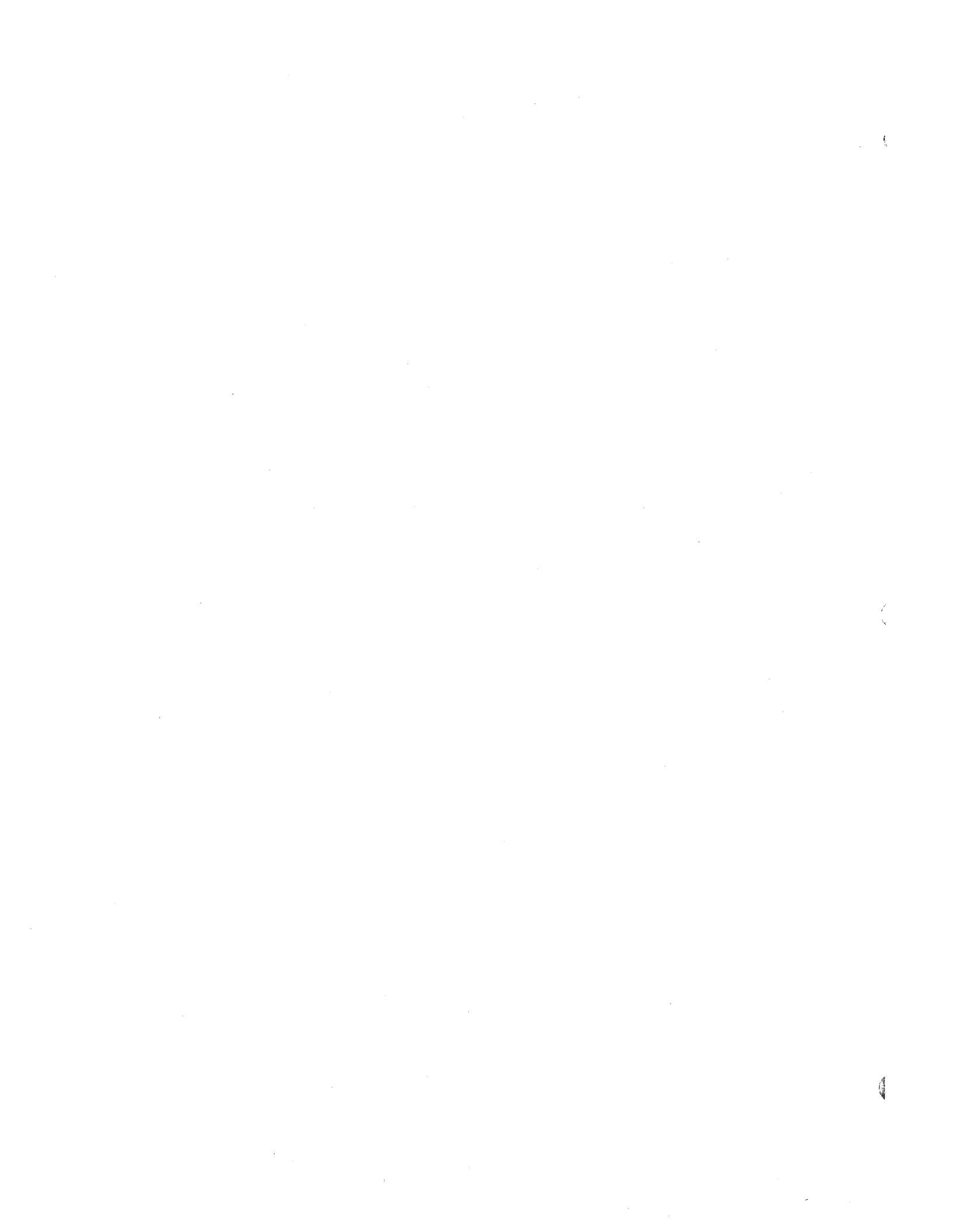


THIS PACKAGE CONTAINS THE TELESIS USER'S MANUAL
SCHEMATIC/PRINTED CIRCUIT

- o VOLUME 2: REFERENCE MANUAL
- o UP-TO-DATE AS OF EDA-3000 REV. 2 SOFTWARE RELEASE
- o PART NUMBER: 76-00004-001 REV. G





USER'S MANUAL

VOLUME 2 REFERENCE MANUAL

VOLUME 2: REFERENCE MANUAL

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NEW COMMANDS WITH THE EDA-3000 REV.1 SOFTWARE RELEASE

- o INDEX
- o COMMAND DESCRIPTIONS - PAGES 1 THRU 165

COMMAND NAME

ADD ARC

PURPOSE

To place an arc element in a drawing.

INPUT SEQUENCE

|ADD ARC| (P₁) (P₂) (P₃) . . . |ENTER|

- (P₁) defines the start point of the arc.
- (P₂) defines a point along the arc.
- (P₃) defines the end point of the arc.
- Each arc must have exactly 3 (P) picks.
- For additional arcs, input additional sets of 3 (P) picks.

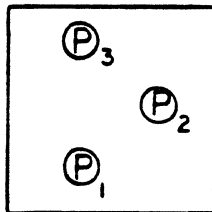
PARAMETERS

- Active Layer
- Line Width
- Grid

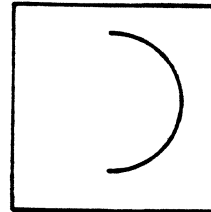
EXAMPLE

|ADD ARC| (P₁) (P₂) (P₃) |ENTER|

ACTION



RESULT



NOTES

Arcs must be defined in a counter-clockwise direction.

ADD CIRCLE

COMMAND NAME

ADD CIRCLE

PURPOSE

To place a circle element in a drawing.

INPUT SEQUENCE

|ADD CIRCLE| Ⓟ₁ Ⓟ₂ . . . |ENTER|

- Ⓟ₁ defines the center of the circle.
- Ⓟ₂ defines the radius of the circle.
- Each circle must have exactly 2 Ⓟ picks.
- For additional circles, input additional pairs of Ⓟ picks.

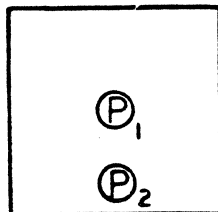
PARAMETERS

- Active Layer
- Line Width
- Grid

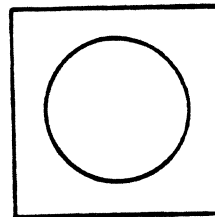
EXAMPLE

|ADD CIRCLE| Ⓟ₁ Ⓟ₂ |ENTER|

ACTION



RESULT



COMMAND NAME

ADD CLASS

PURPOSE

To add a class type section to a device description file.

INPUT SEQUENCE

|ADD CLASS| |CLASS IC|
or
|CLASS IO|
or
|CLASS DISCRETE|

EXAMPLE

|ADD CLASS| |CLASS IC|

ADD COMMENT

COMMAND NAME

ADD COMMENT

PURPOSE

To add a COMMENT line to a text file. Used only when you have picked TEXT LEADTHRU to create or edit the file.

INPUT SEQUENCE

ADD COMMENT keyboard
- input - ENTER

- KEYBOARD INPUT is the text of the comment. It may be any keyboard characters (including blank spaces) up to a maximum of 59.

EXAMPLE

```
ADD COMMENT D E V I C E  D E S C R I P T I O N  
 F I L E : 7 4 0 0 ENTER
```

NOTES

When you use this command, the system automatically encloses the text of your comment in parentheses.

ADD CONNECTION
(for non-PC board drawings)

COMMAND NAME

ADD CONNECTION

(Because the same command is used differently for board drawings and other drawing types, there are two command descriptions for ADD CONNECTION.)

PURPOSE

To add connect lines to the active drawing.

In a non-PC board drawing, (usually schematic drawings) connect lines show the logical connections amongst the logical symbols of your circuit design.

INPUT SEQUENCE

ADD CONNECTION (P₁) (P₂) . . . (P_{LAST}) ENTER

- (P₁) must identify a starting element for the connect line. The start point may be on either:

- A connect point at layer 0 or 1
- or
- A connect line

If (P₁) is not within trap distance of one of these element types, the system will display on the function screen:

"NOWHERE TO START CONNECTION"

and you will need to pick again to find a starting element. If the system has trouble finding a starting element, try a larger trap size, especially if you are using line width greater than 0. The trap must be big enough for the system to find the displayed edges of the connect lines.

The system highlights the element it has found.

- (P₂) is the position of the second vertex of the connect line.

ADD CONNECTION, (CONT)
(for non-PC board drawings)

- All picks after (P) are internal vertices of the connect line, except the LAST pick before ENTER or NEXT.
- P LAST is the end point of the connect line. P_{LAST} must be on
 - A connect point at layer 0 or 1
 - or
 - A connect line

If the system finds a connect point, it connects the end of the connect line to the connect point.

If it finds a connect line, it breaks the connect line at the picked position, adds a connect point there, and joins all three connect lines to the connect point.

If the system finds nothing within trap distance of the last pick, it simply adds the connect line to the data base with its last point at the nearest grid point, and displays on the function screen:

"LINE HAS FLOATING END"

- You complete the connect line by picking NEXT or ENTER. If you pick NEXT, you can immediately pick the starting point of another connect line.

PARAMETERS

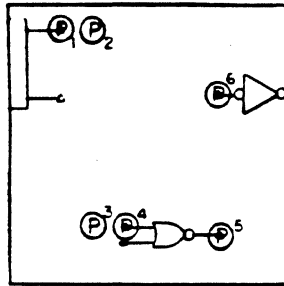
- LINE WIDTH
- GRID SIZE
- CONNECT POINT
- TRAP SIZE

ADD CONNECTION, (CONT)
 (for non-PC board drawings)

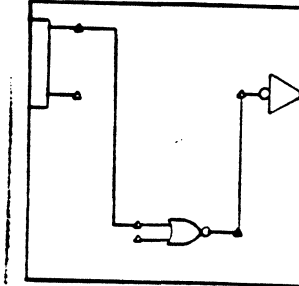
EXAMPLE 1

ADD CONNECTION | P₁ P₂ P₃ P₄ | NEXT | P₅ P₆ | ENTER

ACTION



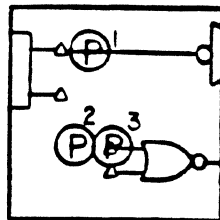
RESULT



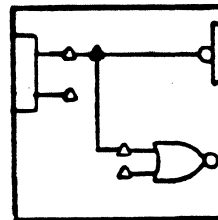
EXAMPLE 2

ADD CONNECTION | P₁ P₂ P₃ | ENTER

ACTION



RESULT



NOTE

In the case of a non-PC board drawing, all connect lines automatically are added at layer 1, regardless of what the active layer is.

ADD CONNECTION
(for PC board drawings)

COMMAND NAME

ADD CONNECTION

(Because the same command is used differently for board drawings and other drawing types, there are two command descriptions for ADD CONNECTION.)

PURPOSE

To add connect lines to the active drawing.

In a PC board drawing, connect lines show the printed circuit tracks that make the actual physical connections among the physical packages of your PC board layout.

INPUT SEQUENCE

ADD CONNECTION | (P₁) (P₂ . . . (P_{LAST}) | ENTER

- (P₁) must identify a starting element for the connect line. The start point may be on either:

- A connect point
or
- A connect line at the active layer

If (P₁) is not within trap distance of one of these element types, the system will display on the function screen:

"NOWHERE TO START CONNECTION"

and you will need to pick again to find a starting element. If the system has trouble finding a starting element, try a larger trap size, especially if you are using line width greater than 0. The trap must be big enough for the system to find the displayed edges of the connect lines.

The system highlights the connect point or connect line it has found.

- (P₂) is the position of the second vertex of the connect line.

ADD CONNECTION, (CONT)
(for PC board drawings)

- All picks after \textcircled{P}_1 are internal vertices of the connect line, except the LAST pick before ENTER or NEXT.
- \textcircled{P} LAST is the end point of the connect line. \textcircled{P} LAST must be on
 - A connect point at layer 0 or 1
or
 - A connect line

If the system finds a connect point, it connects the end of the connect line to the connect point.

If it finds a connect line, it breaks the connect line at the picked position, adds a connect point there, and joins all three connect lines to the connect point.

If the system finds nothing within trap distance of the last pick, it simply adds the connect line to the data base with its last point at the nearest grid point, and displays on the function screen:

"LINE HAS FLOATING END"

- You complete the connect line by picking NEXT or ENTER. If you pick NEXT, you can immediately pick the starting point of another connect line.

PARAMETERS

- LAYER
- LINE WIDTH
- CONNECT POINT SIZE
- GRID SIZE
- TRAP SIZE

ADD CONNECTION, (CONT)
(for PC board drawings)

EXAMPLE

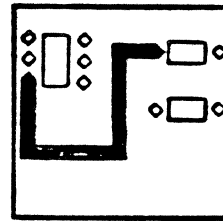
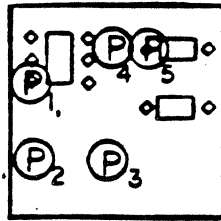
SET LINE WIDTH | 5 | 0 | ENTER

SET ACTIVE LAYER | 2 | ENTER

ADD CONNECTION | P₁ P₂ P₃ P₄ P₅ | ENTER

ACTION

RESULT



NOTES

- You may use the NECK command during the ADD CONNECTION command to narrow the width of one segment of your connect line in order to place it between two pads or in other narrow spaces.
- You may use the DRILL command during the ADD CONNECTION command to place a via (drill-hole through your PC board) and to continue your connect line on an alternate layer.

COMMAND NAME

ADD CONNECT POINT

PURPOSE

To place a connect point in a drawing.

INPUT SEQUENCE

|ADD CONNECT PNT| (P) . . . |ENTER|

- . Each (P) defines the location of a connect point.
- . Number of (P) points is unlimited.

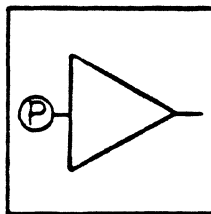
PARAMETERS

- . Active Layer
- . Connect Point Size
- . Grid

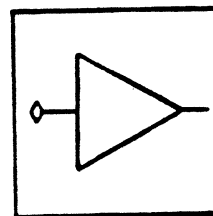
EXAMPLE

|ADD CONNECT PNT| (P) |ENTER|

ACTION



RESULT



ADD DEVICE TYPE

COMMAND NAME

ADD DEVICE TYPE

PURPOSE

To place a device type label on a symbol drawing. Used when drawing a master symbol for the symbol library.

INPUT SEQUENCE

ADD DEVICE TYPE | - input - | ENTER | (P) . . . | ENTER |

- . KEYBOARD INPUT defines the text. It may be up to 18 keyboard characters. Do not use blank spaces.
- . (P) defines the location of the label.

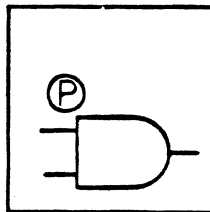
PARAMETERS

- . Active Layer
- . All Text Parameters
- . Text Point Size
- . Grid

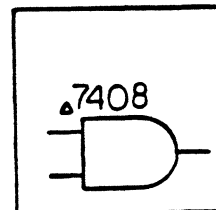
EXAMPLE

ADD DEVICE TYPE | 7 | 4 | 0 | 8 | | ENTER | (P) | ENTER |

ACTION



RESULT



NOTES

You only add one device type label to a symbol drawing.

COMMAND NAME

ADD DRILL LEGEND

PURPOSE

To add this text: /FIGURE/HOLESIZE/ QTY/ at a point you specify in a board drawing. When you later pick the CREATE NC DRILL command, the system constructs a drill legend table under this text.

INPUT SEQUENCE

ADD DRILL LEGEND | (P) | ENTER

- (P) is the location of the text point for this text.
- You may use OOPS! or CANCEL before picking ENTER.

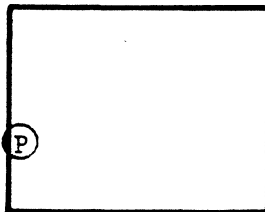
PARAMETERS

- ALL TEXT PARAMETERS
- TEXT POINT SIZE

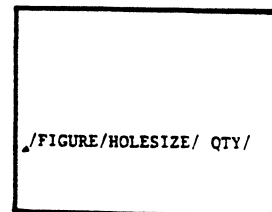
EXAMPLE

ADD DRILL LEGEND | (P) | ENTER

ACTION



RESULT



COMMAND NAME

ADD FUNCTION

PURPOSE

To add a function instance line to the PINORDER section of a device description file.

INPUT SEQUENCE

```

                                keyboard
|ADD FUNCTION| - INPUT-1 - |ENTER|

```

```

- keyboard - |ENTER|
  INPUT-2

```

- . KEYBOARD INPUT-1 is the slot name for this instance of a function. It may be up to 4 alphanumeric characters with no blank spaces allowed.
- . KEYBOARD INPUT-2 is the list of pin numbers in this instance of the function.

Input a pin number to correspond with each pin name in the PINORDER line above.

A pin number may be any integer from 0 to 32767.

Pin numbers must be separated by a blank space or a comma(,).

EXAMPLE

```
|ADD FUNCTION|G|I|ENTER|
```

```
|1|2| |4| |5| |6|ENTER|
```

NOTES

|ADD FUNCTION| is used only in conjunction with the |ADD PINORDER| or |CHANGE PINORDER| commands.

COMMAND NAME

ADD FUNCTION TYPE

PURPOSE

To place a function type label on a symbol drawing. Used when drawing a symbol for the symbol library.

INPUT SEQUENCE

ADD FUNCTION TYPE - keyboard - ENTER \textcircled{P} . . . ENTER
input

- . KEYBOARD INPUT is the text. It may be up to 18 keyboard characters with no blank spaces allowed.
- . \textcircled{P} is the location of the label.

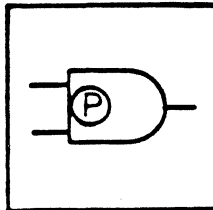
PARAMETERS

- . ACTIVE LAYER
- . TEXT POINT SIZE
- . ALL TEXT PARAMETERS
- . GRID

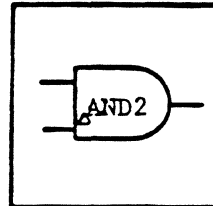
EXAMPLE

ADD FUNCTION TYPE A N D 2 ENTER \textcircled{P} ENTER

ACTION



RESULT



COMMAND NAME

ADD GROUND

PURPOSE

To add a GROUND section to a device description file.

INPUT SEQUENCE

```

      keyboard
|ADD GROUND| - INPUT-1 - |ENTER|
- keyboard - |ENTER|
  INPUT-2

```

- . KEYBOARD INPUT-1 is a signal name. It may be up to 18 alphanumeric characters with blank spaces allowed.
- . KEYBOARD INPUT-2 is a pin number or numbers.

A pin number may be any integer from 0 to 32767.

Pin numbers must be separated by a blank space or a comma (,).

EXAMPLE

```
|ADD GROUND| G N D |ENTER| 7 |ENTER|
```

COMMAND NAME

ADD LINE

PURPOSE

To place a line element in a drawing.

INPUT SEQUENCE

|ADD LINE| (P) (P) . . . |ENTER|

- . Each (P) pick defines a line vertex.
- . Number of (P) picks is unlimited.
- . Using the NEXT command after a (P) pick ends the line with that pick. The next (P) pick begins a new line.

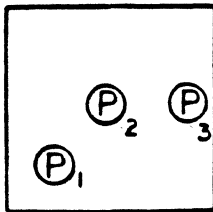
PARAMETERS

- . Active Layer
- . Grid
- . Line Lock: Off, 45, or 90
- . Line Width

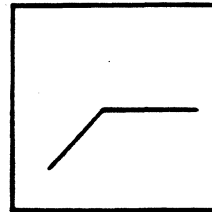
EXAMPLE

|ADD LINE| (P₁) (P₂) (P₃) |ENTER|

ACTION



RESULT



ADD PACKAGE

COMMAND NAME

ADD PACKAGE

PURPOSE

To add a package section to a device description file.

INPUT SEQUENCE

 keyboard
|ADD PACKAGE| - input - |ENTER|

- KEYBOARD INPUT is the package name. It may be up to 14 alphanumeric characters with no blank spaces allowed.
- The package name must be identical to a component symbol file name.

EXAMPLE

|ADD PACKAGE| |D| |I| |P| |I| |4| |ENTER|

ADD PEN LINE

COMMAND NAME

ADD PEN LINE

PURPOSE

To enter the PEN and DBLAYERS assignment line to the pen plot control file when using the EDIT PENPLOT-CON lead-thru.

INPUT SEQUENCE

ADD PEN LINE (PEN [1-8]) - Keyboard - ENTER
Input
(DBLAYERS) - Keyboard - ENTER
Input

- o The PEN must be a number from 1 through 8; there are eight positions in the HP pen plotter carousel.
- o Each DBLAYER in the list of layers must be a number between 0 and 255 inclusive.
- o Each layer number in the list may be separated by a comma or any number of blank spaces.
- o You may assign a range of layers to a pen line by inserting a hyphen (-) or a colon (:) between the selected range.

EXAMPLE

ADD PEN LINE (PEN [1-8]) 1 ENTER (DBLAYERS) 5 64 ENTER

RESULT

PEN 1 DBLAYERS 5 64

EXAMPLE

ADD PEN LINE (PEN [1-8]) 2 ENTER (DBLAYERS) 15, 17, 33-35 8
ENTER

RESULT

PEN 2 DBLAYERS 15, 17 33-35 88:92

COMMAND NAME

ADD PINORDER

PURPOSE

To add a PINORDER section to a device description file.

INPUT SEQUENCE

```
ADD PINORDER -keyboard- ENTER -keyboard- ENTER
                    INPUT-1          INPUT-2
```

```
-pinuse list- pin list for each - DONE
                    instance of this function
```

- . KEYBOARD INPUT-1 is a logical function type. It may be up to 18 alphanumeric characters with no blank spaces allowed.
- . KEYBOARD INPUT-2 is the list of pin names. A pin name may be up to 8 alphanumeric characters with no blank spaces allowed. Input at least one blank space between pin names.
- . PINUSE LIST - Use the ADD PINUSE command to input the PINUSE list.
- . PIN LIST FOR EACH INSTANCE OF THIS FUNCTION. Use the ADD FUNCTION command to add the pin list for each instance of this function.

