine - Jogrtn.txt

' The following subroutine will Jog the motor. This subroutine can be  
' incorporated into a program, once a certain key is pressed, this  
' subroutine can be called on to jog the motor. For reference,  
' it is recommended that the user refer to the sample program  
' "eltrmsmp.tsk" to see how this subroutine is used in a program.

JOG\_Forward:

```
CLRSCRN           ' Print to the Display
DISP 2,1,"Jogging Forward" ' motor status.
DISP 4,1,"Push <Esc> to STOP"
JOG=1             ' Start jog cycle.
DO                ' Wait until the escape
  Keypress=INCHAR(2) ' Key is pressed.
LOOP WHILE Keypress<>27
STOP              ' Stop jog cycle
RETURN
```

### Getvalue Routine - Getvalue.txt

' This is a sample Getvalue subroutine used for data entry such as Distance  
' or Speed. This subroutine can be used as a guide for writing a user specific  
' subroutine. As a suggestion, refer to the sample program "eltrmsmp.tsk"  
' to see how this subroutine is used in a program. The following  
' items are necessary when customizing a routine:

- 1.) Declaration of variables (except on MCPI-MA)
    - INTEGER row,col,keypress,x,y
    - REAL value,min,max,NewValue
    - STRING\$ fmt\$,NewValue\$
  - 2.) Predefined variables.(row,col,min,max)
    - row=?
    - col=?
    - max=?
    - min=?
    - value=?
- Hint: These values are set in the routine that calls this subroutine. Refer to editrtn.txt.

### Getvalue Routine – Getvalue.txt (Cont.)

```
GetValue:
LOCATE row,col
NewValue$="" ' Resets NewValue$ to zero
DO
  DO
    Keypress=INCHAR(2) ' Continuously loops until a key is
  LOOP WHILE Keypress=0 ' pressed on the ELTERM 24
    Y=INSTR(NewValue$,".") ' Prevent the user from entering
    IF Keypress=46 AND Y<>0 THEN ' more than one decimal point.
      Keypress=9999
    END IF
    Y=INSTR(NewValue$,"-") ' Prevent the user from entering
    IF Keypress=45 AND Y<>0 THEN ' more than one minus sign.
      Keypress=9999
    END IF
  IF KeyPress<58 AND Keypress>44 THEN ' Only accept chars. 0 to 9,
    NewValue$=NewValue$+STRING$(1,KeyPress) ' decimal and the minus sign.
  END IF
  X=LEN(NewValue$) ' If the backspace key is
  IF KeyPress=8 AND X>0 THEN ' pressed, erase the last
    x=x-1 ' digit that was entered.
    NewValue$=LEFT$(NewValue$,x)
  END IF
  NewValue=VAL(NewValue$) ' Convert string data into
  ' an actual number.
  LOCATE row,col ' Position cursor and print
  PRINT USING#2,fmt$,NewValue ' the current value.
LOOP UNTIL Keypress=13 ' Repeat loop until the
' Enter key is pressed.
IF NewValue>min AND NewValue<max
  AND NewValue<>0 THEN
  Value=NewValue ' Accept new value if within
  ' the min and max range.
END IF
KeyPress=27
RETURN
```

## Edit Routine - Editrtn.txt

' This is a sample edit subroutine for any user defined function that requires  
' data entry such as Distance or Speed. This subroutine can be used as a  
' guide for writing a user specific subroutine. This subroutine calls out for  
' another subroutine called "GetValue", hence the two should be used  
' together. As a suggestion, refer to the sample program "eltrmsmp.tsk"  
' to see how this subroutine is used in a program.

' The following items are necessary when customizing a routine:

- 1.) Declaration of variables (except on MCPI-MA)
  - INTEGER row,col,keypress
  - REAL value,min,max,distance
  - STRING\$ fmt\$
- 2.) Determine the Screen Layout
  - DISP 1,3,"Move Distance"
  - DISP 2,1,"in inches="
  - DISP 4,1,"ESC-Exit ENTER-Edit"
- 3.) Determine max and min allowable values
  - min=-9999.9
  - max=9999.9
- 4.) Specify the number format using the fmt\$ variable
  - fmt\$="####.0"
  - Hint: If max=99.9 set fmt\$="##.0"
  - If max=999.9 set fmt\$="###.0"
- 5.) Determine row and column position of the number
  - Hint: The row and column specify the location  
      to position the Data on the screen.

Get\_Distance:

```
CLRSCRN           ' Clear Screen
DISP 1,3,"Move Distance"   ' Print the followings messages
DISP 2,1,"in inches="     ' to the screen.
DISP 4,1,"ESC-Exit ENTER-Edit"

fmt$="####.0"       ' Define the length and layout
                   ' of the parameter.

min=-9999.0        ' Define min value.
max=9999.0         ' Define max value.
Value=Distance
row=2              ' Define the location to
col=11             ' print the parameter.

LOCATE row,col    ' Position cursor.
PRINT USING#2,fmt$,Value ' Prints initial number to the screen.
```

### Edit Routine – Editrtn.txt (Cont.)

```
DO                                     ' Wait for a keypress.
  Keypress=INCHAR(2)
LOOP WHILE Keypress=0

IF Keypress=13 THEN                   ' Go edit value if key press
  CLRLINE 3                           ' is the ENTER key.
  CLRLINE 4
  DISP 4,5,"Edit Value"
  GOSUB GetValue
END IF

IF keypress<>27 THEN                  ' Repeat until ESC key
  GOTO Get_Distance                   ' is pressed

  Distance=value
RETURN
```

### MENU Routine (Menu.txt)

' The following subroutine will print a selection Menu on the screen.  
' For reference, it is recommended that the user refer to the sample  
' program "eltrmsmp.tsk" to see how this subroutine is used in a program.

Menu\_Display:

```
DISP 1,1,"F1-Dist. F3-Repeat"
DISP 2,1,"F2-Speed F4-Exec." ' The DISP command prints the items in
DISP 3,1,"Up Arrow -Jog(+)" ' quotes on the screen of the ELTERM 24.
DISP 4,1,"Dwn Arrow-Jog(-)"
RETURN
```

### Sample Program - Eltrmsmp.tsk

```
#INCLUDE C:\MCPI\Elterm24.inc
```

```
' The INCLUDE statement allows the user to use the SE BASIC
' control commands for the ELTERM 24. When using the #INCLUDE
' command, the user must specify the location of the Elterm24.inc file.
```

```
INTEGER      Keypress,row,col,colnew,x,y,repeat
REAL         value,newvalue,min,max,motorspeed,distance
STRING       fmt$,line2$,NewValue$
' NOTE: Variable declaration is only needed when using the
' MCPI software. This is not necessary on the MCPI-MA software.
```

BEGIN:

```
CURSOR_OFF           ' This section turns off the cursor and
FLUSH_RX_BUFFER     ' clears the screen of the ELTERM 24. It
all
CLRSCRN             ' also gets rid of any junk characters that
                   ' might be in the receive buffer
```

## SAMPLE PROGRAM - Eltrmsmp.tsk (Cont.)

GOSUB Menu\_Display

DO

    Keypress=INCHAR(2)           ' Continuously loops until a key is  
LOOP WHILE Keypress=0           ' pressed on the ELTERM 24

    IF Keypress=65 THEN GOSUB Get\_Distance   ' F1 Key  
    IF Keypress=66 THEN GOSUB Get\_Speed      ' F2 Key  
    IF Keypress=67 THEN GOSUB Get\_Repeat     ' F3 Key  
    IF Keypress=68 THEN GOSUB Execute        ' F4 Key  
    IF Keypress=69 THEN GOSUB JOG\_Forward    ' Up Arrow  
    IF Keypress=70 THEN GOSUB JOG\_Reverse    ' Down Arrow

GOTO Begin

Menu\_Display:

DISP 1,1,"F1-Dist. F3-Repeat"            ' The DISP command prints  
DISP 2,1,"F2-Speed F4-Exec."            ' the items in quotes on the  
DISP 3,1,"Up Arrow -Jog(+)"            ' screen of the ELTERM 24.  
DISP 4,1,"Dwn Arrow-Jog(-)"  
RETURN

Get\_Distance:

    CLRSCRN                                ' Clear Screen.  
    DISP 1,3,"Move Distance"            ' Print the followings messages  
    DISP 2,1,"in inches="                ' to the screen.  
    DISP 4,1,"ESC-Exit ENTER-Edit"  
  
    fmt\$="####.0"                         ' Define the length and layout  
  ' of the parameter.  
  
    min=-9999.9                          ' Define min value.  
    max=9999.9                          ' Define max value.  
  
    Value=Distance  
    row=2                                 ' Define the location to  
    col=11                                ' print the parameter.  
  