EXAMPLE

```
ADD PINORDER N A N D 4 ENTER
A B C D Y ENTER ADD PINUSE
IN IN IN IN OUT ADD FUNCTION
1 2 4 5 6 ENTER
ADD FUNCTION 9 1 0 1 2 1 3 8
ENTER DONE
```

COMMAND NAME

ADD PINUSE

PURPOSE

To add a PINUSE line to the PINORDER section of a description file.

INPUT SEQUENCE

ADD PINUSE - list of pinuse labels.

- . LIST OF PINUSE LABELS: Input a pinuse label to correspond with each pin name in the PINORDER line above.
- . PINUSE labels may be a combination of these:

IN , OUT , OCA , OCL , BI , TRI , POWER , GND , NC

EXAMPLE

ADD PINUSE IN IN IN IN OUT

NOTES

ADD PINUSE is used only in conjunction with the ADD PINORDER or CHANGE PINORDER commands.

ADD PINTYPE

<u>COMMAND NAME</u>	ADD PINTYPE
<u>PURPOSE</u>	To input and specify board symbol pintypes in the pin description text file when using the <u>EDIT PIN FILE</u> lead-thru.
<u>INPUT SEQUENCE</u>	<u>ADD PINTYPE</u> (PINTYPE NAME) -> Keyboard -> <u>ENTER</u> Input <ul style="list-style-type: none">o You must use the <u>ADD PINTYPE</u> command before inputting any pin information (drill, shape, size, layer, etc.)o The keyboard input is the pintype name. You may input up to four alphanumeric characters preceded by a blank space. The pintype name distinguishes one pintype from another in the pin file.o When you pick <u>ENTER</u>, the system inserts the keyword <u>PINTYPE</u> and the pintype name to your pin description file.
<u>EXAMPLE</u>	<u>ADD PINTYPE</u> (PINTYPE NAME) A <u>ENTER</u>
<u>RESULT</u>	PINTYPE A

COMMAND NAME

ADD POWER

PURPOSE

To add a POWER section to a device description file.

INPUT SEQUENCE

keyboard

```
|ADD POWER| - INPUT-1 - |ENTER|
```

```
- keyboard - |ENTER|
  INPUT-2
```

- KEYBOARD INPUT-1 is a signal name. It may be up to 18 alphanumeric characters with blank spaces allowed.
- KEYBOARD INPUT-2 is a pin number or numbers.

A pin number may be any integer from 0 to 32767.

Pin numbers must be separated by a blank space or a comma (,).

EXAMPLE

```
|ADD POWER| + |5 V| |ENTER| |1 4| |ENTER|
```

COMMAND NAME

ADD RECTANGLE

PURPOSE

To place a rectangle on a printed circuit board that indicates a filled-etch area.

INPUT SEQUENCE

|ADD RECTANGLE| (P₁)(P₂) . . |ENTER|

- . (P₁) is the lower left corner of the rectangle
- . (P₂) is the upper right corner of the rectangle
- . Use the |NEXT| command after (P₂) to add additional rectangles by picking additional pairs of (P) s.

PARAMETERS

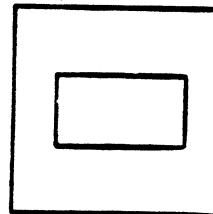
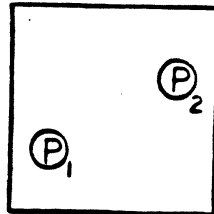
- . ACTIVE LAYER
- . LINE WIDTH
- . GRID

EXAMPLE

|ADD RECTANGLE| (P₁)(P₂) |ENTER|

ACTION

RESULT



NOTES

Rectangles added with this command will appear to be empty on your graphics screen, but, when you output board artwork, these rectangles will be filled.

COMMAND NAME

ADD REFERENCE DESIGNATOR

PURPOSE

To place a reference designator on a symbol drawing. Used when drawing a symbol for the symbol library.

INPUT SEQUENCE

keyboard
 |ADD REF DESIG| - input - |ENTER| (P) . . . |ENTER|

- . KEYBOARD INPUT is the text. It may be up to 8 keyboard characters. Do not use blank spaces.
- . (P) is the location of the label.

PARAMETERS

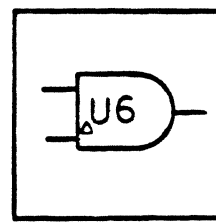
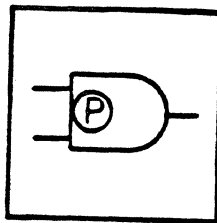
- . ACTIVE LAYER
- . ALL TEXT PARAMETERS
- . GRID
- . TEXT POINT SIZE
- . TRAP

EXAMPLE

|ADD REF DESIG| |U| |6| |ENTER| (P) |ENTER|

ACTION

RESULT



NOTES

Add only one reference designator to a symbol drawing.

COMMAND NAME

ADD SYMBOL [MENU]

PURPOSE

To flip to the set of menus used for adding Telesis-prepared symbols to a drawing.

INPUT SEQUENCE

|ADD SYMBOL [MENU]|

COMMAND NAME

ADD SYMBOL [NAME]

PURPOSE

To place a library symbol in a drawing.

INPUT SEQUENCE

keyboard
`ADD SYMBOL [NAME] - input - [ENTER] (P) . . . [ENTER]`

- . KEYBOARD INPUT must be exact name of symbol file in library. You may specify a revision by following the symbol name with a revision label. The revision label must be preceded by a blank space.
- . KEYBOARD INPUT may include revision label. If it does not, most recently used revision is retrieved.
- . (P) defines location of the symbol. Additional (P) picks input additional locations.
- . Using the [NEXT] command after a (P) allows you to place other symbols in the drawing.
- . All elements of the symbol are added to the drawing at the same layer as they were originally added in the symbol drawing.

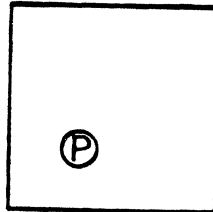
PARAMETERS

- . Grid

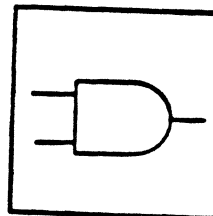
EXAMPLE

`ADD SYMBOL [NAME] | A | N | D | 2 | [ENTER] (P) [ENTER]`

ACTION



RESULT



NOTES

- . The origin of the symbol is placed at your P pick. The origin is the point at 0,0 in the master symbol drawing.

COMMAND NAME

ADD SYMBOL[USER]

PURPOSE

To flip to the user-created set of menus used for adding user-created symbols to a drawing.

INPUT SEQUENCE

|ADD SYMBOL[USER]|

NOTE

- . A user-created menu file must be open when this command is used.

COMMAND NAME

ADD THERMAL RELIEF

PURPOSE

To add thermal relief information to the pin description text file when using the EDIT PIN FILE lead-thru.

INPUT SEQUENCE

PHOTOPLOTTER
ADD THERM-RELIEF -> APERTURE TYPE -> (NAME) -- ENTER (LAYER)

—> Keyboard —> ENTER
 Input

- o The thermal relief line of the pin file contains the following information:
 1. The keyword THERMAL-RELIEF
 2. A photoplotter aperture type (EX. FLASH, CIRCLE, SQUARE, RECTANGLE, OBLONG).
 3. A name that distinguishes one thermal relief from another.
 4. A physical layer assignment.
- o The thermal relief name may contain ten alphanumeric characters with no blank spaces.
- o The physical layer assignment may contain 24 alphanumeric characters with no blank spaces.
- o When you pick ENTER, the system inserts the keyword THERMAL-RELIEF and the equals sign (=), with your thermal relief specifications.

EXAMPLE

ADD THERM-RELIEF FLASH (NAME) AB12 ENTER (LAYER) IMBEDDED-PLANE ENTER

RESULT

THERMAL-RELIEF FLASH=AB12 IMBEDDED-PLANE

After inputting the THERMAL-RELIEF line of the pin file, the system immediately prompts you for ANTI-PAD data. You must select the shape of the ANTI-PAD from the menu displayed on the function screen.

ADD THERM-RELIEF
(continued)

EXAMPLE

Pick: CIRCLE (WIDTH [IN MILS]) 40 ENTER

- o The physical layer nomenclature must be exactly the same for the THERMAL-RELIEF line and the ANTI-PAD line. The system automatically inserts the same physical layer name from the THERMAL-RELIEF line to the ANTI-PAD line of the file when you pick ENTER.

RESULT

ANTI-PAD CIRCLE=.040 IMBEDDED-PLANE

ADD TO GROUP

COMMAND NAME

ADD TO GROUP

PURPOSE

To add more members to an existing group.

INPUT SEQUENCE

ADD TO GROUP (P) . . . ENTER

- (P) picks an element to be added to the group. Every element picked (that is not already a member of the group) highlights as it is identified. It stays highlighted until the BREAK GROUP command or DONE is picked.
- You may continue picking any number of elements for addition to the group.
- OOPS! will cancel the effect only of the most recent pick.
- ENTER completes the addition of members to the group.

ADD VALUE

COMMAND NAME

ADD VALUE

PURPOSE

To place a value label on a symbol drawing.
Used when drawing a master symbol for the
symbol library.

INPUT SEQUENCE

ADD VALUE | keyboard
- input - | ENTER | (P) . . . | ENTER |

- . KEYBOARD INPUT defines the text. It may be up to 20 keyboard characters. Do not use blank spaces.
- . (P) defines the location of the label.

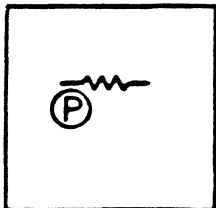
PARAMETERS

- . Active Layer
- . All Text Parameters
- . Grid
- . Text Point Size

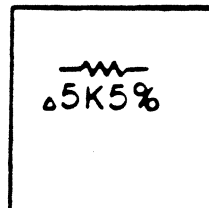
EXAMPLE

ADD VALUE | 5 | K | 5 | % | ENTER | (P) | ENTER |

ACTION



RESULT



NOTES

You only add one value label to a symbol drawing.

ADV N TAPE SECTS

COMMAND NAME

ADVANCE N TAPE SECTIONS

PURPOSE

To advance a magnetic tape a specified number (N) of sections.

INPUT SEQUENCE

ADD N TAPE SECTS - keyboard - ENTER
input

- KEYBOARD INPUT specifies the number of tape sections to advance.

EXAMPLE

ADV N TAPE SECTS | 2 | ENTER

Before: Tape is currently on first section.

After: Tape is now on third section.

NOTES

When the tape reaches the beginning of the section to which it has advanced, the index for that section will be displayed on the function screen.

COMMAND NAME

ADVANCE 1 TAPE SECTION

PURPOSE

To advance the magnetic tape to the beginning of the next tape section.

INPUT SEQUENCE

ADV 1 TAPE SECT

NOTES

When the tape reaches the beginning of the next section, the index for that section will be displayed on the function screen.

COMMAND NAME

ALL FILES FROM TAPE

PURPOSE

To copy all files in the current tape section to the system.

INPUT SEQUENCE

ALL FILES FRM TP

ALL FILES TO TAPE

COMMAND NAME

ALL FILES TO TAPE

PURPOSE

To copy all files currently on the system to magnetic tape.

INPUT SEQUENCE

ALL FILES TO TAPE

ARCHIVE-FLOPPY

COMMAND NAME

ARCHIVE-FLOPPY

PURPOSE

To flip to the menu set used for handling floppy disk archives.

INPUT SEQUENCE

|ARCHIVE-FLOPPY|

ARCHIVE-TAPE

COMMAND NAME

ARCHIVE-TAPE

PURPOSE

To flip to the menu set used for handling magnetic tape archives.

INPUT SEQUENCE

ARCHIVE-TAPE

COMMAND NAME

ARTWORK FILE TO TAPE

PURPOSE

To copy an artwork file from the system to magnetic tape. This command is used only after the GERBER TO TAPE command.

INPUT SEQUENCE

GERBER TO TAPE | ARTFILE TO TAPE - keyboard -
input
ENTER . . . ENTER

- . KEYBOARD INPUT defines the name of the artwork text file to be copied to tape.
- . To input more than one artwork text file name, repeat the ARTFILE TO TAPE command for each additional file name.
- . End each keyboard input with ENTER. After inputting the names of all the artwork files you want copied to tape, pick a final ENTER.

EXAMPLE

GERBER TO TAPE | ARTFILE TO TAPE | F I L M 2 -
A R T | ENTER | F I L M 3 - A R T | ENTER
F I L M - A R T | ENTER | ENTER

NOTES

After the files are copied, the system rewinds it and verifies it to see if any information in the text files did not get recorded.

If the tape is not good, the system will display an error message on the function screen. In this case, go back to the GERBER TO TAPE command, and repeat the process.

If you get an error message the second time, replace the tape with a new one and begin again.

ASCII FILE TO TAPE

COMMAND NAME ASCII FILE TO TAPE

PURPOSE To copy text files from the Telesis system to an ASCII formatted magnetic tape. This command is used after the ASCII TO TAPE command.

*ASCII code allows information exchange between a Telesis system and a computer of different manufacture.

INPUT SEQUENCE ASCII TO TAPE | ASCII FILE TO TAPE | -Keyboard- | ENTER | ENTER
Input

- o The keyboard input is the name of the text file to be written to tape.
- o Repeat the ASCII FILE TO TAPE command; input the name of the second text file to be copied to tape.

Repeat the procedure until you have input all the text files needed for this tape.

- o Use the SHOW COPY LIST command to display the file names you have input.
- o Pick ENTER to copy your selected files to the magnetic tape. The system verifies each file as it is copied to tape. The function screen message line displays all verification messages.
- o Pick DONE before removing the tape from the tape drive.

EXAMPLE ASCII TO TAPE | ASCII FILE TO TAPE | DIP14-PIN | ENTER | ENTER

NOTES ASCII formatted tapes do not have indexes or file names. It is advisable that you attach a label to the tape reel to identify the ASCII files and their sequence on tape.

*(ASCII) AMERICAN STANDARD CODE FOR INFORMATION INTERCHANGE

ASCII FROM TAPE

COMMAND NAME ASCII FROM TAPE

PURPOSE To copy one or all text files from an ASCII* formatted magnetic tape to the current project on the system.

INPUT SEQUENCE |ASCII FROM TAPE| -Keyboard- |ENTER|
Input

- o The keyboard input is the number (in order of sequence on tape) of the tape file to be copied. Skip the keyboard input and pick |ENTER| to copy all of the text files on the tape to the system.
- o You may copy one file or all files, you may not copy selected files from the tape.

EXAMPLE |ASCII FROM TAPE| 1 |ENTER|

Result: The system copies the first text file on the tape and names it TAPE1-TEXT.

EXAMPLE |ASCII FROM TAPE| |ENTER|

Result: The system copies all the text files on the tape and names each file according to its sequence on tape.

EX. TAPE1-TEXT
TAPE2-TEXT
TAPE3-TEXT
TAPE4-TEXT

NOTES ASCII formatted tapes do not have indexes, and the files do not have file names. Therefore, the tape reel must be labeled in order to determine the text file names and sequence of text files on tape.

*(ASCII) AMERICAN STANDARD CODE OF INFORMATION INTERCHANGE

ASCII TO TAPE

COMMAND NAME ASCII TO TAPE

PURPOSE To prepare an ASCII^{*} formatted magnetic tape containing text files currently on a Telesis system. An ASCII formatted magnetic tape allows information exchange between a Telesis system and a computer of different manufacture.

INPUT SEQUENCE |ASCII TO TAPE|

- o Before using the |ASCII TO TAPE| command -
 1. Text files to be copied must be in the current project or in the SYSTEM-LIBRARY.
 2. The tape drive must be powered-on.
 3. The tape drive must be loaded; the ON LINE and WRT EN lights on.

- o TAPE FORMAT CHARACTERISTICS (ASCII)
 1. The tape is 9-tracks, odd parity, with a NO VOLUME label at the beginning of the tape.
 2. The tape is written in 80-byte records in ASCII code. Each record represents one line of the text file.
 3. Each record is space-filled to 80 bytes.
 4. Each text file on tape ends with an end-of-file mark.
 5. The tape has two file marks at the end of the last file on the tape.

NOTES This command is used before the |ASCII FILE TO TAPE| command.

BE CAREFUL! Using the |ASCII TO TAPE| command will delete any existing information on the tape.

If you transfer the contents of the ASCII tape to a non-Telesis system, be certain that this system can be programmed to read the ASCII format.

* (ASCII) AMERICAN STANDARD CODE FOR INFORMATION INTERCHANGE

A SIZE

COMMAND NAME

A SIZE

PURPOSE

To specify that the current drawing have these extents:

LOWER X : 0

LOWER Y : 0

UPPER X : 8500

UPPER Y : 11000

INPUT SEQUENCE

A SIZE

5/82 COMMAND DESCRIPTION

COMMAND NAME ASSIGN ALL REF DES

PURPOSE To batch assign all reference designators stored in the net-data-base to their components on the active board drawing.

INPUT SEQUENCE ASSIGN ALL REF DES

o PREREQUISITES

1. The board drawing must be active
2. The net data base must be in the current project file
3. You must use the UPDATE TEXT command to label the reference designator of each component symbol on the drawing prior to using the ASSIGN ALL REF DES command.

- o When you pick ASSIGN ALL REF DES, the function screen message line displays:

BEGINNING TO ASSIGN REFERENCE DESIGNATORS

The system then proceeds to assign each reference designator to its component symbol on the board drawing. The message line displays each reference designator being assigned.

ASSIGNING REFERENCE DESIGNATOR U2

While the system is running ASSIGN ALL REF DES, the message line displays:

SCANNING THE DRAWING FOR UNASSIGNED REF DES's

When the system completes the ASSIGN ALL REF DES command, the message line displays:

COMPLETED, XX ASSIGNS OCCURRED

(XX is the number of reference designators assigned)

The system then displays the REF-DES-LOG file on the function screen. This is a text file of all status information and error conditions occurring during the assignment of all reference designators.

NOTE: If you pick CANCEL during the ASSIGN ALL REF DES command, the REF-DES-LOG is still created; it contains all status information that was filed prior to CANCEL.

COMMAND NAME

ASSIGN BLUE

PURPOSE

To set blue as the drawing color for all elements on a specified layer.

INPUT SEQUENCE

keyboard
ASSIGN BLUE - input - ENTER

- . Keyboard input defines the layer number. It may be 0 to 255.
- . To specify more than one layer, use commas between layer numbers: 1,9,34 ENTER; or use a hyphen to specify a range of layers: 1-9 ENTER. (Layers 1-9 display as blue.)

EXAMPLE

ASSIGN BLUE 3 ENTER

NOTES

Any elements already existing on the specified layer will be redrawn in blue the next time you command either DRAWING, WINDOW, or ZOOM.

COMMAND NAME

ASSIGN GREEN

PURPOSE

To set green as the drawing color for all elements on a specified layer.

INPUT SEQUENCE

keyboard
ASSIGN GREEN - input - ENTER

- KEYBOARD INPUT defines the layer number. It may be 0 to 255.
- To specify more than one layer, use commas between layer numbers: 1,9,3,4 ENTER;
 or use a hyphen to specify a range of layers: 1-9 ENTER.

EXAMPLE

ASSIGN GREEN 3 ENTER

NOTES

Any elements already existing on the specified layer will be redrawn in green the next time you command either DRAWING, WINDOW, or ZOOM.

COMMAND NAME

ASSIGN RED

PURPOSE

To use red as the drawing color for all elements on a specified layer.

INPUT SEQUENCE

keyboard

ASSIGN RED - input - ENTER

- . KEYBOARD INPUT defines the layer number. It may be 0 to 255.
- . To specify more than one layer, use commas between layer numbers: 1,9,34 ENTER;
or use a hyphen to specify a range of layers: 1-9 ENTER.

EXAMPLE

ASSIGN RED 3 ENTER

NOTES

Any elements already existing on the specified layer will be redrawn in red the next time you command either DRAWING, WINDOW, or ZOOM.

COMMAND NAME

ASSIGN REFERENCE DESIGNATOR

PURPOSE

To form a relationship between a board component and the net-data-base by assigning a reference designator in the net-data-base to a component in the board drawing.

INPUT SEQUENCE

keyboard
ASSIGN REF DES - input - ENTER (P) . . . ENTER

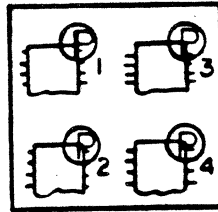
- . KEYBOARD INPUT is the text. It must be identical to the reference designator text in the net-data-base.
- . (P) is the component to which the reference designator is to be assigned.
- . You may input a series of reference designators separated by commas. You then (P) a series of components to assign these reference designators sequentially.
- . The NEXT command has 2 uses with the ASSIGN REF DES command:
 1. Picking NEXT at the end of the command instead of ENTER allows you to assign additional reference designators to additional components.
 2. Picking NEXT after a (P), but before you have assigned all the reference designators in your keyboard input series, has the effect of cancelling that last (P) and the reference designator text that went with it. You may then continue picking (P)s to assign the remaining reference designators in your keyboard input series. (This allows you to continue, even though you made an error entering one of the reference designators in the series.)

(COMMAND DESCRIPTION IS CONTINUED ON THE NEXT PAGE)

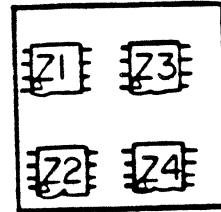
EXAMPLE

ASSIGN REF DES | Z1 | , | Z2 | , | Z3 | , | Z4 | ENTER | P1
 P2 P3 P4 ENTER

ACTION



RESULT



NOTES

To use this command, you must first have successfully used the EXTRACT NETLIST command on your schematic, and have a NET-DATA-BASE with the correct information. If there is an error in your assignment of a reference designator, the system will not make the assignment. The function screen will display the following error messages:

REF DES ALREADY USED; PLEASE ASSIGN NEXT REF DES!
 The system will skip this reference designator and assign the next one on your list with the next (P).

NO SUCH REF DES ON SCHEMATIC; PLEASE ASSIGN NEXT REF DES!
 The system will skip this reference designator and assign the next one with the next (P).

WRONG DEVICE OR VALUE; PLEASE PICK A DIFFERENT COMPONENT!
 This reference designator will be assigned to the next component you pick. You may skip over this ref des by picking NEXT, if you wish.

WRONG PACKAGE TYPE; PLEASE PICK A DIFFERENT COMPONENT!
 This reference designator will be assigned to the next component you pick. You may skip over this ref des by picking NEXT, if you wish.

COMPONENT ALREADY ASSIGNED; PLEASE PICK A DIFFERENT COMPONENT!
 This reference designator will be assigned to the next component you pick.

ACCESS FAILURE!
 The command is effectively cancelled when you receive this message.

COMMAND NAME

ASSIGN VIOLET

PURPOSE

To set violet as the drawing color for all elements on a specified layer.

INPUT SEQUENCE

keyboard
 - input -

- . KEYBOARD INPUT defines the layer number. It may be 0 to 255.
- . To specify more than one layer, use commas between layer numbers: ; or use a hyphen to specify a range of layers: .

EXAMPLE

NOTES

Any elements already existing on the specified layer will be redrawn in violet the next time you command either DRAWING, WINDOW, or ZOOM.

COMMAND NAME

ASSIGN YELLOW

PURPOSE

To set yellow as the drawing color for all elements on a specified layer.

INPUT SEQUENCE

ASSIGN YELLOW keyboard
- input - ENTER

- KEYBOARD INPUT defines the layer number. It may be 0 to 255.
- To specify more than one layer, use commas between layer numbers: 1,9,34 ENTER;
or use a hyphen to specify a range of layers: 1-9 ENTER.

EXAMPLE

ASSIGN YELLOW 3 ENTER

NOTES

Any elements already existing on the specified layer will be redrawn in yellow the next time you command either DRAWING, WINDOW, or ZOOM.

COMMAND NAME

ATTACH PINUSE CODE

PURPOSE

To place a pinuse label on a connect point.

INPUT SEQUENCE

ATCH PINUSE CODE - keyboard - ENTER \textcircled{P}_1 \textcircled{P}_2 . . . ENTER
input

- . KEYBOARD INPUT is the text. It must be one of the following: IN, OUT, OCA, OCL, BI, TRI, POWER, GROUND (with exactly these spellings) if you intend to use the LOGIC RULE CHK command.
- . \textcircled{P}_1 is the location of the text.
- . \textcircled{P}_2 is the connect point to which the label is to be attached.
- . Use NEXT after \textcircled{P}_2 to place additional pinuse labels.

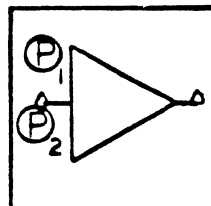
PARAMETERS

- . ACTIVE LAYER
- . TEXT POINT SIZE
- . ALL TEXT PARAMETERS
- . GRID

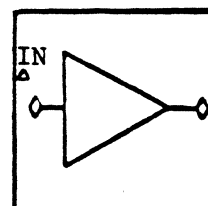
EXAMPLE

ATCH PINUSE CODE I N ENTER \textcircled{P}_1 \textcircled{P}_2 ENTER

ACTION



RESULT



COMMAND NAME

ATTACH SIGNAL NAME TO A CONNECT LINE

PURPOSE

To place a signal name label on a connect line. The text on the signal name label is then the name of the net associated with that connect line.

INPUT SEQUENCE

ATCH SIG NAME LN - keyboard - P₁ P₂ ENTER
input

- KEYBOARD INPUT is the signal name. It may be up to 18 keyboard characters, including blank spaces.
- P₁ gives the position where the signal-name label is to be placed.
- P₂ identifies the connect line with which the signal-name label is to be associated. The connect line will highlight.

PARAMETERS

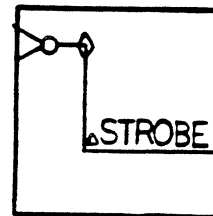
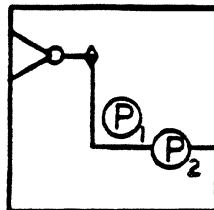
- ACTIVE LAYER . GRID . TRAP
- ALL TEXT PARAMETERS

EXAMPLE

ATCH SIG NAME LN | STROBE | ENTER | P₁ | P₂ | ENTER

ACTION

RESULT



NOTES

Use the ATCH SIG NAME PN command to attach a signal name to a connect point on a symbol (such as a ground symbol).

FIX FUNCTIONS [SELECT COMP]

COMMAND NAME FIX FUNCTIONS BY SELECTING COMPONENT

PURPOSE To fix IC logic functions by selecting components on the active board drawing. Fixed functions on IC components are not available for auto-swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE FIX FUNCTIONS [SELECT COMP] -Tablet- (P)... ENTER
Menu

- o (P) - defines the first component, with all with all swappable logic functions on the component highlighting. Additional picks will highlight and fix swappable functions on additional IC components. A component with highlighted functions will de-highlight when the operator picks additional components.
- o CANCEL will not fix highlighted functions on the last selected component.
- o Pick ENTER to fix those logic functions highlighted on the last selected component, and to complete the command.
- o Use the LIST FIXED FUNCTIONS command to list and verify fixing of functions on the components selected during the command.

EXAMPLE FIX FUNCTIONS [SELECT COMP] (P)... ENTER

COMMAND NAME

ATTACH FUNCTION TYPE

PURPOSE

To place a function type label on a symbol.
Used after the symbol has been placed in a schematic drawing.

INPUT SEQUENCE

keyboard
|ATTCH FNCTN TYP| - input - |ENTER| (P), (P)₂ . . . |ENTER|

- . KEYBOARD INPUT is the text. It may be up to 18 keyboard characters with no blank spaces allowed.
- . (P) is the location of the label.
- . (P)₂ is the element to which the label is to be attached.
- . Use |NEXT| after (P)₂ to place additional function type labels.

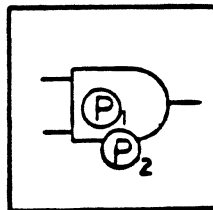
PARAMETERS

- . ACTIVE LAYER
- . TEXT POINT SIZE
- . ALL TEXT PARAMETERS
- . GRID

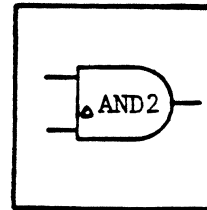
EXAMPLE

|ATTCH FNCTN TYP| |A| |N| |D| |2| |ENTER| (P), (P)₂ |ENTER|

ACTION



RESULT



COMMAND NAME

ATTACH DEVICE TYPE

PURPOSE

To place a device type label on a symbol.
Used after a library symbol has been placed
in a schematic or PC board drawing.

INPUT SEQUENCE

keyboard

ATTCH DVICE TYPE - input - ENTER (P₁) (P₂) . . . ENTER

- . KEYBOARD INPUT defines the text. It may be up to 18 keyboard characters. Do not use blanks.
- . (P₁) defines the location of the label.
- . (P₂) defines the element to which the label is to be attached.
- . Using the NEXT command after (P₂) allows you to attach additional device type labels in additional locations to other elements.

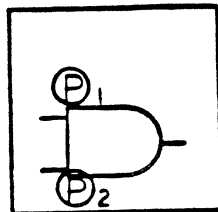
PARAMETERS

- | | |
|-----------------------|-------------------|
| . Active layer | . Grid |
| . All Text Parameters | . Text Point Size |

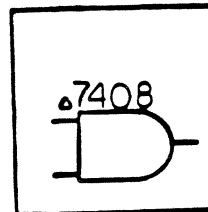
EXAMPLE

ATTCH DVICE TYPE | 7 | 4 | 0 | 8 | ENTER (P₁) (P₂) ENTER

ACTION



RESULT



COMMAND NAME

ATTACH PIN NAME

PURPOSE

To place a name label and associate it logically with a connect point.

INPUT SEQUENCE

ATTCH PIN NAME - keyboard input - ENTER | \textcircled{P}_1 \textcircled{P}_2 . . . | ENTER

- . KEYBOARD INPUT defines name. It may be up to 8 keyboard characters. Do not use blank spaces.
- . \textcircled{P}_1 defines location of name.
- . \textcircled{P}_2 defines connect point to which name is to be attached.
- . Using the NEXT command after \textcircled{P}_2 allows you to input additional pin name labels in additional locations.

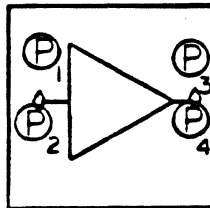
PARAMETERS

- . Active Layer
- . Grid
- . All Text Parameters
- . Text Point Size

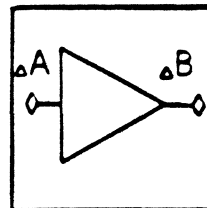
EXAMPLE

ATTCH PIN NAME | A | ENTER | \textcircled{P}_1 \textcircled{P}_2
NEXT | B | ENTER | \textcircled{P}_3 \textcircled{P}_4 | ENTER

ACTION



RESULT



FIX/FREE COMPONENTS

COMMAND NAME FIX/FREE COMPONENTS

PURPOSE To flip to the menu containing the commands used to selectively fix and free components prior to using the automatic swapping capability on the active board drawing.

The FIX/FREE COMPONENTS command is located on the AUTOMATIC PLACEMENT menu.

INPUT SEQUENCE FIX/FREE COMPONENTS

- o The following commands are located on the FIX/FREE COMPONENTS menu:

HILITE FIXED COMPONENTS
FIX ALL COMPONENTS
FIX COMPONENT [SELECT]
LIST FIXED COMPONENTS
FIX COMPONENTS BY WINDOW
FIX COMPONENT BY REFDES
HILITE FREE COMPONENTS
FREE ALL COMPONENTS
FREE COMPONENT [SELECT]
LIST FREE COMPONENTS
FREE COMPONENTS BY WINDOW
FREE COMPONENT BY REFDES

FIX/FREE FUNCTIONS

COMMAND NAME FIX/FREE FUNCTIONS

PURPOSE To flip to the menu containing the commands used to selectively fix and free IC component logic functions prior to using the automatic swapping capability on the active board drawing.

The FIX/FREE FUNCTIONS command is located on the AUTOMATIC PLACEMENT menu.

INPUT SEQUENCE FIX/FREE FUNCTIONS

- o The following commands are located on the FIX/FREE FUNCTIONS menu.

HILITE FIXED FUNCTIONS
FIX ALL FUNCTIONS
FIX FUNCTION [SELECT PIN]
FIX FUNCTIONS [SELECT COMP]
LIST FIXED FUNCTIONS
FIX FUNCTIONS BY WINDOW
FIX FUNCTION BY REFDES.PIN #
FIX BY DEVICE
HILITE FREE FUNCTIONS
FREE ALL FUNCTIONS
FREE FUNCTION [SELECT PIN]
FREE FUNCTIONS [SELECT COMP]
LIST FREE FUNCTIONS
FREE FUNCTIONS BY WINDOW
FREE FUNCTION BY REFDES.PIN #
FREE BY DEVICE

COMMAND NAME AUTOMATIC PLACEMENT

PURPOSE To flip to the menu page containing the commands used to automatically place components on a board drawing.

INPUT SEQUENCE |AUTOMATIC PLACEMENT|

The function screen message line displays:

(LOOKING FOR KEEPIN RECTANGLE: MISSING KEEPIN RECTANGLE ON LAYER 147)

- o Use the |SET ACTIVE LAYER| command to specify layer 147.
- o Use the |ADD RECTANGLE| command to specify the KEEPIN area of the board drawing.
- o You must specify a KEEPIN rectangle on layer 147 before performing automatic placement.
- o If you specified the KEEPIN rectangle on layer 147 before picking the |AUTOMATIC PLACEMENT| command, the system displays the following message:

(LOOKING FOR KEEPIN RECTANGLE)

When the system locates the KEEPIN area of your board drawing, the system displays the |AUTOMATIC PLACEMENT| menu page.

NOTES The following commands are located on the |AUTOMATIC PLACEMENT| menu:

AUTO-PLACE BOARD
LIST PLACE-LOG
SET PLCMNT PARAM

PRINT PLACE-LOG
RATSNEST
CURRENT INDEX
PROJECT INDEX

AUTO-PLACE BOARD

COMMAND NAME AUTO-PLACE BOARD

PURPOSE To begin the automatic placement of components to a board drawing.

INPUT SEQUENCE AUTO-PLACE BOARD

- o Pick AUTO-PLACE BOARD after you have specified and input the auto placement parameters.

The function screen message line displays:

(AUTOMATIC PLACEMENT SET-UP STARTED)

Then,

(PLACEMENT SET-UP COMPLETE)

The system then begins placing components on your drawing.

- o The system places components on the drawing in the following order:
 1. Placement of all unplaced ICs (if specified in the PLACE-CON file)
 2. Placement of all unplaced DEVICES (if specified in the PLACE-CON file)
 3. Placement of all unplaced DISCRETES (if specified in the PLACE-CON file).
- o The message line displays the component reference designator and the explicit drawing coordinates of each component being placed.

EX. (PLACING U11 @ (600, 1400))

- o When the system completes the AUTO-PLACE BOARD command, the system then executes the RATSNEST command.

EXAMPLE AUTO-PLACE BOARD

COMMAND NAME

BACK ANNOTATE ALL

PURPOSE

To back annotate reference designator labels and pin number labels on all schematic sheets belonging to a board so as to bring them into conformity with the board and the net data base; and to create a text file named ANNOTATE-LOG listing the drawings that have been updated and error messages.

INPUT SEQUENCEBACK ANNOT ALLNOTES

The net data base to be used must be in the current project file. If there is more than one net data base in the current project file, the system uses the most recently used revision.

The schematic sheets to be annotated must be in the current project file. The system back annotates all schematics belonging to the net data base being used. The system will ignore any other schematic drawings in the current project file.

There must be no active drawing when you use this command. The system automatically activates each drawing, annotates it, and closes it with the same revision label it had previously.

When back annotating your drawings, the system uses the text points already in your drawing, and the text parameters that were originally set for each text point (unless you used the UPDATE TXT PARAM command).

If there is no text point for a pin number label, the system creates a text point directly over the connect point for that pin and uses the currently set text parameters.

COMMAND NAME

BACK ANNOTATE CURRENT

PURPOSE

To back annotate reference designator labels and pin number labels on the currently active schematic drawing so as to bring it into conformity with the board and the net data base; and to create a text file named ANNOTATE-LOG listing any error messages.

INPUT SEQUENCEBACK ANNOT CURNOTES

The net data base to be used must be in the current project file. If there is more than one net data base in the current project file, the system uses the most recently used revision.

When back annotating your drawings, the system uses the text points already in your drawing, and the text parameters that were originally set for each text point (unless you used the UPDATE TXT PARAM command).

If there is no text point for a pin number label, the system creates a text point directly over the connect point for that pin and uses the currently set text parameters.

COMMAND NAME

BI

PURPOSE

To add a PINUSE code "BI" to a device description file.

INPUT SEQUENCEADD PINUSE | BI

or

CHANGE PINUSENOTES

This command is used only after the ADD PINUSE or CHANGE PINUSE commands.

BLANK GRID

COMMAND NAME

BLANK GRID

PURPOSE

To blank the display of the grid on the graphics screen.

INPUT SEQUENCE

BLANK GRID

NOTE

When you blank the visible grid, it continues to act as a snap grid, and it retains the grid size you last set with the SET GRID SIZE command.

BLANK ALL

COMMAND NAME

BLANK ALL

PURPOSE

To blank all colors and the grid specification displayed on the active drawing. The operator may use this command to blank all colors and their assigned layers, then UNBLANK only the desired colors/layers. The operator may then interactively edit the unblanked layers.

INPUT SEQUENCE

BLANK ALL

- o The BLANK ALL command is located on the BLANK/UNBLANK menu on Telesis 2.1 systems only; these systems have the graphics processor for the WORLD, ROAM, and ZOOM softkeys.
- o When the operator picks BLANK ALL, the system blanks all colors and their assigned layers on the active drawing.

NOTES

BLANK ALL will blank the grid specification on the graphics screen. If the operator chooses to unblank colors on the drawing one at a time with each UNBLANK command, the grid specification will not reappear on the graphics screen. UNBLANK ALL must be used to re-display the grid specification.

BLANK (COLOR OPTION)

BLUE
GREEN
RED
VIOLET
YELLOW

COMMAND NAME BLANK BLUE (or other color option)

PURPOSE To select and instantly blank individual colors assigned to displayed layers on an active BOARD, SCHEMATIC, or SYMBOL drawing. This feature may be used to temporarily blank any number of colors and their assigned layers to allow clear visibility on a congested drawing prior to editing.

INPUT SEQUENCE BLANK BLUE (or other color option)

- o The BLANK commands are located on the BLANK/UNBLANK menu on Telesis 2.1 systems only; these systems have the graphics processor for the WORLD, ROAM, and ZOOM softkeys.
- o When BLANK BLUE (or other color option) is picked, the system instantly blanks all layers assigned to that color on the active drawing.
- o Blanked colors may be re-displayed with the UNBLANK commands that appear on the BLANK/UNBLANK menu page.

NOTES If the operator picks the BLANK RED command, then proceeds to edit the drawing, elements displayed on the drawing will not highlight during interactive commands, such as MOVE SYMBOL. It is recommended that the operator use the BLANK LAYER command on specific layers so that the highlighting feature of the Telesis system continues to be visible.

COMMAND NAME

BLANK/UNBLANK

PURPOSE

To flip to the menu page containing the commands used to blank and unblank colors actively displayed on BOARD, SCHEMATIC, and SYMBOL drawings.

INPUT SEQUENCE

BLANK UNBLANK

- o The BLANK/UNBLANK command is contained on Telesis 2.1 systems only; these systems have the graphics processor for the WORLD, ROAM, and ZOOM softkeys.
- o The following commands are available on the BLANK/UNBLANK menu page:

BLANK ALL
BLANK RED
BLANK GREEN
BLANK YELLOW
BLANK BLUE
BLANK VIOLET

UNBLANK ALL
UNBLANK RED
UNBLANK GREEN
UNBLANK YELLOW
UNBLANK BLUE
UNBLANK VIOLET

NOTE: The BLANK/UNBLANK commands are system parameters. You set them for display purposes only; they are not saved as a parameter with drawings.

COMMAND NAME

BLANK LAYER

PURPOSE

To specify that all elements on a specified layer not be displayed in all subsequent display commands (DRAWING, WINDOW, ZOOM, SHIFT). Note that this command does not immediately cause the selected layers to become invisible. You must pick a display command to see the effect.

INPUT SEQUENCE

keyboard

BLANK LAYER - input - ENTER

- . KEYBOARD INPUT defines the layer number.
- . To specify more than one layer, use commas between layer numbers: 1,9,34 ENTER;
or use a hyphen to specify a range of layers:
1-9 ENTER.

EXAMPLE

BLANK LAYER 3 ENTER

NOTES

This command does not delete elements on layer specified.

COMMAND NAME

BOARD DRAWINGS

PURPOSE

To flip to the menu set used for creating new board drawings or editing existing ones. When creating a new board drawing, this command is the signal to the system that it must link the current net-data-base to the new drawing.

INPUT SEQUENCEBOARD DRAWINGS

BREAK GROUP

COMMAND NAME

BREAK GROUP

PURPOSE

To break up the identity of the present group, and return all its highlighted member elements to their normal colors.

INPUT SEQUENCE

BREAK GROUP

B SIZE

COMMAND NAME

B SIZE

PURPOSE

To specify that the current drawing have these extents:

LOWER X : 0

LOWER Y : 0

UPPER X : 17000

UPPER Y : 11000

INPUT SEQUENCE

B SIZE

NEW COMMANDS WITH THE EDA-3000 REV. 1 SOFTWARE RELEASE

COMMAND DESCRIPTIONS

NAME	PAGE	NAME	PAGE
ADD APERTURE	1-2	ENGLISH UNITS	50
ADD CONTINUATION LINE	3	FIX ALL	51
ADD PINSWAP	4-5	FIX ALL COMPONENTS	52
ADD PINUSE CONTINUATION	6	FIX ALL FUNCTIONS	53
ADD WHEEL	7	FIX ALL PINS	54
BLANK	8	FIX ALL PINS IN COMPONENT	55
BLUE PRIORITY	9	FIX ALL PINS IN FUNCTION	56
BOARD SYMBOLS	10	FIX COMPONENT [SELECT]	57
BOTTOM	11	FIX COMPONENT BY REFDES	58
BREAK LINE	12	FIX COMPONENTS BY WINDOW	59
CANCEL ACTV EXEC	13	FIX FUNCTION [SELECT PIN]	60
CANCEL PENPLOT BACKGROUND	14	FIX FUNCTION BY REFDES.PIN#	61
CENTER (on WORLD menu)	15	FIX FUNCTION BY DEVICE	61A
CHANGE APERTURE	16	FIX FUNCTIONS [SELECT COMP]	62
CHANGE PAD GRAPHICS	17	FIX FUNCTIONS BY WINDOW	63
CHANGE PINSWAP	18	FIX PIN [SELECT PIN]	64
CHANGE PINUSE CONTINUATION	19	FIX PIN BY REFDES.PIN#	65
CHANGE WHEEL	20	FIX PINS BY WINDOW	66
CHG CONTINUATION LINE	21	FIX/FREE COMPONENTS	67
CHG EXEC FILE NM	22	FIX/FREE FUNCTIONS	68
CHG EXEC FILE REV	23	FIX/FREE PINS	69
COMP/FUNC/PIN SWAPPING	24	FREE ALL	70
CONVERT SYMBOLS	25	FREE ALL COMPONENTS	71
COPY EXEC FILE	26-27	FREE ALL FUNCTIONS	72
CREATE BOM-REPORT	28	FREE ALL PINS	73
CREATE COMPONENT-REPORT	29	FREE ALL PINS IN COMPONENT	74
CREATE CONVERTED SYMBOL	30	FREE ALL PINS IN FUNCTION	75
CREATE DRAWING	31-32	FREE COMPONENT [SELEC]	76
CREATE MERGE DRAWING	33	FREE COMPONENT BY REFDES	77
CREATE NETLIST-REPORT	34	FREE COMPONENT BY WINDOW	78
DELETE	35	FREE COMPONENT BY DEVICE	78A
DELETE EXEC FILE	36-37	FREE FUNCTION [SELECT PIN]	79
DELETE LAYER	38	FREE FUNCTION BY REFDES.PIN#	80
DELETE WINDOW	39	FREE FUNCTIONS [SELECT COMP]	81
DELETE CONNECTIVITY	40	FREE FUNCTIONS BY WINDOW	82
DISPLAY	41	FREE PIN [SELECT PIN]	83
DISPLAY TEXT FILE	42	FREE PIN BY REFDES.PIN#	84
DRAW BOARD SYMBOL	43	FREE PINS BY WINDOW	85
DRAW SCHEMATIC SYMBOL	44	GREEN PRIORITY	86
DRAWING=WORLD	45	HILITE FIXED COMPONENTS	87
DRAWINGS/SYMBOLS	46	HILITE FIXED FUNCTIONS	88
DWN	47	HILITE PINS ON COMP	89
EDIT APERTURE-TAB	48		
EDIT FILE	49		

COMMAND NAME

CALIBRATE DIGITIZER

PURPOSE

To calibrate the digitizer before using it as an input device.