    LOCATE row,col                        ' Position cursor.  
  
    PRINT USING#2,fmt\$,Value            ' Prints initial number to  
  ' the screen.  
  
    DO                                    ' Wait for a keypress.  
        Keypress=INCHAR(2)  
    LOOP WHILE Keypress=0  
  
    IF Keypress=13 THEN                 ' Go edit value if key press  
    CLRLINE 3                            ' is the ENTER key.  
        CLRLINE 4  
        DISP 4,5,"Edit Value"  
        GOSUB GetValue  
    END IF

### SAMPLE PROGRAM - Eltrmsmp.tsk (Cont.)

```
IF keypress<>27 THEN                                ' Repeat until ESC key
    GOTO Get_Distance                                ' is pressed

    Distance=value
    RETURN

Get_Speed:                                           ' Actual Speed
    CLRSCRN
    DISP 1,8,"SPEED"
    DISP 2,4,"in RPM= "
    DISP 4,1,"ESC-Exit ENTER-Edit"
    fmt$="###.0"
    min=0.0
    max=999.0
    Value=motorSpeed
    row=2
    col=11

    LOCATE row,col                                  ' LOCATE sets the position of the cursor
    PRINT USING#2,fmt$,Value                        ' Prints initial number
    DO
        Keypress=INCHAR(2)
    LOOP WHILE Keypress=0

    IF Keypress=13 THEN
        CLRLINE 3
        CLRLINE 4
        DISP 4,5,"Edit Value"
        GOSUB GetValue
    END IF
    IF keypress<>27 THEN GOTO Get_Speed

    motorspeed=value
    SPEED=motorspeed

Get_Repeat:                                          ' Number of Repeats
RETURN
    CLRSCRN
    DISP 1,7,"NUMBER"
    DISP 2,5,"OF REPEATS="
    DISP 4,1,"ESC-Exit ENTER-Edit"
    fmt$="###"
    min=0
    max=999
    Value=repeat
    row=2
    col=16

    LOCATE row,col                                  ' LOCATE sets the position of the cursor
```

## SAMPLE PROGRAM - Eltrmsmp.tsk (Cont.)

```
PRINT USING#2,fmt$,Value          ' Prints initial number
DO
  Keypress=INCHAR(2)
  LOOP WHILE Keypress=0
  IF Keypress=13 THEN
    CLRLINE 3
    CLRLINE 4
    DISP 4,5,"Edit Value"
    GOSUB GetValue
    END IF
  IF keypress<>27 THEN GOTO Get_Repeat
  repeat=value
RETURN
Execute:                          ' This section executes all of
ACCEL=50                          ' the parameters
DECEL=50
WNDGS=1
CLRSCRN
DISP 1,2,"MOTION IN PROGRESS"
X=0
DO UNTIL X=Repeat
  MOVEI=Distance
  WAITDONE
  X=X+1
LOOP
RETURN
JOG_Forward:
CLRSCRN                          ' Print to the Display
DISP 2,1,"Jogging Forward"      ' motor status
DISP 4,1,"Push <Esc> to STOP"
JOG=1                            ' Start jog cycle
DO                                ' Wait until the escape
  Keypress=INCHAR(2)            ' Key is pressed
  LOOP WHILE Keypress<>27
  STOP                          ' Stop jog cycle
RETURN
JOG_Reverse:
CLRSCRN                          ' Print motor status to the Display
DISP 2,1,"Jogging Reverse"
DISP 4,1,"Push <Esc> to STOP"
JOG=-1                          ' Start jog cycle
```