INPUT SEQUENCE

CALIBRATE DIG (prompt) - keyboard -
input-1

ENTER (prompt) - keyboard - ENTER
input-2

(prompt) P₁ (prompt) P₂

(prompt) P₃ (prompt) ENTER (prompt) - keyboard ENTER
input-3

(prompt) - keyboard ENTER
input-4

- . KEYBOARD INPUT-1 specifies the X size of the drawing in mils. Specify the size you wish the system to use for this drawing, not necessarily the actual size of the drawing on the digitizer table.
- . KEYBOARD INPUT-2 specifies the Y size of the drawing in mils. Specify the size you wish the system to use for this drawing, not necessarily the actual size of the drawing on the digitizer table.
- . P₁ specifies the lower right corner point of the drawing.
- . P₂ specifies the lower left corner point of the drawing.
- . P₃ specifies the uppermost Y value of the drawing.
- . KEYBOARD INPUT-3 specifies the X offset from the lower left corner of the current system drawing extents. Skip the input and pick ENTER for no offset.
- . KEYBOARD INPUT-4 specifies the Y offset from the lower left corner of current system drawing extents. Skip the input and pick ENTER for no offset.

EXAMPLE:

Open a drawing file, and pick B SIZE drawing extents. Then pick DIGITIZER MENU and:

CALIBRATE DIG | 15000 | ENTER

10000 | ENTER | P₁P₂P₃ | ENTER | 100 | ENTER
100 | ENTER

CALIBRATE DIG (cont)

RESULT: The system will create a drawing area that is 15000 x 10000 mils. The system places your P_2 at the coordinate point 100,100 of the system drawing extents; your P_1 is at 15100,100; your P_3 is at 100,10100.

NOTE:

- The X and Y sizes you specify must fit within the drawing extents you set when you opened the drawing file.
- The X and Y sizes you specify may be smaller or larger than the actual size of the drawing on the digitizer table. The system calculates a scale at which it will draw your digitizer input.

COMMAND NAME

CANCEL

PURPOSE

To cancel the last input command.

INPUT SEQUENCE

|CANCEL|

NOTES

- Using |CANCEL| does not delete anything completed during the command you are cancelling.
- On many menus, picking |CANCEL| will return the previous menu to the function screen.

COMMAND NAME

CANCEL ACTIVE FILE

PURPOSE

To cancel the currently active text file.
Used only when you have picked TEXT LEADTHRU
to create or edit a file.

INPUT SEQUENCE

CANCEL ACTV FILE

NOTES

- If you began by opening an old file, the original version will not be cancelled; only the version currently active will be deleted.

CANCEL PRINT

COMMAND NAME

CANCEL PRINT

PURPOSE

To cancel the printing of text files being output to the matrix printer.

INPUT SEQUENCE

|CANCEL PRINT|

- o The function screen message line displays the following message when |CANCEL PRINT| is picked:

<BACKGROUND MATRIX PRINT CANCELLED>

CANCL ACTIV DRW

COMMAND NAME

CANCEL ACTIVE DRAWING

PURPOSE

To discard the drawing in progress.

INPUT SEQUENCE

CANCL ACTIV DRW

NOTES

If you began the current drawing session with an OLD DRAWING command, the original version is not discarded with this command. Only the copy on which you were working is discarded.

COMMAND NAME

CANCEL USER MENUS

PURPOSE

To cancel the currently open menu file.

INPUT SEQUENCE

|CANCL USER MENUS|

COMMAND NAME

CENTER

PURPOSE

To move the display on the graphics screen so that it is centered on a point you pick.

INPUT SEQUENCE

|CENTER| (P) . . . |ENTER|

- (P) defines the point on the drawing to be moved to the center of the display.

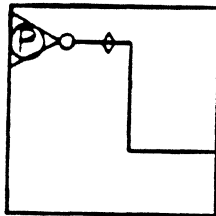
PARAMETERS

- Grid

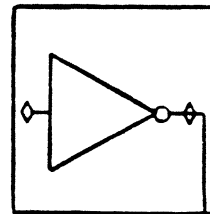
EXAMPLE

|CENTER| (P) |ENTER|

ACTION



RESULT



CENTER JUST TEXT

COMMAND NAME

CENTER JUSTIFY TEXT

PURPOSE

Set the text justification parameter to center justified. All text on a center justified text point will be centered on the text point. After this command has been picked, all text added to the active drawing, and all text picked in the UPDATE TXT PARAM command will be center justified.

INPUT SEQUENCE

CENTER JUST TEXT

CHANGE

COMMAND NAME

CHANGE

PURPOSE

To flip to the menu page containing additional editing commands.

INPUT SEQUENCE

|CHANGE|

CHANGE CLASS

COMMAND NAME

CHANGE CLASS

PURPOSE

To change a class type section in a device description file.

INPUT SEQUENCE

| CHANGE CLASS | | CLASS IC |
OR
| CLASS IO |
OR
| CLASS DISCRETE |

EXAMPLE

| CHANGE CLASS | | CLASS IC |

NOTES

Cursor must be at section to be changed.

COMMAND NAME

CHANGE FUNCTION

PURPOSE

To change a function instance line of the PINORDER section of a device description file.

INPUT SEQUENCE

```

                                keyboard
|CHANGE FUNCTION| - INPUT-1 - |ENTER|

```

```

- keyboard - |ENTER|
  INPUT-2

```

- KEYBOARD INPUT-1 is the slot name for this instance of a function. It may be up to 4 alphanumeric characters with no blank spaces allowed.
- KEYBOARD INPUT-2 is the list of pin numbers in this instance of the function.

Input a pin number to correspond with each pin name in the PINORDER line above.

A pin number may be any integer from 0 to 32767.

Pin numbers must be separated by a blank space or a comma(,).

EXAMPLE

```
|CHANGE FUNCTION|G|I|ENTER|
```

```
|1|2|4|5|6|ENTER|
```

NOTES

- |CHANGE FUNCTION| is used only in conjunction with the |CHANGE PINORDER| or |ADD PINORDER| commands.
- Cursor must be at line to be changed.

COMMAND NAME

CHANGE GROUND

PURPOSE

To change a GROUND section of a device description file.

INPUT SEQUENCE

keyboard
 |CHANGE GROUND| - INPUT-1 - |ENTER|

- keyboard - |ENTER|
 INPUT-2

- . KEYBOARD INPUT-1 is a signal name. It may be up to 18 alphanumeric characters with blank spaces allowed.
- . KEYBOARD INPUT-2 is a pin number or numbers.

A pin number may be any integer from 0 to 32767.

Pin numbers must be separated by a blank space or a comma (,).

- . Omit KEYBOARD INPUT-1 or KEYBOARD INPUT-2 by picking |ENTER| if you wish to leave signal name or pin numbers unchanged.

EXAMPLE

|CHANGE GROUND|G|N|D|ENTER|7|ENTER|

NOTES

Cursor must be at section to be changed.

COMMAND NAME

CHANGE NAME/REVISION

PURPOSE

To flip to the menu set used for changing file names and revision labels.

INPUT SEQUENCE

CHANGE NAME/REV

COMMAND NAME

CHANGE PACKAGE

PURPOSE

To change the PACKAGE section of a device description file.

INPUT SEQUENCE

keyboard

CHANGE PACKAGE - input - ENTER

- KEYBOARD INPUT is the package name. It may be up to 14 alphanumeric characters with no blank spaces allowed.
- The package name must be identical to a component symbol file name.

EXAMPLE

CHANGE PACKAGE D I P 1 4 ENTER

NOTES

Cursor must be at section to be changed.

CHANGE PEN LINE

<u>COMMAND NAME</u>	CHANGE PEN LINE
<u>PURPOSE</u>	To change the PEN/DBLAYERS line of the pen plot control file when using the <u>EDIT PENPLOT-CON</u> lead-thru.
<u>INPUT SEQUENCE</u>	<u>CHANGE PEN LINE</u> (PEN [1-8]) - Keyboard - <u>ENTER</u> Input (DBLAYERS) - Keyboard - <u>ENTER</u> Input <ul style="list-style-type: none">o When the system prompts for (PEN [1-8]), input the new pen assignment.o When the system prompts for (DBLAYERS), input the new DBLAYERS assignment. Each layer number in the list may be separated by a comma or any number of blank spaces. You may assign a range of layers by inserting a hyphen (-) or a colon (:) between the selected range.
<u>EXAMPLE</u>	<u>CHANGE PEN LINE</u> (PEN [1-8]) 6 <u>ENTER</u> (DBLAYERS) 40:44 88 103 <u>ENTER</u>
<u>RESULT</u>	PEN 6 DBLAYERS 40:44 88 103
<u>NOTES</u>	When using the <u>CHANGE PEN LINE</u> command, you may pick <u>ENTER</u> for any input that is unchanged. For example, if you wish to change the DBLAYERS without changing the PEN assignment, pick <u>ENTER</u> when they system prompts you for (PEN [1-8]). The current pen assigned to that line of the file remains the same. You may then proceed to change the (DBLAYERS) information.

COMMAND NAME

CHANGE PINCOUNT

PURPOSE

To change a PINCOUNT section in a device description file.

INPUT SEQUENCE

CHANGE PINCOUNT keyboard
- input - ENTER

- . KEYBOARD INPUT is the number of pins on the physical device. It must be an integer.

EXAMPLE

CHANGE PINCOUNT | 1 | 4 | ENTER

NOTES

Cursor must be at section to be changed.

CHANGE PINORDER

COMMAND NAME

CHANGE PINORDER

PURPOSE

To change the PINORDER section in a device description file.

INPUT SEQUENCE

CHANGE PINORDER | CHANGE PINUSE | DONE
and/or
CHANGE FUNCTION

- You may use the CHANGE PINUSE and/or CHANGE FUNCTION commands after picking CHANGE PINORDER.

EXAMPLE

CHANGE PINORDER | CHANGE PINUSE | IN | IN | IN | OUT | DONE

NOTES

- You may not change the PINORDER line itself. To do so, you must delete the entire PINORDER section.
- Cursor must be at section to be changed.

CHANGE PINTYPE

COMMAND NAME CHANGE PINTYPE

PURPOSE To change the current board symbol pintype names in the pin description file when using the EDIT PIN FILE lead-thru.

INPUT SEQUENCE CHANGE PINTYPE (PINTYPE NAME) -Keyboard- ENTER
Input

- o The keyboard input is the pintype name. You may input up to four alphanumeric characters. The pintype name distinguishes one pintype from another in the pin file.
- o The CHANGE PINTYPE command allows editing of all lines assigned to that pintype section. Simply pick ENTER after the (PINTYPE NAME) prompt to flip to the appropriate menu page for changing information within that pintype section.
- o When you pick ENTER, the system reinserts the keyword PINTYPE and the pintype name to the pin description file.

EXAMPLE CHANGE PINTYPE (PINTYPE NAME) A ENTER

RESULT PINTYPE A

COMMAND NAME

CHANGE PINUSE

PURPOSE

To change the PINUSE line of a PINORDER section of a description file.

INPUT SEQUENCE

CHANGE PINUSE - list of pinuse labels.

- LIST OF PINUSE LABELS: Input a pinuse label to correspond with each pin name in the PINORDER line above.
- PINUSE labels may be a combination of these:

IN , OUT , OCA , OCL , BI , TRI , POWER , GND , NC

EXAMPLE

CHANGE PINUSE IN IN IN IN OUT

NOTES

- CHANGE PINUSE is used only in conjunction with the CHANGE PINORDER or ADD PINORDER commands.
- Cursor must be at line to be changed.

COMMAND NAME

CHANGE POWER

PURPOSE

To change the POWER section of a device description file.

INPUT SEQUENCE

keyboard
`|CHANGE POWER| - INPUT-1 - |ENTER|`

- keyboard - `|ENTER|`
 INPUT-2

- KEYBOARD INPUT-1 is a signal name. It may be up to 18 alphanumeric characters with blank spaces allowed.
- KEYBOARD INPUT-2 is a pin number or numbers.

A pin number may be any integer from 0 to 32767.

Pin numbers must be separated by a blank space or a comma (,).

- Omit KEYBOARD INPUT-1 or KEYBOARD INPUT-2 by picking `|ENTER|` if you wish to leave signal name or pin numbers unchanged.

EXAMPLE

`|CHANGE POWER| + |5| |V| |ENTER| |1| |4| |ENTER|`

NOTES

Cursor must be at section to be changed.

COMMAND NAME

CHANGE REFERENCE DESIGNATOR

PURPOSE

To change the reference designator text on a board component after the ASSIGN REF DES command has been used.

INPUT SEQUENCE

CHANGE REF DES -keyboard- ENTER (P) . . . ENTER
input

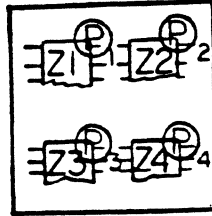
- KEYBOARD INPUT defines the text. It may be up to 24 alphanumeric characters.
- (P) defines the component on which the reference designator is to be changed.
- You may input a series of reference designator texts separated by commas. You then (P) a series of components to place these reference designators sequentially.
- The NEXT command has 2 uses with the CHANGE REF DES command:
 1. Picking NEXT at the end of the command instead of ENTER allows you to change additional reference designators on additional components.
 2. Picking NEXT after (P), but before you have used all the reference designators in your keyboard input series, has the effect of cancelling the last (P) and the reference designator text that went into it. You may then continue picking (P)s to use the remaining reference designators in your keyboard input series.

(COMMAND DESCRIPTION IS CONTINUED ON THE NEXT PAGE)

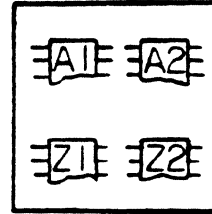
COMMAND NAME

CHANGE REF DES | A 1 | A 2 | Z 1 | Z 2 | ENTER | P 1
 P 2 P 3 P 4 ENTER

ACTION



RESULT

NOTES

You may only use this command to change the reference designator text on components with which you have first used the ASSIGN REF DES command. This command does not change the relationship between a component and schematic symbol(s) by the ASSIGN REF DES command. After using this command, you may use the BACKANNOTATE command to change the schematic symbol(s) annotation so that it corresponds once again with your components' annotation.

If there is an error in your change of a reference designator, the system will not make the change. The function screen will display the following error messages:

COMPONENT NOT ASSIGNED!

This reference designator will be placed on the next component you pick.

ACCESS FAILURE!

The command is effectively cancelled when you receive this message.

If you duplicate a reference designator name already on your board, the system will place the name on your **P**, but it will issue a warning message:

DUPLICATE REF DES NAME!

By the time you finish annotating your board, you must eliminate the duplication if the system is to operate properly.

COMMAND NAME

CHANGE SEGMENT LAYER

PURPOSE

To assign existing PC board connection-line segments to other layers of your drawing. Segments reassigned to new layers will be displayed in the new layer color.

INPUT SEQUENCE

CHANGE SEGMENT LAYER --> (NEW LAYER) --> Keyboard --> ENTER (P) ENTER
Input

- When the system prompts you for the layer, input the layer (number) of your drawing where the segment is to be assigned. Pick ENTER.
- Pick the segment on your drawing that you wish to assign to the new layer. The segment will highlight in RED.
- Pick ENTER to assign the segment to the layer you specified.

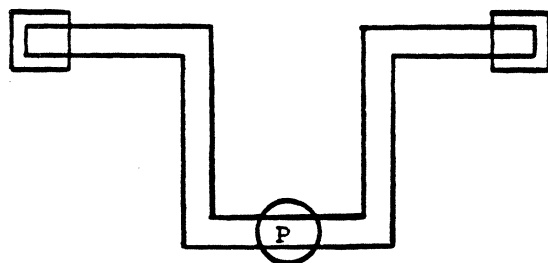
NOTES:

If you are assigning connect-line segments to other layers that have the same color assignment, use the LIST ELEMENT command to verify the new layer assignment.

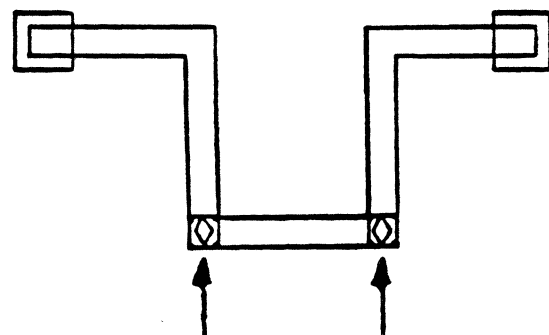
The system automatically inserts VIA symbols to your PC board design when connect-line segments are transferred to new layers.

EXAMPLE:

CHANGE SEGMENT LAYER (NEW LAYER) 1 ENTER (P) ENTER



CONNECT-LINE SEGMENT

RESULT

VIA SYMBOLS

COMMAND NAME CHANGE THERMAL RELIEF

PURPOSE To change the thermal relief specification in the pin description file when using the EDIT PIN FILE lead-thru.

INPUT SEQUENCE CHANGE THERM-REL PHOTOPLLOTTER APERTURE TYPE (NAME)... ENTER (LAYER)

—> -Keyboard- ENTER
Input

- o The thermal relief line of the pin file contains the following information:
 1. The keyword THERMAL-RELIEF
 2. A photoplotter aperture type (Ex. FLASH)
 3. A name that distinguishes one thermal relief from another.
 4. A physical layer assignment
- o The thermal relief name may contain any ten alphanumeric characters with no blank spaces.
- o The physical layer assignment may contain 24 alphanumeric characters with no blank spaces.
- o When you pick ENTER, the system reinserts the keyword THERMAL-RELIEF and the equals sign (=), with your thermal relief specifications.

EXAMPLE CHANGE THERM-REL FLASH AB12 ENTER (LAYER) IMBEDDED-PLANE ENTER

RESULT THERMAL-RELIEF FLASH=AB12 IMBEDDED-PLANE

When using the CHANGE THERM-REL command, you may pick ENTER after any prompt if the current specification displayed on the graphics screen is correct. The specification remains the same.

NOTES If the physical layer nomenclature is changed, the system automatically changes the physical layer nomenclature of the ANTI-PAD line of the file. These lines of the pin file must have the same physical layer nomenclature.

CHANGE WIDTH

COMMAND NAME

CHANGE WIDTH

PURPOSE

To change the width of entire lines and connect-lines on symbol, schematic and board drawings.

INPUT SEQUENCE

CHANGE WIDTH --> (LINE WIDTH) ^{NEW} --> Keyboard --> ENTER
Input
-> Tablet --> (P) --> ENTER
Menu

(P) Defines the entire line or connect-line in the drawing. The line is highlighted in RED.

ENTER - Assigns the new line width and displays it on the drawing.

NOTES

If you pick ENTER without inputting a line width, the system will change the current line width to a 0 mil line when you complete the CHANGE WIDTH input sequence. You must input the new line width or CANCEL from the CHANGE WIDTH command if you do not want the current line width changed to 0 mils.

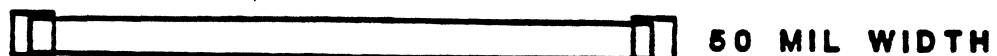
EXAMPLE:

CHANGE WIDTH (LINE WIDTH) ^{NEW} 50 ENTER (P) ENTER

CURRENT CONNECT-LINE



NEW CONNECT-LINE



COMMAND NAME

CHANGE CURRENT PROJECT NAME

PURPOSE

To change the name of the current project file.

INPUT SEQUENCECHG CUR PROJ NM - keyboard - ENTER
input

- . KEYBOARD INPUT defines the new project name.
- . You may not specify a revision after the project name because this command changes the name of all revisions that have the same name as the current project. While the project name is changed, each revision label is retained.

EXAMPLECHG CUR PROJ NM BETA ENTERNOTES

This command cannot be used to change the name of a project on a floppy disk.

COMMAND NAME

CHANGE CURRENT PROJECT REVISION

PURPOSE

To change the revision label of the current project file.

INPUT SEQUENCE

CHG CUR PROJ RV - keyboard - ENTER
input

- . KEYBOARD INPUT defines the new revision label.
- Input the revision label only. Do not include
- . the project name.

EXAMPLE

CHG CUR PROJ RV | T | E | M | P | ENTER

Before: Current project was project ALPHA revision 1.

After: Current project is now project ALPHA revision TEMP.

COMMAND NAME

CHANGE DRAWING NAME

PURPOSE

To change the name of a drawing.

INPUT SEQUENCE

CHG DRAWING NM - keyboard - , - keyboard -
input-1 input-2

ENTER - keyboard - ENTER
input-3

- . KEYBOARD INPUT-1 is the name of the project in which the drawing is filed:
 - a) if the drawing is in the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) if the drawing is in any other project, input the exact project name.
- . KEYBOARD INPUT-2 is the drawing name to be changed. It must be the exact drawing name.
- . KEYBOARD INPUT-3 is the new drawing name.
- . Always use a comma , after a project name (KEYBOARD INPUT-1) to distinguish it from the drawing name. No comma is necessary if the project name is skipped.
- . You may not specify a revision after a drawing name because this command changes the name of all revisions with the same drawing name. Revision labels remain unchanged.
- . You may specify a revision after the project name. If you do not, the most recently used revision will be used.
- . To change the name of a drawing that is on a floppy disk, you use this command exactly as described above with this exception: input the characters F : immediately before the project name.

CHG DRAWING NM (CONT)

EXAMPLE

```
CHG DRAWING NM | A | L | P | H | A | | 2 | , | S | C | H | E | M | | ENTER |  
T | E | S | T | S | C | H | E | M | | ENTER |
```

Result: The drawing SCHEM in revision 2 of the project ALPHA is now named TESTSCHEM.

COMMAND NAME

CHANGE DRAWING REVISION

PURPOSE

To change the revision label of a drawing and, if the drawing is a board drawing, to change the revision label of the net-data-base file to which it is linked.

INPUT SEQUENCE

CHG DRAWING RV - keyboard - , - keyboard -
input-1 input-2

ENTER - keyboard - ENTER
input-3

- . KEYBOARD INPUT-1 is the name of the project in which the drawing is filed:
 - a) if the drawing is in the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) if the drawing is in any other project, input the exact project name. You may specify the project revision. If you do not, the most recently used revision will be used.
- . KEYBOARD INPUT-2 is the drawing name whose revision label is to be changed. It must be the exact drawing name. You may also specify the revision label to be changed. If you do not, the label of the most recently used revision will be changed.
- . KEYBOARD INPUT-3 is the new revision label. Input the revision label only. Do not include the drawing name.
- . Always use a comma , after a project name (KEYBOARD INPUT-1) to distinguish it from the drawing name. No comma is necessary if the project name is skipped.
- . To change the revision label of a drawing on a floppy disk, you use this command exactly as described above with this exception: input the characters F : immediately before the project name.

EXAMPLE

```
CHG DRAWING RV | ALPHA 2 , SCHEM A | ENTER |  
B | ENTER |
```

Result: revision A of drawing SCHEM in revision 2 of project ALPHA is now labeled revision B.

COMMAND NAME

CHANGE MENU NAME

PURPOSE

To change the name of a menu file.

INPUT SEQUENCE

CHG MENU NM - keyboard - |_ - keyboard - ENTER
 input-1 input-2

- keyboard ENTER
 input-3

- KEYBOARD INPUT-1 is the name of the project (if any) in which the menu file is filed.

If the menu file is not in a project file, or if it is in the current project file, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2.

- KEYBOARD INPUT-2 is the menu file name to be changed.
- KEYBOARD INPUT-3 is the new menu file name.
- Always use a comma |_ after the project name to distinguish it from the menu file name. No comma is necessary if the project name is skipped.
- You may not specify a revision after a menu file name because this command changes the name of all revisions with the same menu file name. Revision labels remain unchanged.
- You may specify a revision after the project name. You must input one blank space between the file name and the revision label. If you do not input a revision label, the most recently used revision will be used.
- To change the name of a menu file that is on a floppy disk, use this command exactly as described above with this exception: input the characters |F|: immediately after the CHG MENU NM command.

EXAMPLE

CHG MENU NM ALPHA ENTER BETA ENTER

Result: You have changed the name of a menu file from "ALPHA" to "BETA". The menu file was at the system level so the project name was skipped.

COMMAND NAME

CHANGE MENU REVISION

PURPOSE

To change the revision label of a menu file.

INPUT SEQUENCE

CHG MENU RV - keyboard - , - keyboard - ENTER
 input-1 input-2

- keyboard ENTER
 input-3

- KEYBOARD INPUT-1 is the name of the project (if any) in which the menu file is filed.

If the menu file is not in a project file, or if it is in the current project file, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2.

- KEYBOARD INPUT-2 is the name of the menu file whose revision label is to be changed. It must be the exact menu file name. You may also specify the revision to be changed. You must input one blank space between the file name and the revision label. If you do not specify a revision label, the change will affect the most recently used revision.
- KEYBOARD INPUT-3 is the new revision label. Input the revision label only; do not include the menu file name. The revision label may be up to 4 alphanumeric characters with no blank spaces allowed.
- Always use a comma , after a project name to distinguish it from the menu file name. No comma is necessary if the project name is skipped.
- You may specify a revision label after the project file name. You must input one blank space between the file name and the revision label. If you do not specify a revision label, the most recently used revision will be used.
- To change the revision label of a menu file that is on a floppy disk, use this command exactly as described above with this exception: input the characters F: immediately after the CHG MENU RV command.

EXAMPLE

CHG	MENU	RV	A	L	P	H	A	A	B	C	ENTER	X	Y	Z	ENTER
-----	------	----	---	---	---	---	---	---	---	---	-------	---	---	---	-------

Result: You have changed the revision label of a menu file name "ALPHA" from "ABC" to "XYZ". The menu file was at the system level so the project name was skipped.

COMMAND NAME

CHANGE NET DATA BASE REVISION

PURPOSE

To change the revision label of a net data base.

INPUT SEQUENCE

CHG NET-DB RV - keyboard - , - keyboard -
input-1 input-2

ENTER - keyboard - ENTER
input-3

- . KEYBOARD INPUT-1 is the name of the project in which the net data base is filed:
 - a) if the net data base is in the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) if the net data base is in any other project, input the exact project name. You may specify the project revision. If you do not, the most recently used revision will be used.
- . KEYBOARD INPUT-2 is the name of the net data base. Since the net data base always has the same name, you need not input the name. You may just input the revision label to be changed. If you do not input the revision label, the label of the most recently used revision will be changed.
- . KEYBOARD INPUT-3 is the new revision label. Input the revision label only.
- . Always use a comma , after a project name (KEYBOARD INPUT-1) to distinguish it from KEYBOARD INPUT-2. No comma is necessary if the project name is skipped.
- . To change the revision label of a net data base on a floppy disk, you use this command exactly as described above with this exception: input the characters F : immediately before the project name.

EXAMPLE

CHG NET-DB RV | 1 | ENTER | TEMP | ENTER

Result: revision 1 of the net data base in the current project is now labeled revision TEMP.

NOTE

Ordinarily, it is advisable to use the CHG DRAWING RV command to simultaneously change the revision label of a net data base and the board drawing to which it is linked. This ensures that the board and the net data base always have the same revision label.

COMMAND NAME

CHANGE SYMBOL NAME

PURPOSE

To change the name of a symbol file.

INPUT SEQUENCE

```

|CHG SYMBOL NM| - keyboard - |,| - keyboard - |ENTER|
                    input-1          input-2
- keyboard - |ENTER|
              input-3

```

- . KEYBOARD INPUT-1 defines the name of the project in which the symbol is filed:
 - a) if the symbol file is in the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) if the symbol file is in any other project, input the exact project name.
- . KEYBOARD INPUT-2 defines the symbol file name to be changed. It must be the exact symbol file name.
- . KEYBOARD INPUT-3 defines the new symbol file name.
- . Always use a comma |,| after a project name (KEYBOARD INPUT-1) to distinguish it from the symbol file name. No comma is necessary if the project name is skipped.
- . You may not specify a revision after a symbol file name because this command changes the name of all revisions with the same file name. Revision labels remain unchanged.
- . You may specify a revision after the project name. If you do not, the most recently used revision will be used.
- . To change the name of a symbol file that is on a floppy disk, you use this command exactly as described above with this exception: input the characters |F| |:] immediately before the project name.

EXAMPLE

```
|CHG SYMBOL NM| |D|I|0|3|5|0| |ENTER| |D|I|0|D|E|3|5|0| |ENTER|
```

Result: the symbol file DI0350 in the current project,
is now named DIODE350.

COMMAND NAME

CHANGE SYMBOL REVISION

PURPOSE

To change the revision label of a symbol file.

INPUT SEQUENCE

CHG SYMBOL RV - keyboard - , - keyboard - input-1 - keyboard - input-2 - ENTER

- keyboard - ENTER
input-3

- . KEYBOARD INPUT-1 defines the name of the project in which the symbol is filed:
 - a) if the symbol file is in the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) if the symbol file is in any other project, input the exact project name. You may specify the product revision. If you do not, the most recently used revision will be used.
- . KEYBOARD INPUT-2 defines the name of the symbol file whose revision label is to be changed. It must be the exact symbol file name. You may also specify the revision to be changed. If you do not, the most recently used revision will be changed.
- . KEYBOARD INPUT-3 defines the new revision label. Input the revision label only. Do not include the symbol file name.
- . Always use a comma , after a project name (KEYBOARD INPUT-1) to distinguish it from the symbol file name. No comma is necessary if the project name is skipped.
- . To change the revision label of a symbol file on a floppy disk, you use this command exactly as described above with this exception: input the characters F : immediately before the project name.

EXAMPLE

CHG SYMBOL RV DIODE350,I ENTER TEMP ENTER

Result: Revision 1 of the symbol file DIODE350 in the, current project is now labeled revision TEMP.

COMMAND NAME

CHANGE TEXT FILE NAME

PURPOSE

To change the name of a text file.

INPUT SEQUENCE

CHG TEXT FILE NM - keyboard - , - keyboard - ENTER
input-1 input-2

- keyboard - ENTER
input-3

- . KEYBOARD INPUT-1 defines the name of the project in which the text file is filed:
 - a) if the text file is in the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) if the text file is in any other project, input the exact project name.
- . KEYBOARD INPUT-2 defines the text file name to be changed. It must be the exact text file name.
- . KEYBOARD INPUT-3 defines the new text file name.
- . Always use a comma , after a project name (KEYBOARD INPUT-1) to distinguish it from the text file name. No comma is necessary if the project name is skipped.

You may not specify a revision after a text file name because this command changes the name of all revisions with the same text file name. Revision labels remain unchanged.

You may specify a revision after the project name. If you do not, the most recently used revision will be used.

- . To change the name of a text file that is on a floppy disk, you use this command exactly as described above with this exception: input the characters F : immediately before the project name.

EXAMPLE

CHG TEXT FILE NM ALPHA,SAMPLEFILE

ENTER EXAMPLEFILE ENTER

Result: the text file SAMPLEFILE in the project ALPHA is now named EXAMPLEFILE.

COMMAND NAME

CHANGE TEXT FILE REVISION

PURPOSE

To change the revision label of a text file.

INPUT SEQUENCE

CHG TEXT FILE RV - keyboard - , - keyboard - ENTER
input-1 input-2

- keyboard - ENTER
input-3

- . KEYBOARD INPUT-1 defines the name of the project in which the text file is filed:
 - a) if the text file is in the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) if the text file is in any other project, input the exact project name. You may specify the project revision. If you do not, the most recently used revision will be used.
- . KEYBOARD INPUT-2 defines the name of the text file whole revision label is to be changed. It must be the exact text file name. You may also specify the revision to be changed. If you do not, the label of the most recently used revision will be changed.
- . KEYBOARD INPUT-3 defines the new revision label. Input the revision label only. Do not include the text file name.
- . Always use a comma , after a project name (KEYBOARD INPUT-1) to distinguish it from the text file name. No comma is necessary if the project name is skipped.
- . To change the revision label of a text file on a floppy disk, you use this command exactly as described above with this exception: input the characters F : immediately before the project name.

EXAMPLE

CHG TEXT FILE RV EXAMPLEFILE , 1 ENTER

TEMP ENTER

Result: The revision 1 of the text file EXAMPLEFILE in the current project is now labeled revision TEMP.

COMMAND NAME

CLASS DISCRETE

PURPOSE

To add a class type "DISCRETE" to a device description file.

INPUT SEQUENCEADD CLASSCLASS DISCRETE

or

CHANGE CLASSNOTES

This command is used only after the ADD CLASS or CHANGE CLASS commands.

COMMAND NAME

CLASS IC

PURPOSE

To add a class type "IC" to a device description file.

INPUT SEQUENCE

ADD CLASS CLASS IC
or
CHANGE CLASS

NOTES

This command is used only after the ADD CLASS or CHANGE CLASS commands.

COMMAND NAME

CLASS IO

PURPOSE

To add a class type "IO" to a device description file.

INPUT SEQUENCE

ADD CLASS CLASS IO
OR
CHANGE CLASS

NOTES

This command is used only after the ADD CLASS or CHANGE CLASS commands.

COMMAND NAME

COMPONENT ORIENTATION

PURPOSE

To inform the system of the predominant orientation (horizontal or vertical) of the components in the board drawing. (The system requires this information when the auto router is used.)

INPUT SEQUENCE

COMP ORIENTATION - keyboard - ENTER
input

- KEYBOARD INPUT is H or V (for horizontal or vertical).

EXAMPLE

COMP ORIENTATION H ENTER

DEFAULT

V

COMMAND NAME

COMPRESS DRAWING

PURPOSE

To compress the disk space used by a drawing so that more free disk space is available, and so that speed of system operation is increased.

INPUT SEQUENCE

COMPRESS DRAWING

CONNECT-POINTS

COMMAND NAME CONNECT POINTS

PURPOSE To include the keyword CONNECT-POINTS in the pen plot control file when using the EDIT PENPLOT-CON lead thru.

INPUT SEQUENCE CONNECT POINTS

NOTES If CONNECT POINTS are included in the pen plot, they will be plotted at the size last set by the SET CNCT PT SIZE command. Variations in size shown on the graphics screen will not be shown in the pen plot.

COMMAND NAME

CONVERT LINE GRAPHICS

PURPOSE

To update all drawings created prior to the 8304-E software release. This command updates all lines (greater than 0-width) to the "filled line" graphics now on Telesis 2.1 only.

CONVERT LINE GRAPHICS also updates the line graphics of any drawing created on a Telesis system that is transferred to another Telesis system containing a different display configuration. * For example, drawings created on Telesis 2.0 that are transferred to a Telesis 2.1 system, and the reverse.

* Telesis 2.1 - includes the graphics processor for the WORLD, ROAM and ZOOM softkeys.

Telesis 2.0 - systems that do not have the graphics processor.

INPUT SEQUENCE

CONVERT LINE GRAPHICS

- o CONVERT LINE GRAPHICS command is located on the SYMBOL, SCHEMATIC and BOARD menus on Telesis 2.0 and Telesis 2.1 systems.
- o When CONVERT LINE GRAPHICS is picked, the function screen displays the following message:

THIS MENU SELECTION IS USED TO CONVERT ALL LINES
(WITH A WIDTH GREATER THAN ZERO) TO THE CURRENT
GRAPHIC CONFIGURATION.

PLEASE PICK PAGE -> TO CONTINUE
OR
PLEASE PICK CANCEL

If the operator picks PAGE ->, the system will issue the following statement on the function screen message line:

CONVERSION OF LINES STARTED

The drawing will then repaint on the graphics screen, with all lines (greater than 0-width) converted to the existing graphics display configuration on the system. When CONVERT LINE GRAPHICS is complete, the function screen message line displays:

CONVERSION COMPLETE

NOTE: Once the operator picks PAGE ->, the CANCEL command will not terminate the CONVERT LINE GRAPHICS command. The drawing conversion must complete before the system can be used interactively.

NOTES

Refer to the OPERATOR'S MANUAL (Volume 1.) for additional information on the CONVERT LINE GRAPHICS command and when to use it Telesis 2.1 and Telesis 2.0 systems.

COMMAND NAME

COPY CURRENT PROJECT

PURPOSE

To make a copy of the contents of the current project file.

INPUT SEQUENCE

COPY CUR PROJECT - keyboard - ENTER
input

- . KEYBOARD INPUT-1 defines the name of the project receiving the copy:
 - a) to copy into the current project, skip the KEYBOARD INPUT and pick ENTER;
 - b) to copy into any other existing project, input the exact project name;
 - c) to create a new project and copy into it, input a new project name.
- . You may specify a revision after each project name. If you do not, the most recently used revision will be used.
- . To copy to a floppy disk, you use this command exactly as described above with this exception: input the characters F : immediately before the name of the project on the floppy disk.

EXAMPLE

COPY CUR PROJECT F : ENTER

Result: The current project is copied to the floppy disk under its current name.

COMMAND NAME

COPY DRAWING

PURPOSE

To make a copy of a drawing and if the drawing is a board drawing, to make a copy of the net data base file to which it is linked.

INPUT SEQUENCE

COPY DRAWING - keyboard - [,] - keyboard - ENTER
input-1 input-2

- keyboard - [,] - keyboard - ENTER
input-3 input-4

- . KEYBOARD INPUT-1 is the name of the project from which the drawing is to be copied:
 - a) to copy from the current project, skip the KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) to copy from any other project, input the exact project name.
- . KEYBOARD INPUT-2 is the name of the drawing to be copied. It must be the exact drawing name.
- . KEYBOARD INPUT-3 is the name of the project receiving the copy:
 - a) to copy into the current project, skip KEYBOARD INPUT-3 and go directly to KEYBOARD INPUT-4;
 - b) to copy into any other existing project, input the exact project name;
 - c) to create a new project and copy into it, input a new project name.
- . KEYBOARD INPUT-4 is the name of the drawing copy if different from the original drawing name (KEYBOARD INPUT-2). To use the same drawing name for the copy as for the original, skip KEYBOARD INPUT-4.
- . Always use a comma [,] after project names (KEYBOARD INPUT-1 and KEYBOARD INPUT-3) to distinguish them from drawing names. No comma is necessary if a project name is skipped. However, the comma is necessary when a drawing name is skipped.

- . You may specify a revision after any project name or drawing name. If you do not, the most recently used revision will be used.
- . To copy to or from a floppy disk, you use this command exactly as described above with this exception: input the characters `[F]:` immediately before the name of any project that is on the floppy disk.

EXAMPLE 1

```
[COPY DRAWING] [F]:[A][L][P][H][A], [S][C][H][E][M] [ENTER] [B][E][T][A]
[,] [ENTER]
```

Result: The drawing SCHEM in the project ALPHA is copied from the floppy disk to the system. The drawing is still named SCHEM, but is now in a project file named BETA.

EXAMPLE 2

```
[COPY DRAWING] [B][O][A][R][D] [ENTER] [F]: [ENTER]
```

Result: The drawing BOARD in the current project is copied to a floppy disk under the same project name and drawing name; the net data base linked to this drawing is copied to the floppy disk along with the drawing.

COMMAND NAME

COPY ELEMENT

PURPOSE

To place a new element that is a copy of an existing element in the drawing.

INPUT SEQUENCE

COPY ELEMENT | \textcircled{P}_1 | \textcircled{P}_2 . . . | ENTER |

- . \textcircled{P}_1 defines the element to be copied. It may be on any part of the element.
- . \textcircled{P}_2 defines the location of the copy.
- . After \textcircled{P}_2 , you may continue picking \textcircled{P} s to place copies of the same element in additional locations.
- . Use the NEXT command instead of ENTER to copy additional elements.

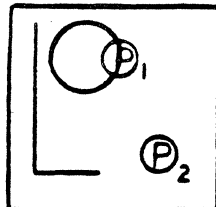
PARAMETERS

- . Grid & Trap

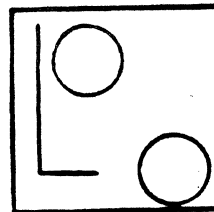
EXAMPLE

COPY ELEMENT | \textcircled{P}_1 | \textcircled{P}_2 . . . | ENTER |

ACTION



RESULT

NOTES

- . When the system copies an element in a new location, it places the origin of the element at the location picked.
- . You cannot copy connect lines.
- . COPY copies the element without any logical attachments. This means that if you copy a symbol, the copy will have no attached connect lines, even though the original may have connections.

COMMAND NAME

COPY FROM TAPE

PURPOSE

To copy a list of items from a magnetic tape to the system, and to flip to the menu page that allows you to specify whether items are to be copied to the current project or to their original projects.

INPUT SEQUENCE

COPY FROM TAPE | CPY TO CUR PROJ |
 or
CPY TO ORIG PROJ | - list of items - ENTER |
 to be copied

- When you pick COPY FROM TAPE, you may then choose to copy files from the tape to the current project (CPY TO CUR PROJ), or to copy them to their original projects (CPY TO ORIG PROJ).
- LIST OF ITEMS TO BE COPIED—To input this list, use the following commands:

SECT FROM TAPE
PROJ FROM TAPE
DRAWING FROM TAPE
SYMBOL FROM TAPE
TEXT FROM TAPE
NET-DB FROM TAPE

EXAMPLE

COPY FROM TAPE | CPY TO CUR PROJ | DRAWING FROM TAPE
ALPHA,SCHEM | ENTER | NET-DB FROM TAPE
ALPHA, | ENTER | ENTER

Result: Two items are copied from magnetic tape to the system.

- 1) the drawing SCHEM in the project ALPHA
- 2) the net data base in the project ALPHA

NOTES

A magnetic tape may have several sections containing data. You may only copy files from the current tape section.

COMMAND NAME

COPY GROUP

PURPOSE

To place a copy of a group in a drawing.

INPUT SEQUENCECOPY GROUP | P, P₂ . . . | ENTER

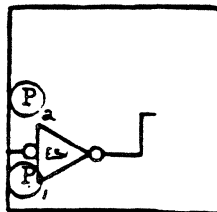
- P, establishes a reference point on the group to be copied.
- P₂ specifies the point at which this reference point is to be placed when the group is copied.
- Input additional Ps after P₂ to specify reference point locations for additional copies.

PARAMETERS

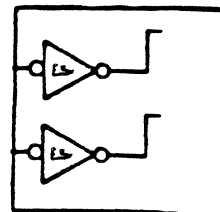
- GRID
- TRAP

EXAMPLECOPY GROUP | P, P₂ | ENTER

ACTION



RESULT

NOTES

- Reference designators will be copied if they are part of a group. If the reference designator was placed with the ASSIGN REF DES command in the original group, the original will retain its link to the net data base, but the copy will have no link to the net data base.
- The copy will have the same connections and floating ends (if any) as the original group. No new connections will be made when the copy is made even if you place a floating end in a copy directly on the connect point of another element in the drawing.

- You may specify a revision label after any project name or menu file name. You must input one blank space between the file name and the revision label. If you do not input a revision label, the most recently used revision will be used.
- For floppy disk copies, use this command exactly as described above with these exceptions:
 - a) to copy from a floppy disk, input the characters `F:` immediately after the `COPY MENU FILE` command.
 - b) to copy to a floppy disk, input the characters `F:` immediately after the first `ENTER` in the input sequence.