### SAMPLE PROGRAM - Eltrmsmp.tsk (Cont.)

```
DO                                     ' Wait until the escape
  Keypress=INCHAR(2)                   ' Key is pressed
  LOOP WHILE Keypress<>27
  STOP
RETURN                                  ' Stop jog cycle

GetValue:
LOCATE row,col
NewValue$=""                           ' Resets NewValue$ to zero
DO
  DO
  Keypress=INCHAR(2)                   ' Continuously loops until a key is
  LOOP WHILE Keypress=0                ' pressed on the ELTERM 24
    Y=INSTR(NewValue$,".")            ' Prevent the user from entering
    IF Keypress=46 AND Y<>0 THEN        ' more than one decimal point.
      Keypress=9999
    Y=INSTR(NewValue$,"-")            ' Prevent the user from entering
    IF Keypress=45 AND Y<>0 THEN        ' more than one minus sign.
      Keypress=9999
    IF Keypress<58 AND Keypress>44    ' Only accept numbers 0 to 9
      THEN NewValue$= NewValue$+
        STRING$(1,Keypress)           ' decimal and the minus sign.
    END IF
    X=LEN(NewValue$)                   ' If the backspace key is
                                        ' pressed, erase the last
                                        ' digit that was entered.
    IF Keypress=8 AND X>0 THEN
      x=x-1
      NewValue$=LEFT$(NewValue$,x)
    END IF
    NewValue=VAL(NewValue$)            ' Convert string data into
                                        ' an actual number.

    LOCATE row,col                     ' Position cursor and print
    PRINT USING#2,fmt$,NewValue        ' the current value.
  LOOP UNTIL Keypress=13               ' Repeat loop until the
                                        ' Enter key is pressed.

  IF NewValue>min AND NewValue<max
    AND NewValue<>0 THEN
    Value=NewValue                     ' Accept new value if within
                                        ' the min and max range.
  END IF
  Keypress=27
RETURN
```

## "INCLUDE" File - Elterm24.inc

'Elterm24.INC - Include file for use with Elterm 24 Operator Interface.  
'The include file replaces the control commands that the Elterm24  
' understands with easier to use SEBASIC commands that the MCPI  
' software will understand.

\*\*\*\*\*

' NOTE1: To use the "Include" file in your project, use the '#INCLUDE'  
' include directive followed by a complete path and file name. The include  
' file directive must appear in the task before any references to the  
' defined functions can be used. example 'C:\MCPI\Elterm24.INC'

' NOTE2: The semicolon (;) is used extensively through out this file. The  
' semicolon is used to suppress the carriage return and line feed that the  
' controller automatically appends to a PRINT command. The semicolon  
' is also used to structure the various codes sent to the Elterm 24 panel.

\*\*\*\*\*

' The MX2000, TDC, DXi, and PCi have two com ports for serial communica-  
' tion with external devices. Port #1 is the host port and used for program  
' development. 'Port #2 is the aux. port which is typically used with an  
' operator interface panel.

' COM - Select which of the two com ports are to be used with  
' the following statements

```
#DEFINE COM 2           'Aux. serial port
#DEFINE COM 1           'Host serial port
```

\*\*\*\*\*

' FLUSH\_RX\_BUFFER Read and dump any characters that might be in the  
' receive buffer.

```
#DEFINE FLUSH_RX_BUFFER DO : KEYPRESS=INCHAR(COM) : LOOP
UNTIL KEYPRESS=0
```

\*\*\*\*\*

' The cursor indicates where the next displayed character appears. The  
' cursor is a flashing block. To display the cursor  
' the cursor must be enabled.

```
' CURSOR_ON           Make cursor visible.
' CURSOR_OFF          Make cursor invisible.

#DEFINE CURSOR_ON    PRINT#COM,CHR$(27)+"e";
#DEFINE CURSOR_OFF   PRINT#COM,CHR$(27)+"f";
```

## "INCLUDE" File - Elterm24.inc (Cont.)

```
*****
' CLRSCRN      Home the cursor and clear the entire screen
' CLRLINE line# Clear the specified line
' LOCATE       Move the cursor to @1(row),@2(col).
' LOCATE 2,7   Move the cursor to row 2 column 7.
' DISP        Move the cursor to @1(row),@2(col)and display @3(value).
'DISP 1,5,"MX2000" - move the cursor to row 1 col 5 and display 'MX2000'.
#DEFINE CLRSCRN      PRINT#COM,CHR$(27)+"E";
#DEFINE LOCATE @1,@2
      PRINT#COM,CHR$(27)+"Y"+CHR$(31+@1)+CHR$(@2+31);
#DEFINE DISP @1,@2,@3      LOCATE @1,@2, @3;
#DEFINE LC @1
      PRINT#COM,CHR$(27)+"Y"+CHR$(31+@1)+CHR$(32);
#DEFINE CLRLINE @1 LC @1 "      ";
*****
'Elterm24 series keyboard response codes
'
#DEFINE F1 65
#DEFINE F2 66
#DEFINE F3 67
#DEFINE F4 68
#DEFINE UP 69
#DEFINE DOWN 70
#DEFINE LEFT 71
#DEFINE RIGHT 72
#DEFINE BS 08
#DEFINE ENTER 13
#DEFINE ESC 27
#DEFINE MINUS_SIGN 45
```

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