EXAMPLE

```
COPY MENU FILE ALPHA ENTER F: ENTER
```

Result: You have copied the menu file "ALPHA" to a floppy disk. The original and the copy are at the system level (not in a project file), and the copy has the same name (ALPHA) as the original, so KEYBOARD INPUTS-1, 3, and 4 were skipped.

NOTES

Menu files should usually be kept at the system level because they cannot be edited or used for adding symbols when filed within a project file. However, they may be archived within a project file.

COMMAND NAME

COPY NET DATA BASE

PURPOSE

To make a copy of a net data base file.

INPUT SEQUENCE

COPY NET-DB - keyboard - |_ - keyboard - ENTER
input-1 input-2

- keyboard - |_ - keyboard - ENTER
input-3 input-4

- . KEYBOARD INPUT-1 is the name of the project in which the net data base is to be copied:
 - a) to copy from the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) to copy from any other project, input the exact project name.
- . KEYBOARD INPUT-2 is usually skipped. It defines the name of the net data base file. (By picking the COPY NET-DB command, you automatically defined the name of the file, that is, NET-DATA-BASE. However, you may use KEYBOARD INPUT-2 to specify the revision label of the net data base you wish to copy.)
- . KEYBOARD INPUT-3 is the name of the project receiving the copy:
 - a) to copy into the current project, skip KEYBOARD INPUT-3 and go directly to KEYBOARD INPUT-4;
 - b) to copy into any other existing project, input the exact project name;
 - c) to create a new project and copy into it, input a new project name.
- . KEYBOARD INPUT-4 is usually skipped. It defines the name of the net data base copy. (A net data base, copy or original, will always have the name NET-DATA-BASE.) However, you may use KEYBOARD INPUT-4 to specify the revision label of the copy if different from the revision label of the original.

- Always use a comma `|,|` after project names (KEYBOARD INPUT-1 and KEYBOARD INPUT-3) to distinguish them from the net data base revision labels. No comma is necessary if a project name is skipped. However, the comma is necessary when a net data base revision label is skipped.
- You may specify a revision after any project name. If you do not, the most recently used revision will be used. You may also specify the revision label of the net data base original (KEYBOARD INPUT-2) or copy (KEYBOARD INPUT-4). Because a net data base file is always named NET-DATA-BASE, you do not need to input the name of the file; you may input the revision label alone. If you do not specify the net data base revision to be used, the most recently used revision will be used.
- To copy to or from a floppy disk, you use this command exactly as described above with this exception: input the characters `|F|:|B|` immediately before the name of any project that is on the floppy disk.

EXAMPLE

```
|COPY NET-DB| |A|L|P|H|A|,| |ENTER| |F|:|B| |ENTER|
```

Result: The most recently used revision of the net data base in project ALPHA is copied on to a floppy disk into a project file with the same name as the current project file. The copy of the net data base is labelled revision B.

NOTE

Ordinarily, it is advisable to use the `|COPY DRAWING|` command to simultaneously copy a net data base and the board drawing to which it is linked. This ensures that the board and the net data base remain together.

COMMAND NAME

COPY SYMBOL

PURPOSE

To make a copy of a symbol file.

INPUT SEQUENCE

COPY SYMBOL - keyboard - | , | - keyboard - ENTER
input-1 input-2

- keyboard - | , | - keyboard - ENTER
input-3 input-4

- . KEYBOARD INPUT-1 is the name of the project from which the symbol is to copied:
 - a) to copy from the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) to copy any other project, input the exact project name.
- . KEYBOARD INPUT-2 is the name of the symbol to be copied. It must be the exact symbol file name.
- . KEYBOARD INPUT-3 is the name of the project receiving the copy:
 - a) to copy into the current project, skip KEYBOARD INPUT-3 and go directly to KEYBOARD INPUT-4;
 - b) to copy into any other existing project, input the exact project name;
 - c) to create a new project and copy into it, input a new project name.
- . KEYBOARD INPUT-4 is the name of the symbol file copy if different from the original symbol file name (KEYBOARD INPUT-2). To use the same symbol file name for the copy as for the original, skip KEYBOARD INPUT-4.
- . Always use a comma | , | after project names (KEYBOARD INPUT-1 and KEYBOARD INPUT-3) to distinguish them from symbol file names. No comma is necessary if a project name is skipped. However, the comma is necessary when a symbol name is skipped.

- . You may specify a revision after any project name or symbol file name. If you do not, the most recently used revision will be used.
- . To copy to or from a floppy disk, you use this command exactly as described above with this exception: input the characters `|F:|` immediately before the name of any project that is on the floppy disk.

EXAMPLE

```
|COPY SYMBOL| |SYSTEM-LIBRARY,DIPL4|
|ENTER| |F:| |ENTER|
```

Result: The symbol file DIPL4 is copied from the system to a floppy disk. It retains the same file name and project name.

COMMAND NAME

COPY TEXT FILE

PURPOSE

To make a copy of a text file.

INPUT SEQUENCE

COPY TEXT FILE - keyboard - | | - keyboard - ENTER
input-1 input-2

- keyboard - | | - keyboard - ENTER
input-3 input-4

- . KEYBOARD INPUT-1 defines the name of the project from which the text file is to be copied:
 - a) to copy from the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) to copy from any other project, input the exact project name.
- . KEYBOARD INPUT-2 defines the name of the text file to be copied. It must be the exact text file name.
- . KEYBOARD INPUT-3 defines the name of the project receiving the copy:
 - a) to copy into the current project, skip KEYBOARD INPUT-3 and go directly to KEYBOARD INPUT-4;
 - b) to copy into any other existing project, input the exact project name;
 - c) to create a new project and copy into it, input a new project name.
- . KEYBOARD INPUT-4 defines the name of the text file copy if different from the original text file name (KEYBOARD INPUT-2). To use the same text file name for the copy as for the original, skip KEYBOARD INPUT-4.
- . Always use a comma | | after project names (KEYBOARD INPUT-1 and KEYBOARD INPUT-3) to distinguish them from text file names. No comma is necessary if a project name is skipped. However, the comma is necessary when a text file name is skipped.

- . You may specify a revision after any project name or text file name. If you do not, the most recently used revision will be used.
- . To copy to or from a floppy disk, you use this command exactly as described above with this exception: input the characters `[F:]` immediately before the name of any project that is on the floppy disk.

EXAMPLE

```
COPY TEXT FILE | ALPHA, BOM-REPORT | ENTER |
F: ALPHA, | ENTER |
```

Result: The text file BOM-REPORT in project ALPHA is copied to a floppy disk. It is still named BOM-REPORT and it is still in a project file named ALPHA.

COMMAND NAME

COPY TO TAPE

PURPOSE

To copy a list of items from the system to magnetic tape, and to flip to the menu page used to input the list.

INPUT SEQUENCE

COPY TO TAPE - list of items - ENTER
to be copied

- . LIST OF ITEMS TO BE COPIED—To input this list, use the following commands:

CUR PROJ TO TAPE
PROJECT TO TAPE
DRAWNG TO TAPE
SYMBOL TO TAPE
TEXT TO TAPE
NET-DB TO TAPE

EXAMPLE

COPY TO TAPE | TEXT TO TAPE | ALPHA,EXTRAC
TION-LOG | ENTER | PROJECT TO TAPE | BETA
ENTER | ENTER

Result: Two items are copied from the system to tape
1) the text file EXTRACTION-LOG in the project ALPHA
2) the project file BETA

COMMAND NAME

COPY TO CURRENT PROJECT

PURPOSE

This command is used only after the COPY FROM TAPE command. Its purpose is to specify that the items you are copying from tape are to be filed in the current project file.

INPUT SEQUENCE

CPY TO CUR PROJ

COMMAND NAME

COPY TO ORIGINAL PROJECT

PURPOSE

This command is used only after the COPY FROM TAPE command. Its purpose is to specify that the items you are copying from tape are to be filed in the project or projects where they were originally filed before being copied to tape.

INPUT SEQUENCE

CPY TO ORIG PROJ

NOTES

If a copied item's original project no longer exists on the system, the system will create a project file with that name and will place the copy in it.

COMMAND NAME

CREATE BILL OF MATERIALS FILE

PURPOSE

To create a bill of materials text file from the NET-DATA-BASE file in the current project. The text file is named: BOM-REPORT.

INPUT SEQUENCE

CREATE BOM FILE

NOTES

There must be a net-data-base file in the current project file.

CREATE CMPNT RPT

COMMAND NAME

CREATE COMPONENT REPORT

PURPOSE

To create a list-by-components text file from the most recent NET-DATA-BASE file in the current project. The text file is named COMPONENT-REPORT.

INPUT SEQUENCE

|CREATE CMPNT RPT|

NOTES

There must be a net-data-base file in the current project file.

COMMAND NAME

CREATE/EDIT TEXT

PURPOSE

To flip to the TEXT FILE KEYBOARD.

INPUT SEQUENCE

CREATE/EDIT TEXT

CREATE EXEC FILE

COMMAND NAME

CREATE EXECUTE FILE

PURPOSE

To name and create an execute file on the Telesis system. An execute file is simply a recording of menu picks used to operate the Telesis system non-interactively.

INPUT SEQUENCE

CREATE EXEC FILE (EXECUTE FILE NAME) - Keyboard - ENTER
Input

- o CREATE EXEC FILE is located on the EXECUTE MENU.
- o The keyboard input is the execute file name. The file name may contain up to 18 alphanumeric characters with no blank spaces. The system does not assign a default name if the keyboard input is omitted.
- o A revision label is optional. It may contain up to four alphanumeric characters. The file name and the revision label must be separated by a blank space. If a revision is not input, the system assigns the revision label "1" when the file is saved.

EXAMPLE

CREATE EXEC FILE (EXECUTE FILE NAME) OVERNIGHT TEST ENTER

- o When the CREATE EXEC FILE command sequence is terminated with ENTER, the system re-displays the previous menu page containing the EXECUTE MENU command. The system is now in the execute file "record" mode. Each command picked from the function screen is now recorded into the execute file in the sequence selected by the operator.

Refer to the UTILITIES section of the manual for further information and an example of a typical execute file.

CREATE GROUP

COMMAND NAME

CREATE GROUP

PURPOSE

To create a group of elements that can be operated on by any group commands.

INPUT SEQUENCE

CREATE GROUP | (P) . . . | ENTER |

- (P) picks an element to be a member of the group. Every element picked highlights as it is identified. It stays highlighted until the BREAK GROUP command or DONE is picked.
- You may continue picking any number of elements for inclusion in the group.
- You must (P) symbols before picking the connect lines that connect them because the system will refuse to include a connect line in group unless the elements at both ends of the line have already been included in the group.
- OOPS! will cancel the effect only of the most recent pick.
- ENTER completes the definition of the group.

NOTES

- If you want to add more members to the group, after picking ENTER, you can use the ADD TO GROUP command.
- You may only create one group at a time in a drawing. Before creating a new group, use the BREAK GROUP command on any existing group.

CREATE NC DRILL

COMMAND NAME

CREATE NUMERICAL CONTROL DRILL

PURPOSE

To instruct the system to place a drill legend table and holesize figures in the active board drawing; and to create the text files NCDRILL-TAPE and NCDRILL-LOG.

INPUT SEQUENCE

CREATE NC DRILL

PARAMETERS

. ALL TEXT PARAMETERS

COMMAND NAME

CREATE NETLIST

PURPOSE

To create a list-by-nets text file from the most recent NET-DATA-BASE file in the current project. The text file is named: NETLIST-REPORT.

INPUT SEQUENCE

CREATE NETLIST

NOTES

There must be a net-data-base file in the current project file.

COMMAND NAME

CREATE PHOTOPLOT

PURPOSE

To instruct the system to create a text file containing Gerber photoplot information and instructions for each filmsheet you have listed in the PHOTOPLOT-CON file. To create these files the system gather information from these sources:

- o PHOTOPLOT-CON text file
- o PHOTOPLOT-PAR text file
- o APERTURE-TAB text file
- o LAYERSTD text file
- o pin description text files
- o board drawing
- o net data base file

INPUT SEQUENCECREATE PHOTOPLOTNOTES

The sources listed above are prerequisites for this command. They must exist in the current project file or in the SYSTEM-LIBRARY project file.

COMMAND NAME

CREATE PENPLOT FILE

PURPOSE

To create the essential penplot file needed to operate the HP pen plotter in a "background" mode. "Background" mode allows the operator to interact with the Telesis system while the plotter is operating.

INPUT SEQUENCE

CREATE PENPLOT FILE (ENTER PENPLOT CONTROL FILE NAME) -Keyboard- ENTER
Input

(ENTER FILENAME TO BE CREATED) -Keyboard- ENTER
Input

- o The drawing must be active in order to use the CREATE PENPLOT FILE command.
- o The first keyboard input is the name of the existing penplot control file. If the file is named PENPLOT-CON, simply pick ENTER. If a pen plot control file does not exist, pick ENTER to assign all drawing layers to PEN 1 of the plotter carousel.
- o The second keyboard input is the -PLOT file name. This is the file used by the system for "background" plotting. If a file name is not input, the system names the -PLOT file from the existing drawing name when ENTER is picked. The system also assigns revision "1" to the file.

However, the operator may input a file name that contains up to 13 alphanumeric characters. A 13-character file name results in 18 characters when the system inserts the -PLOT suffix. If the operator wishes to assign a revision label to the -PLOT file, the file name and the revision label must be separated by a blank space when it is input. A revision label may contain up to four alphanumeric characters.

- o When this command sequence is terminated with ENTER, the system reads the actively displayed drawing and the penplot control data in the PENPLOT-CON file. The system then assembles and stores this information in the -PLOT file.

EXAMPLE 1

Existing drawing name = TEST

CREATE PENPLOT FILE (ENTER PENPLOT CONTROL FILE NAME) ENTER

(ENTER FILENAME TO BE CREATED) ENTER

Resulting -PLOT file = TEST-PLOT

EXAMPLE 2

Existing drawing name: TEST

CREATE PENPLOT FILE (ENTER PENPLOT CONTROL FILE NAME) ENTER

(ENTER FILENAME TO BE CREATED) WINDOW 1 ENTER

Resulting -PLOT file: WINDOW-PLOT 1

NOTES

If more than one -PLOT file is to exist in the same project file, the operator may name the first file with the drawing name default, then proceed to name the additional -PLOT files with revision labels.

When the system completes the creation of the -PLOT file, the function screen message line displays:

PLOT FILE COMPLETED

The operator may then proceed to plot the ACTIVE or INACTIVE drawing with the PENPLOT BACKGROUND command.

COMMAND NAME

CREATE SYMBOL

PURPOSE

To create a symbol file from the current active drawing. You will then be able to add the symbol file to other drawings using the ADD SYMBOL commands. This command also creates a text file reporting on the elements in the symbol. The system gives the text file the same name that you give the symbol file, but with the suffix "-LOG" added.

INPUT SEQUENCE

keyboard

CREATE SYMBOL - input - ENTER

- . KEYBOARD INPUT defines symbol name and revision label.
- . Revision label is optional.
- . Symbol name may be up to 14 alphanumeric characters. Do not use blank spaces.
- . Revision label may be up to 4 alphanumeric characters. Do not use blank spaces.
- . Revision label follows name and must be preceded by a blank space.

EXAMPLE

CREATE SYMBOL | A | N | D | 2 | ENTER

NOTES

- . The system checks all symbols for maximum number of elements and other general requirements. If there is an error, the system will create a -LOG file but no symbol file; and it will report the error.
- . When you input the symbol name: VIA, after CREATE SYMBOL, the system checks the symbol drawing to see that it meets the requirements for vias:
 - . one and only one connect point
 - . located at 0,0
 - . placed on layer 0
 - . no pin numbers
 - . no reference designator
 - . no connect lines

If it does not meet these requirements, the system will send you an error message and will not create the symbol.

CREATE TEXT NETLIST

COMMAND NAME

CREATE TEXT NETLIST

PURPOSE

To create a text file that lists contents of the current net data base. This text file can be edited and used with the LOAD TXT NETLIST command to edit the net data base.

INPUT SEQUENCE

CREATE TEXT NETLIST - Keyboard -> ENTER
Input

EXAMPLE

CREATE TEXT NETLIST NETLIST-EDIT-FILE ENTER

COMMAND NAME

C SIZE

PURPOSE

To specify that the current drawing have these extents:

LOWER X : 0

LOWER Y : 0

UPPER X : 22000

UPPER Y : 17000

INPUT SEQUENCE

C SIZE

COMMAND NAME

CURRENT PROJECT TO TAPE

PURPOSE

To list the current project as one of a series of items to be copied from the system to magnetic tape.

INPUT SEQUENCE

CUR PROJ TO TAPE

NOTES

This command is used only in conjunction with the COPY TO TAPE command. Refer to that command description for further information.

CURRENT INDEX

COMMAND NAME

CURRENT INDEX

PURPOSE

To display a list of the contents of the current project file or system file.

INPUT SEQUENCE

CURRENT INDEX

COMMAND NAME DEASSIGN ALL REF DES

PURPOSE To batch deassign all reference designators assigned to component symbols on an active board drawing.

INPUT SEQUENCE DEASSIGN ALL REF DES

- o Use the DEASSIGN ALL REF DES on the board drawing prior to making engineering changes on the schematic drawing. You may then,
 1. Update the schematic.
 2. EXTRACT NETLIST
 3. Use UPDATE TEXT to label each board component symbol with the appropriate reference designator.
 4. Use the ASSIGN ALL REF DES command to batch reassign the reference designators to the board drawing.
- o When you pick DEASSIGN ALL REF DES, the function screen issues the following prompt:

THIS COMMAND WILL DEASSIGN ALL REFERENCE DESIGNATORS ON THIS BOARD DRAWING.

"--->PAGE" TO CONTINUE AND DEASSIGN
"CANCEL" TO TERMINATE WITH NO DEASSIGN

- o If you pick CANCEL, the system terminates the DEASSIGN ALL REF DES command.
- o If you pick PAGE-->, the system proceeds with the deassignment of all reference designators.

DEASSIGNING ALL REFERENCE DESIGNATORS

"BOARD 20% DEASSIGNED"
"BOARD 40% DEASSIGNED"
"BOARD 60% DEASSIGNED"
"BOARD 80% DEASSIGNED"
"BOARD 100% DEASSIGNED"

- o When the DEASSIGN ALL REF DES command is complete, the message line issues the following prompt:

COMPLETED, XX DEASSIGNS OCCURRED

(XX is the number of deassignments that occurred)

COMMAND NAME

DEASSIGN REFERENCE DESIGNATOR

PURPOSE

To delete a reference designator from a board component, and to delete the relationship formed by the ASSIGN REF DES command between the board component and the net data base.

INPUT SEQUENCE

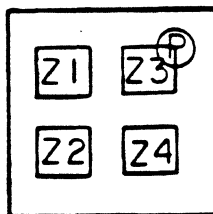
DEASSIGN REF DES (P) . . . ENTER

- (P) defines the component whose reference designator is to be deassigned.
- Picking NEXT after each (P) allows you to deassign additional reference designators.

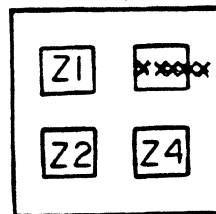
EXAMPLE

DEASSIGN REF DES (P) ENTER

ACTION



RESULT

NOTES

This command is used only to delete a reference designator placed on a component with the ASSIGN REF DES command. If the component does not have such a reference designator, the function screen will display this error message:
COMPONENT LACKS ASSIGNED REFDES-PICK DIFFERENT COMPONENT.

When you use this command, the deassigned reference designator is replaced by 8 asterisks: "*****." These asterisks indicate the absence of any reference designator. To assign a new reference designator, use the ASSIGN REF DES command as usual.

COMMAND NAME

DEHIGHLIGHT NET

PURPOSE

To dehighlight an entire connected set of connect lines.

INPUT SEQUENCE

DEHIGHLIGHT NET (P) . . . ENTER

- (P) identifies one connect line member of the net to be highlighted. The net dehighlights after being picked.
- OOPS! reverses the effect of the previous pick. The dehighlighted net returns to highlight color.
- Subsequent picks identify other nets to be dehighlighted.

DELETE COMPONENT

COMMAND NAME DELETE COMPONENT

PURPOSE To delete placed components on a board drawing when using the INTERACTIVE PLACEMENT capability. The deleted component information is restored to the net data base. INTERACTIVE PLACEMENT and/or AUTOMATIC PLACEMENT may then be used to re-place the component to the drawing.

INPUT SEQUENCE DELETE COMPONENT -Tablet Menu- (P) ENTER

- o (P) - defines the component on the drawing to be deleted. The component highlights in RED.
- o ENTER - deletes the component on the drawing and restores the component information to the net data base.
- o Use the NEXT command or additional (P's) to delete additional components.

EXAMPLE DELETE COMPONENT (P) ENTER

DELETE DRAWING

COMMAND NAME

DELETE DRAWING

PURPOSE

To delete a drawing file and, if the drawing is a board drawing, to delete the net data base to which it is linked.

INPUT SEQUENCE

DELETE DRAWING - keyboard - , - keyboard - ENTER
input-1 input-2

- . KEYBOARD INPUT-1 is the name of the project from which the drawing is to be deleted:
 - a) to delete a drawing from the current project file, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) to delete a drawing from any other project, input the exact project name.
- . KEYBOARD INPUT-2 is the name of the drawing to be deleted.
- . Always use a comma , after a project name (KEYBOARD INPUT-1) to distinguish it from the drawing name. No comma is necessary if the project name is skipped.
- . You may specify a revision after the project name or drawing name. If you do not, the most recently used revision will be used.
- . To delete from a floppy disk, you use this command exactly as described above with this exception: input the characters F : immediately before the name of the project on the floppy disk.

EXAMPLE

DELETE DRAWING ALPHA,BOARD ENTER

Result: The drawing BOARD and its net data base are deleted from the project ALPHA.

COMMAND NAME

DELETE ELEMENT

PURPOSE

To delete an element from a drawing.

INPUT SEQUENCE

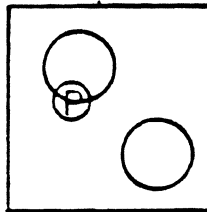
|DELETE ELEMENT| (P) . . . |ENTER|

- . (P) defines the element to be deleted.
Your pick may be on any part of the element.
- . You may pick |OOPS!| after the element has highlighted, to correct an erroneous selection. Otherwise, the highlighted element will be deleted when you pick another element or |ENTER| or |NEXT|.

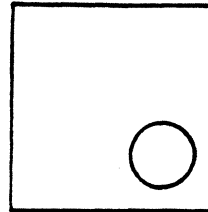
EXAMPLE

|DELETE ELEMENT| (P) |ENTER|

ACTION



RESULT



COMMAND NAME

DELETE LINE

PURPOSE

To delete a line from a text file. Used only when you have picked TEXT LEADTHRU to create or edit a file.

INPUT SEQUENCE

DELETE LINE

NOTE

Cursor must be at line to be deleted.

COMMAND NAME

DELETE MENU FILE

PURPOSE

To delete a menu file.

INPUT SEQUENCE

DELETE MENU FILE - keyboard - , - keyboard - ENTER
input-1 input-2

- KEYBOARD INPUT-1 is the name of the project (if any) from which the menu file is to be deleted.

If the menu file is not in a project file, or if it is in the current project file, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2.

- KEYBOARD INPUT-2 is the name of the menu file to be deleted.
- Always use a comma , after the project name to distinguish it from the menu file name. No comma is necessary if the project name is skipped.
- You may specify a revision label after the project name or menu file name. You must input one blank space between the file name and the revision label. If you do not input a revision label, the most recently used revision will be used.
- To delete from a floppy disk, use this command exactly as described above with this exception: input the characters F: immediately after the DELETE MENU FILE command.

EXAMPLE

DELETE MENU FILE ALPHA ENTER

Result: You have deleted the menu file "ALPHA" from the system. The file was at the system level (not in a project file) so KEYBOARD INPUT-1 was skipped.

COMMAND NAME

DELETE NET DATA BASE

PURPOSE

To delete a net data base file.

INPUT SEQUENCE

DELETE NET-DB - keyboard - , - keyboard - input-1 - keyboard - input-2 - ENTER

- . KEYBOARD INPUT-1 is the name of the project from which the net data base is to be deleted:
 - a) to delete a net data base from the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) to delete a net data base from any other project, input the exact project name.
- . KEYBOARD INPUT-2 is usually skipped. It is the name of the net data base file. (By picking the DELETE NET DB command, you automatically defined the name of the file, that is, NET-DATA-BASE. However, you may use KEYBOARD INPUT-2 to specify the revision label of the net data base you wish to delete.)
- . Always use a comma , after the project name (KEYBOARD INPUT-1) to distinguish it from the net data base revision label. No comma is necessary if the project name is skipped. However, the comma is necessary when the net data base revision label is skipped.
- . You may specify a revision after the project name. If you do not, the most recently used revision will be used. You may also specify the revision of the net data base to be deleted (KEYBOARD INPUT-2). Because the net data base is always named NET-DATA-BASE, you do not need to input the name of the file; you may input the revision label alone. If you do not specify the net data base revision, the most recently used revision will be deleted.
- . To delete from a floppy disk, you use this command exactly as described above with this exception: input the characters F : immediately before the name of the project on the floppy disk.

DELETE NET-DB (CONT)

EXAMPLE 1

DELETE NET-DB | ENTER

Result: The most recently used revision of the net data base in the current project file is deleted.

EXAMPLE 2

DELETE NET-DB | F:A|L|P|H|A|,|B | ENTER

Results: Revision B of the net data base in the project file ALPHA is deleted from a floppy disk.

NOTE

If you wish to delete both a net data base file and the board drawing to which it is linked, you may use the DELETE DRAWING command to delete them both simultaneously.

DELETE PROJECT

COMMAND NAME

DELETE PROJECT

PURPOSE

To delete a project file.

INPUT SEQUENCE

DELETE PROJECT - keyboard - ENTER (prompt) ->PAGE
input

- . KEYBOARD INPUT defines the name of the project to be deleted. It must be the exact project name.
- . After you enter the project name, the system will prompt you to confirm your intention to delete this project. Pick the ->PAGE command at the top of the screen to confirm this.
- . You may specify a revision after the project name. If you do not, the most recently used revision will be used.
- . To delete a project from a floppy disk, you use this command exactly as described above with this exception: input the characters F : immediately before the project name.

EXAMPLE

DELETE PROJECT ALPHA ENTER ->PAGE

DELETE SECTION

COMMAND NAME

DELETE SECTION

PURPOSE

To delete a section from a text file. Used only when you have picked TEXT LEADTHRU to create or edit the file.

INPUT SEQUENCE

DELETE SECTION

NOTES

Cursor must be at section to be deleted.

COMMAND NAME

DELETE SEGMENT

PURPOSE

To delete a line segment from a line or connect line in a drawing.

INPUT SEQUENCE

DELETE SEGMENT (P) . . . ENTER

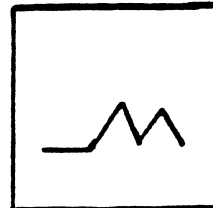
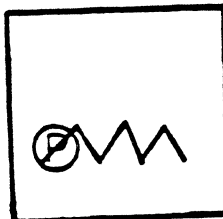
- (P) defines the segment to be deleted. It may be on any part of the segment.
- You may pick OOPS! after the element has highlighted, and correct an erroneous selection. Otherwise, the highlighted segment will be deleted when you pick another segment, or ENTER or NEXT.
- You can only delete the first or last segment of a connect line. This is to prevent the condition of connect lines with both ends not connected.

EXAMPLE

DELETE SEGMENT (P) ENTER

ACTION

RESULT



DELETE SYMBOL
(DRAWING-MENU command)

COMMAND NAME

DELETE SYMBOL (DRAWING-MENU command)

PURPOSE

To delete a symbol from a drawing. This command also deletes all connect lines connected to the symbol.

INPUT SEQUENCE

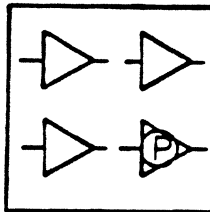
|DELETE SYMBOL| (P) . . . |ENTER|

- (P) defines the symbol to be deleted. It may be on any part of the symbol. You may pick |OOPS!| after the element has highlighted and correct an erroneous selection. Otherwise, the highlighted element, including the highlighted connect lines attached, will be deleted when you pick another element or |ENTER| or |NEXT|.
- Use the |NEXT| command after each (P) pick to delete additional symbols.

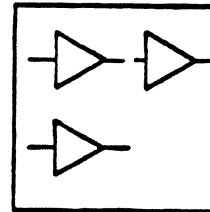
EXAMPLE

|DELETE SYMBOL| (P) |ENTER|

ACTION



RESULT



COMMAND NAME

DELETE TEXT

PURPOSE

To delete any text (including its textpoint) that was placed in a drawing with the following commands:

ADD REF DESIG
ADD DEVICE TYPE
ADD VALUE
ATTCH DEVICE TYPE
ATTCH PIN NAME

ATTACH PIN NUMBER
ATTCH REF DESIG
ATTCH SIGNAL NAME
ATTCH VALUE
UPDATE TEXT
ADD SYMBOL

(Text points added as part of symbol)

INPUT SEQUENCE

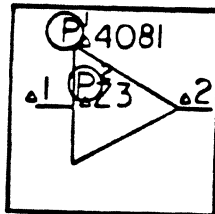
DELETE TEXT | (P) . . . | ENTER

- (P) defines the text to be deleted. Your (P) may be on any part of the text or text point.
- You may pick OOPS! after the element has highlighted, and correct an erroneous selection. Otherwise, the highlighted text will be deleted when you pick another text point or ENTER or NEXT.

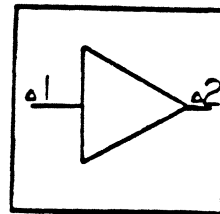
EXAMPLE

DELETE TEXT | (P₁) (P₂) | ENTER

ACTION



RESULT



NOTES

Do not use this command to delete text placed in a drawing with the ASSIGN REF DES command or the CHANGE REF DES command. If you do, the text will be deleted, but the component-symbol relationship formed with the ASSIGN REF DES command will remain, which could cause errors.

COMMAND NAME

DELETE TEXT FILE

PURPOSE

To delete a text file.

INPUT SEQUENCE

DELETE TEXT FILE - keyboard - , - keyboard - ENTER
input-1 input-2

- . KEYBOARD INPUT-1 defines the name of the project from which the text file is to be deleted:
 - a) to delete a text file from the current project file, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) to delete a text file from any other project, input the exact project name.
- . KEYBOARD INPUT-2 defines the name of the text file to be deleted. It must be the exact text file name.
- . Always use a comma , after project names (KEYBOARD INPUT-1) to distinguish it from the text file name. No comma is necessary if the project name is skipped.
- . You may specify a revision after the project name or text file name. If you do not, the most recently used revision will be used.
- . To delete from a floppy disk, you use this command exactly as described above with this exception: input the characters F : immediately before the name of the project on the floppy disk.

EXAMPLE

DELETE TEXT FILE ALPHA,BOM-REPORT ENTER

Result: The text file BOM-REPORT is deleted from the project ALPHA.

COMMAND NAME

DELETE VERTEX

PURPOSE

To delete a line vertex from a line or connect line in a drawing. The endpoint of a line is considered to be a vertex.

INPUT SEQUENCE

|DELETE VERTEX| (P) . . . |ENTER|

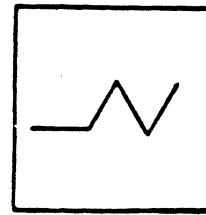
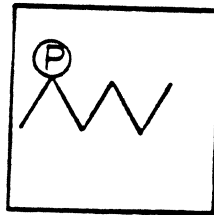
- . (P) defines the vertex to be deleted.
- . You may pick |OOPS!| after the vertex has been selected to correct an erroneous selection. Otherwise the selected vertex will be deleted when you select another vertex or pick |ENTER| or |NEXT|.

EXAMPLE

|DELETE VERTEX| (P) |ENTER|

ACTION

RESULT

NOTE

If a line element only has two endpoints (a single segment) and you delete one endpoint using DELETE VERTEX, the entire line will be deleted.

DELETE VIA

COMMAND NAME

DELETE VIA

PURPOSE

To delete a via from a pcb design.

INPUT SEQUENCE

|DELETE VIA| (P) . . . |ENTER|

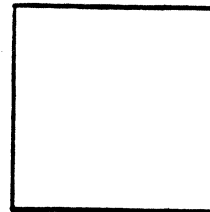
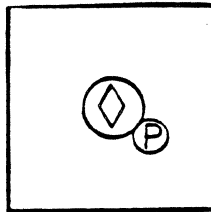
- (P) defines the via to be deleted.
- You may pick OOPS! after the selected via has highlighted to correct an erroneous selection. Otherwise the highlighted via will be deleted when you pick another vertex or ENTER or NEXT.

EXAMPLE

|DELETE VIA| (P) |ENTER|

ACTION

RESULT



COMMAND NAME

DELETE CONNECTION

PURPOSE

To delete all segments of a connect line running between two connect points.

INPUT SEQUENCEDEL CONNECTION | (P) . . . | ENTER |

- (P) identifies the connect line to be deleted. The segments to be deleted will highlight after being picked.
- Use OOPS! to reverse the effect of the last (P).
- Use additional (P)s to delete additional connect lines before picking ENTER.

DEL FLOATING CON

COMMAND NAME

DELETE FLOATING CONNECTORS

PURPOSE

To remove a connect point or connect points from the list of floating connectors specified with the SET FLOATING CON command.

INPUT SEQUENCE

DEL FLOATING CON - keyboard - ENTER - keyboard - ENTER
input-1 input-2

- Use the same input sequence as for SET FLOATING CON.

EXAMPLE

DEL FLOATING CON J 1 ENTER 2 , 5 ENTER

DEL NET LIN WDTN

COMMAND NAME

DELETE NET LINE WIDTH

PURPOSE

To remove a net or nets from the list of special line widths specified with the SET NET LIN WDTN command.

INPUT SEQUENCE

DEL NET LIN WDTN - keyboard - ENTER
input

- KEYBOARD INPUT is the net name or number.
- Use a comma (,) between net names or numbers to input more than one.

EXAMPLE

DEL NET LIN WDTN 6 ENTER

Result: Net number 6 will now be routed at the width specified with the SET LINE WIDTH command.

DEL NET SECTION

COMMAND NAME

DELETE NET SECTION

PURPOSE

To delete the section of a net that includes all connected connect lines and tee points between component pins.

INPUT SEQUENCE

DEL NET SECTION Ⓟ . . . ENTER

- Ⓟ identifies one connect line member of the net section to be deleted. The net section highlights after being picked.
- OOPS! reverses the effect of the previous pick. The highlighted net returns to its normal color and is not deleted.
- Subsequent picks identify other net sections to be deleted. As each pick is entered, the highlighted net section from the previous pick is deleted.

DEL NO-ROUTE NET

COMMAND NAME

DELETE NO-ROUTE NET

PURPOSE

To remove a net or nets from the list of NO-ROUTES specified with the SET NO-ROUTE NET command.

INPUT SEQUENCE

DEL NO-ROUTE NET - keyboard - ENTER
input

- KEYBOARD INPUT is the net name or net number.
- Use a comma (,) between net names or numbers to input more than one.

EXAMPLE

DEL NO-ROUTE NET 2 ENTER

COMMAND NAME

DELETE NO VIA ELIMINATION

PURPOSE

To remove a net or nets from the list of NO-VIA-ELIMINATIONS specified with the SET NO VIA ELIM command.

INPUT SEQUENCE

DEL NO VIA ELIM - keyboard - ENTER
input

- KEYBOARD INPUT is the net name or net number.
- Use a comma (,) between net names or numbers to input more than one.

EXAMPLE

DEL NO VIA ELIM 2 ENTER

COMMAND NAME

DESIGN BOARD

PURPOSE

To flip to the set of menus used for drawing a printed circuit board layout.

INPUT SEQUENCE

DESIGN BOARD

COMMAND NAME

DESIGN RULE CHECK

PURPOSE

To check your board for violations of the rules that you specified with the INPUT DRC RULE command. The system flags violations on the graphics screen and creates a violations report text file which you can print and display.

INPUT SEQUENCE

```
DESIGN RULE CHK - keyboard - ENTER - keyboard -
input-1 input-2
ENTER (prompt) ENTER
```

- KEYBOARD INPUT-1 must be the name of the rules text file you created with the INPUT DRC RULE command. You may skip KEYBOARD INPUT-1 if you used the default name: PDCRFILE.
- KEYBOARD INPUT-2 specifies the violations report text file name. Skip KEYBOARD INPUT-2 to use the system's default violations report file name: PDRCOUT.
- After your two keyboard entries, the system will prompt you to confirm that you want to continue with this command. Pick -> PAGE to confirm this.

EXAMPLE

```
DESIGN RULE CHK RULES1 ENTER VIOLATI
ONS1 ENTER ENTER
```

NOTES

The system flags the violations in your drawing with a cross (X) at the location of each fault. If you save the drawing, the crosses are saved with it. When you repeat the DESIGN RULE CHK command, existing crosses are deleted and replaced with new ones.

COMMAND NAME

DIAGONAL ALLOWED

PURPOSE

To specify whether the auto router may use diagonal instead of square corners for routed lines.

INPUT SEQUENCE

|DIAGONAL ALLOWED| - keyboard - |ENTER|
input

- KEYBOARD INPUT is Y or N (for yes or no)

EXAMPLE

|DIAGONAL ALLOWED|Y|ENTER|

NOTES

Diagonal corners, if allowed, are 45° angle lines extending across one diagonal grid interval.

DEFAULT

Y

DIGITIZER MENU

COMMAND NAME

DIGITIZER MENU

PURPOSE

To flip to the menu containing the digitizer commands.

INPUT SEQUENCE

|DIGITIZER MENU|

4/83 COMMAND DESCRIPTION

DIGITIZER OFF

COMMAND NAME

DIGITIZER OFF

PURPOSE

To turn off the digitizer as an input device.

INPUT SEQUENCE

DIGITIZER OFF

DIGITIZER ON

COMMAND NAME

DIGITIZER ON

PURPOSE

To activate the digitizer for use as an input device.

INPUT SEQUENCE

|DIGITIZER ON|

DISCRETE GRID

COMMAND NAME DISCRETE GRID

PURPOSE To define a matrix of valid locations for the automatic placement of DISCRETE components on a board drawing.

INPUT SEQUENCE |DISCRETE GRID| (DISCRETE GRID SIZE X) -Keyboard- |ENTER|
Input
(DISCRETE GRID SIZE Y) -Keyboard- |ENTER| (P) |EN|
Input

- o The keyboard inputs define the location sizes for the placement of DISCRETES.
- o (P) - defines the grid origin on the drawing and displays the matrix points on the graphics screen.

The matrix points formed by the intersecting lines are valid locations for the automatic placement of DISCRETES. When a component is placed at one of these points, the symbol is placed with its origin at that point.

Pick an additional location if the first grid displayed is unacceptable for the number of DISCRETES to be placed.

You may also use the keypad menu to input explicit (X,Y) coordinates to define a grid origin.

- o |ENTER| - to indicate that the grid is accepted.
- o |CANCEL| - to erase the grid and cancel the grid information.

EXAMPLE |DISCRETE GRID| (DISCRETE GRID SIZE X) 200 |ENTER|
(DISCRETE GRID SIZE Y) 200 |ENTER| (P) |ENTER|

NOTES

Do not define a grid size smaller than the space requirements for the largest DISCRETE to be placed.

The grid must accommodate the number of DISCRETES stored in the net data base that are to be placed in the drawing.

DEFAULT PARAMETER: X: 100 Y: 100 Origin: 0,0

DISCRETE ROTATION

COMMAND NAME DISCRETE ROTATION

PURPOSE To define the rotation(s) of all DISCRETES to be placed with the AUTOMATIC PLACEMENT capability.

INPUT SEQUENCE DISCRETE ROTATION (ALLOW 0 ROTATION [Y/N]) -Keyboard- ENTER
(ALLOW 90 ROTATION [Y/N]) -Keyboard- ENTER
(ALLOW 180 ROTATION [Y/N]) -Keyboard- ENTER
(ALLOW 270 ROTATION [Y/N]) -Keyboard- ENTER

- o The keyboard input is the character input Y (yes) or the character input N (no).
- o You may specify up to four rotation angles.
- o The AUTOMATIC PLACEMENT capability places each component at one of the rotations specified; the system selects the best and most efficient rotation angle for each unplaced DISCRETE (if you specify more than one angle).

EXAMPLE DISCRETE ROTATION (ALLOW 0 ROTATION [Y/N]) -Y- ENTER
(ALLOW 90 ROTATION [Y/N]) -Y- ENTER
(ALLOW 180 ROTATION [Y/N]) -Y- ENTER
(ALLOW 270 ROTATION [Y/N]) -N- ENTER

RESULT There are three possible angles of rotation that AUTOMATIC PLACEMENT can use during the placement of each DISCRETE.

DEFAULT PARAMETER: 0 DEG: Y
 90 DEG: N
 180 DEG: N
 270 DEG: N

DISPLAY GRID

COMMAND NAME

DISPLAY GRID

PURPOSE

To cause the current grid to be displayed.

INPUT SEQUENCE

DISPLAY GRID

COMMAND NAME

DISPLAY LAYER

PURPOSE

To specify that all elements on a layer be displayed in all subsequent display commands (DRAWING, WINDOW, ZOOM, SHIFT).

INPUT SEQUENCE

keyboard

DISPLAY LAYER - input - ENTER

- . KEYBOARD INPUT defines layer numbers.
- . To specify more than one layer, use commas between layer numbers: 1, 9, 3 4 ENTER; or use a hyphen to specify a range of layers: 1-9 ENTER.

EXAMPLE

DISPLAY LAYER 3 ENTER

NOTES

- . This command reverses the effect of the BLANK LAYER command.
- . This command does not immediately cause the selected layers to be displayed. You must pick a display command (DRAWING, WINDOW, ZOOM, SHIFT) to see the effect.

DONE

COMMAND NAME

DONE

PURPOSE

To indicate that you have finished with the current menu page.

INPUT SEQUENCE

|DONE|

5/82 COMMAND DESCRIPTION

COMMAND NAME

DRAWING

PURPOSE

To display the entire extent of the current drawing on the graphics screen.

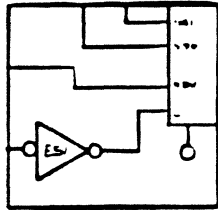
INPUT SEQUENCEDRAWINGNOTES

This command places the outer extents of a drawing at the border of the graphics display.

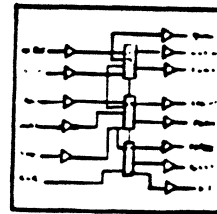
EXAMPLE

DRAWING

BEFORE



AFTER



COMMAND NAME

DRAWING

PURPOSE

To zoom-out of the current display on the graphics screen. This command repaints and refits the entire drawing into a new WORLD and ROAM space.

INPUT SEQUENCE

DRAWING

. Enter this command from the WORLD menu page

NOTES

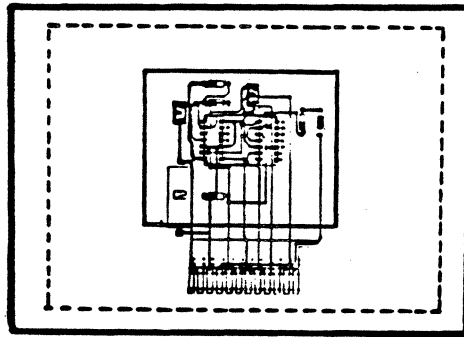
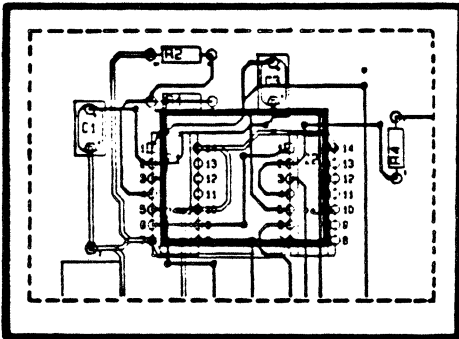
Screen repainting time depends on the amount of graphics used in your drawing.

EXAMPLE

DRAWING

Current WORLD display

RESULT



DRAWING TO TAPE

COMMAND NAME

DRAWING TO TAPE

PURPOSE

To list a drawing file as one of a series of items to be copied from the system to magnetic tape. (If the drawing is a board drawing, the net data base to which it is linked will be copied as well.)

INPUT SEQUENCE

DRAWING TO TAPE - keyboard - , - keyboard - ENTER
input-1 input-2

- KEYBOARD INPUT-1 defines the name of the project in which the drawing is filed:
 - a) if the drawing is filed in the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) if the drawing is filed in any other project, input the exact project name.
- KEYBOARD INPUT-2 defines the name of the drawing to be listed. It must be the exact drawing name.
- Always use a comma , after a project name (KEYBOARD INPUT-1) to distinguish it from a drawing name. No comma is necessary if the project name is skipped.
- You may specify a revision after the project name or drawing name. If you do not, the most recently used revision will be used.

EXAMPLE

DRAWING TO TAPE ALPHA, SCHEM ENTER

Result: The drawing SCHEM in the project ALPHA is placed on a list of items to be copied to magnetic tape.

NOTES

This command is used only in conjunction with the COPY TO TAPE command. Refer to that command description for further information.

COMMAND NAME

DRAW SCHEMATIC

PURPOSE

To flip to the set of menus used for drawing a schematic.

INPUT SEQUENCE

DRAW SCHEMATIC

COMMAND NAME

DRAW SYMBOL

PURPOSE

To flip to the set of menus used for drawing a symbol.

INPUT SEQUENCE

DRAW SYMBOL

DRILL

COMMAND NAME DRILL

PURPOSE To place a via in a drawing during an ADD CONNECTION command. Also, to change active layers from the currently active one to an alternate one.

INPUT SEQUENCE . . . DRILL (P) . . .

. (P) defines the location of the via

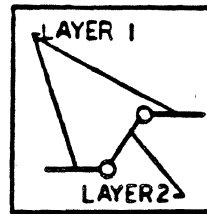
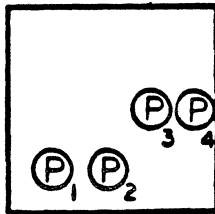
EXAMPLE

SET LAYER PAIR | 1 | ENTER | 2 | ENTER

ADD CONNECTION (P₁) (P₂) DRILL (P₃) DRILL (P₄) ENTER

ACTION

RESULT



NOTES

Before using the DRILL command, use the SET LAYER PAIR command to specify the two layers you wish to use with the DRILL command. Each time you use the DRILL command, the active layer switches from the current one of these two layers to the other one, and the active layer becomes the alternate layer.

If you wish to change active layers without using the DRILL command, use the SWAP command.

COMMAND NAME

DRAWING FROM TAPE

PURPOSE

To list a drawing file as one of a series of items to be copied from a magnetic tape to the system. (If the drawing is a board drawing, the net data base to which it is linked will be copied as well.)

INPUT SEQUENCE

DRWNG FROM TAPE - keyboard - , - keyboard - ENTER
input-1 input-2

- . KEYBOARD INPUT-1 defines the name of the project in which the drawing is filed. You may skip KEYBOARD INPUT-1 if the drawing file you wish to copy is the only one with that name (KEYBOARD INPUT-2) on the current tape section, or if it is in a project file with the same name as the current project.
- . KEYBOARD INPUT-2 defines the name of the drawing to be listed. It must be the exact drawing name.
- . Always use a comma , after the project name (KEYBOARD INPUT-1) to distinguish it from the drawing name. No comma is necessary if the project name is skipped.
- . You may specify a revision for the project or the drawing. If you do not, the most recently used revision will be used.

EXAMPLE

DRWNG FROM TAPE ALPHA , SCHEM ENTER

Result: The drawing SCHEM in the project ALPHA is placed on a list of items to be copied from magnetic tape to the system.

NOTES

This command is used only in conjunction with the COPY FROM TAPE command. Refer to that command description for further information.

COMMAND NAME

D SIZE

PURPOSE

To specify that the current drawing have these extents:

LOWER X : 0

LOWER Y : 0

UPPER X : 32000

UPPER Y : 22000

INPUT SEQUENCE

D SIZE

EDIT FILE

COMMAND NAME

EDIT FILE

PURPOSE

To menu-back and return to the active text file for additional editing while using the TEXT LEADTHRU capability.

INPUT SEQUENCE

EDIT FILE

COMMAND NAME

EDIT BOARD MENU

PURPOSE

To add or edit menu box text in a set of user-definable, component symbol menus. This command can only be used after the menu file containing the menu set has been opened with the NEW USER MENUS or OLD USER MENUS command.

INPUT SEQUENCEEDIT BOARD MENU

COMMAND NAME

EDIT CONNECTIONS

PURPOSE

To flip to the menu page within the router menu set that can be used to interactively add and edit connections.

INPUT SEQUENCE|EDIT CONNECTIONS|NOTES

The first time you use one of these commands: |ROUTE BOARD|, |ROUTE BY WINDOW|, |ROUTE PIN PAIR|, |ROUTE NET|, |EDIT CONNECTIONS|, or |VIA ELIMINATE| after entering the router menu set, there will be a considerable delay, while the system creates the set-up files it needs for the router. There will be no delay for subsequent uses of these commands unless you leave the router menu set or make major changes in the parameter settings.

COMMAND NAME

EDIT DEVICE FILE

PURPOSE

To open a device description text file, and to flip to the menu set that leads you through the creation or editing of a device description file. (Use this command to open old files and to create new files.)

INPUT SEQUENCE

keyboard

EDIT DEVICE FILE - input - ENTER

- . KEYBOARD INPUT is the device file name and revision label.
- . Device file name may be up to 18 alphanumeric characters with no blank spaces allowed.
- . Revision label is optional.
- . Revision label follows the file name and must be preceded by a blank space. It may be up to 4 alphanumeric characters.
- . If you do not input a revision label for a new file, the system will assign "rev 1" to the file when you close it.
- . If you do not input a revision label for an old file, the system will open the most-recently-used revision of the file.

EXAMPLE

EDIT DEVICE FILE 7 4 0 2 ENTER

EDIT LAYERSTD

COMMAND NAME EDIT LAYER STANDARD FILE

PURPOSE To create or edit an existing layer standard text file when using the TEXT LEADTHRU capability.

INPUT SEQUENCE EDIT LAYERSTD (rev)_____ ENTER

- o The layer standard file must be named LAYERSTD.
- o When you pick EDIT LAYERSTD, the system prompts you for a revision label.
- o Pick ENTER when the system prompts you for a revision; the system automatically names the new file LAYERSTD.
- o The revision label is optional. It may contain up to 4 alphanumeric characters.
- o If you do not input a revision label for a new file, the system assigns "rev 1" to the file when you close it.
- o If you do not input a revision label for an old file, the system automatically opens the latest version of the file.

EXAMPLE: EDIT LAYERSTD (rev)_____ ENTER

RESULT The system names the new file LAYERSTD, or opens the latest version of the file named LAYERSTD.

COMMAND NAME

EDIT EXECUTE FILE

PURPOSE

To edit an existing execute file on the Telesis system. When the execute file is displayed on the function screen, the following softkey editing commands may be used:

DELETE
INSERT
CHANGE
LIST

INPUT SEQUENCE

EDIT EXEC FILE (EXECUTE FILE NAME) - Keyboard - ENTER
Input

- o EDIT EXEC FILE is located on the EXECUTE MENU.
- o The keyboard input is the execute file name. Input the file name and the revision label to open the version to be edited. Omit the revision label if editing the latest version.
- o When the EDIT EXEC FILE command sequence is terminated with ENTER, the system displays the execute file on the function screen.
- o When a softkey editing command is picked, it highlights in reverse-video. This signals that the command is active and is awaiting a menu pick selection from the execute file display.

EXAMPLE

EDIT EXEC FILE (EXECUTE FILE NAME) OVERNIGHT TEST ENTER

Refer to the UTILITIES section of the manual for further information on each softkey command used to edit the execute file, and for a listing of possible error messages.

COMMAND NAME EDIT PENPLOT CONTROL FILE

PURPOSE To create or edit an existing pen plot control text file when using the TEXT LEADTHRU capability.

INPUT SEQUENCE EDIT PENPLOT-CON --> (FILE NAME) --> Keyboard --> ENTER
Input

- o The keyboard input is the pen plot control file name and the revision label. You may name the file, or you may simply pick ENTER to allow the system to automatically name the file PENPLOT-CON.
- o You may input a file name containing up to 18 alphanumeric characters.
- o The revision label is optional. Input a blank space between the file name and revision label. The revision label may contain up to 4 alphanumeric characters.
- o If you do not input a revision label for a new file, the system assigns "rev 1" to the file when you close it.
- o If you do not input a revision label for an old file, the system automatically opens the latest version of the file.

EXAMPLE EDIT PENPLOT-CON (FILE NAME) ENTER

RESULT The system assigns the name PENPLOT-CON to your new pen plot control file, or opens the latest existing file named PENPLOT-CON.

EXAMPLE EDIT PENPLOT-CON (FILE NAME) PENPLOT-CON ABCD ENTER

RESULT The system opens a new file named PENPLOT-CON ABCD, or opens an existing file of the same name.

EDIT PIN FILE

COMMAND NAME

EDIT PIN FILE

PURPOSE

To create or edit an existing pin description text file when using the TEXT LEADTHRU capability.

INPUT SEQUENCE

EDIT PIN FILE --> (FILE NAME) --> Keyboard --> ENTER
Input

- o The keyboard input is the pin description file name (with the -PIN suffix) and the revision label.
- o The file name may contain up to 18 alphanumeric characters (no blank spaces) with the -PIN suffix included.
- o The revision label is optional. Input a blank space between the file name and the revision label. The revision label may contain up to 4 alphanumeric characters.
- o If you do not input a revision label for a new file, the system assigns "rev 1" to the file when you close it.
- o If you do not input a revision label for an old file, the system automatically opens the latest version of the file.

EXAMPLE:

EDIT PIN FILE DIP14-PIN ENTER

NOTES

The (-PIN) suffix must be included in the pin file name.

COMMAND NAME

EDIT SCHEMATIC MENU

PURPOSE

To add or edit menu box text in a set of user-definable, schematic symbol menus. This command can only be used after the menu file containing the menu set has been opened with the NEW USER MENUS or OLD USER MENUS command.

INPUT SEQUENCEEDIT SCHEM MENU

ENTER

COMMAND NAME

ENTER

PURPOSE

To indicate that input is complete for a command or part of a command. Used only with other commands. See individual command names for use with particular commands.

INPUT SEQUENCE

ENTER

5/82 COMMAND DESCRIPTION

EXECUTE MENU

COMMAND NAME

EXECUTE MENU

PURPOSE

To flip to the menu page used to create and edit execute files. This command is also used to display the execute file on the function screen during editing.

INPUT SEQUENCE

|EXECUTE MENU|

NOTES

The |EXECUTE MENU| command is located at the following system levels:

1. OLD PROJECT/NEW PROJECT
2. BOARD DRAWINGS and DESIGN BOARD
3. OTHER DRAWINGS and DRAW SCHEMATIC
4. GROUPS menu
5. TEXT menu

EXTRACT NETLIST

COMMAND NAME

EXTRACT NETLIST

PURPOSE

To create or edit a net data base file. The system takes the information for the net data base from the active schematic drawing and (optionally) from device description files in the current project or in the SYSTEM-LIBRARY.

INPUT SEQUENCE

EXTRACT NETLIST

NOTES

In the case of multi-sheet schematics, you must repeat the EXTRACT NETLIST command for each sheet. To do this, you must activate each drawing.

COMMAND NAME

FILE MANAGEMENT

PURPOSE

To flip to the menu set used for file management.

INPUT SEQUENCE

FILE MANAGEMENT

COMMAND NAME

FILE MANAGEMENT/ARCHIVES

PURPOSE

To flip to the menus used for file management or archives at the system level (that is, without opening a project file).

INPUT SEQUENCE

|FILE MGMT/ARCHIV|

FILL PENPLOT

COMMAND NAME

FILL PENPLOT

PURPOSE

To fill the various line widths and pad shapes in your board design when plotting the drawing with the HP Pen Plotter.

INPUT SEQUENCE

FILL PENPLOT (ENTER ARTWORK FILE NAME) - Keyboard - ENTER
Input

(SCALE) - Keyboard - ENTER
Input

o PREREQUISITES

The APERTURE-TAB text file, the PHOTOPLOT-PAR text file and the artwork file (-ART) must be in the current project or in the SYSTEM-LIBRARY.

FILL PENPLOT allows you to use any number of pens (up to 8) from the HP plotter carousel. However, you must input at least one pen width when you use the FILL PENPLOT capability.

- o Input the artwork file name (-ART).
- o Input the plotting scale.
- o The system will prompt you for pen width data for the eight positions in the plotter carousel.

(WIDTH OF PEN 1 [IN MILS]) - Keyboard - ENTER
Input

(WIDTH OF PEN 2 [IN MILS]) - Keyboard - ENTER
Input

- o If there are positions on the carousel that do not have pen assignments, pick ENTER when the system prompts you for those particular pens. ENTER assigns a zero plotting width and overrides those pen positions.
- o Pick ENTER to start the pen plot.

FILL PENPLOT
(continued)

EXAMPLE

```
FILL PENPLOT FILM-1-ART ENTER 1 ENTER  
  
(WIDTH OF PEN 1 [IN MILS]) 5 ENTER  
(WIDTH OF PEN 2 [IN MILS]) 10 ENTER  
(WIDTH OF PEN 3 [IN MILS]) 25 ENTER  
(WIDTH OF PEN 4 [IN MILS]) 30 ENTER  
(WIDTH OF PEN 5 [IN MILS]) 35 ENTER  
(WIDTH OF PEN 6 [IN MILS]) 50 ENTER  
(WIDTH OF PEN 7 [IN MILS]) 100 ENTER  
(WIDTH OF PEN 8 [IN MILS]) 150 ENTER
```

NOTES

Refer to the POST PROCESSING section of this manual for important considerations and limits to the FILL PENPLOT capability.

FLOPPY INDEX

COMMAND NAME

FLOPPY INDEX

PURPOSE

To display a list of the contents of the currently mounted floppy disk.

INPUT SEQUENCE

FLOPPY INDEX

FREE DISK SPACE

COMMAND NAME

FREE DISK SPACE

PURPOSE

To display a message on the function screen indicating the number of blocks of free disk space available on the system.

INPUT SEQUENCE

|FREE DISK SPACE|

GERBER FROM TAPE

COMMAND NAME

GERBER FROM TAPE

PURPOSE

To copy one or all artwork files from a Gerber-formatted magnetic tape to the current project on the system.

INPUT SEQUENCE

GERBER FROM TAPE - keyboard - ENTER
input

- KEYBOARD INPUT is the number (in order of sequence on the tape) of the tape file to be copied.* Skip the KEYBOARD INPUT and pick ENTER to copy all of the artwork files on the tape to the system. (you may copy one file or all files, you may not copy selected files from the tape.)

EXAMPLE

GERBER FROM TAPE | 1 | ENTER

Result: The system copies the first artwork file on the tape and names it "TAPE1-ART."

NOTES

- The system copies the artwork file (or files) into the current project, and it gives each file a name based on the file's sequence on the tape. For example, the first file on the tape will be named "TAPE1-ART", the second file on the tape will be named "TAPE2-ART", etc.

* Gerber formatted tapes do not have indexes, and the files on them do not have file names. Therefore, the tape must be labeled, or you must have preserved some other record of its contents, in order to know the sequence of the artwork files on the tape.

GERBER TO TAPE

COMMAND NAME

GERBER TO TAPE

PURPOSE

To prepare a magnetic tape to receive copies of artwork files. This command properly formats the tape for use with a Gerber 6200 series photoplotter.

INPUT SEQUENCE

GERBER TO TAPE

NOTES

BE CAREFUL: Using the GERBER TO TAPE will delete any existing information on the tape.

COMMAND NAME

GND

PURPOSE

To add a PINUSE code "GND" to a device description file.

INPUT SEQUENCEADD PINUSE GND

or

CHANGE PINUSENOTES

This command is used only after the ADD PINUSE or CHANGE PINUSE commands.

COMMAND NAME

GROUPS

PURPOSE

To flip to the menu used to create and operate on groups.

INPUT SEQUENCE

|GROUPS|

HIGHLIGHT NET

COMMAND NAME

HIGHLIGHT NET

PURPOSE

To highlight an entire connected set of connect lines.

INPUT SEQUENCE

HIGHLIGHT NET (P) . . . ENTER

- (P) identifies one connect line member of the net to be highlighted. The net highlights after being picked.
- OOPS! reverses the effect of the previous pick. The highlighted net returns to its normal color and is not highlighted.
- Subsequent picks identify other nets to be highlighted.

COMMAND NAME

HIGHLIGHT NET BY NET NUMBER

PURPOSE

To highlight a net on a board by specifying its net number as listed in the netlist report.

INPUT SEQUENCE

HIGHLIGHT NET/NUMBER - keyboard - ENTER
input

- . KEYBOARD INPUT is the number of the net to be highlighted.

NOTES

Only nets connected to components on which you have used the ASSIGN REF DES command will be highlighted.

IC GRID

COMMAND NAME IC GRID

PURPOSE To define a matrix of valid locations for the automatic placement of ICS on a board drawing.

INPUT SEQUENCE |IC GRID| (IC GRID SIZE X) -Keyboard- |ENTER|
Input
(IC GRID SIZE Y) -Keyboard- |ENTER| (P) |ENTER|
Input

- o The keyboard inputs define the location sizes for the placement of IC components.
- o (P) - defines the grid origin on the drawing and displays the matrix points on the graphics screen.

The matrix points formed by the intersecting lines are valid locations for the automatic placement of ICS. When a component is placed at one of these points, the symbol is placed with its origin at that point.

Pick an additional location if the first grid displayed is unacceptable.

You may also use the keypad menu to input explicit (X,Y) coordinates to define a grid origin.

- o |ENTER| - to indicate that the grid is accepted.
- o |CANCEL| - to erase the grid and cancel the grid information.

EXAMPLE |IC GRID| (IC GRID SIZE X) 800 |ENTER|
(IC GRID SIZE Y) 1600 |ENTER| (P) |ENTER|

NOTES Do not define a grid size smaller than the space requirements for the largest IC to be placed.

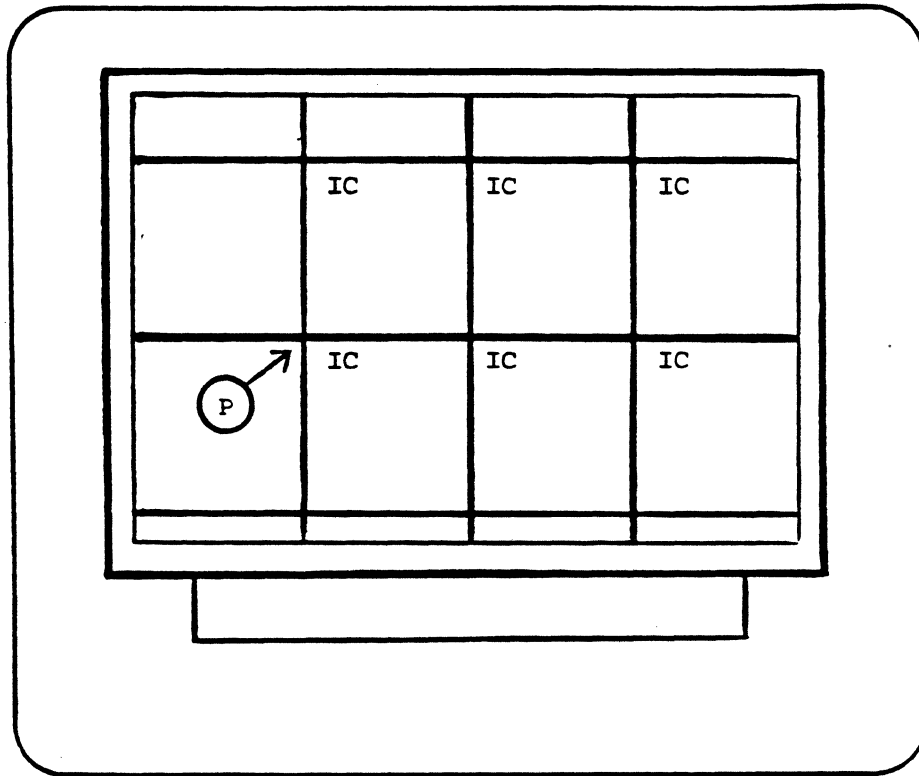
The grid must accommodate the number of ICS stored in the net data base that are to be placed in the drawing.

DEFAULT PARAMETER: X: 700 Y: 1400 Origin: 0,0

The example on the following page shows a typical IC grid displayed on the graphics screen.

IC GRID
(continued)

EXAMPLE: Matrix points to allow placement of six IC components.



Ⓟ - defines the grid origin and displays the matrix points on the graphics screen.

IC ROTATION

COMMAND NAME IC ROTATION

PURPOSE To define the rotation(s) of all ICS to be placed with the AUTOMATIC PLACEMENT capability.

INPUT SEQUENCE IC ROTATION (ALLOW 0 ROTATION [Y/N]) -Keyboard- ENTER
(ALLOW 90 ROTATION [Y/N]) -Keyboard- ENTER
(ALLOW 180 ROTATION [Y/N]) -Keyboard- ENTER
(ALLOW 270 ROTATION [Y/N]) -Keyboard- ENTER

- o The keyboard input is the character input Y (yes) or N (no).
- o You may specify up to four rotation angles.
- o The system places each component at one of the rotations specified; the system selects the best and most efficient rotation angle for each unplaced IC (if you specify more than one angle).

EXAMPLE IC ROTATION (ALLOW 0 ROTATION [Y/N]) -Y- ENTER
(ALLOW 90 ROTATION [Y/N]) -Y- ENTER
(ALLOW 180 ROTATION [Y/N]) -Y- ENTER
(ALLOW 270 ROTATION [Y/N]) -Y- ENTER

RESULT Each unplaced IC stored in the net data base will be placed at one of the four angles during AUTOMATIC PLACEMENT.

NOTES DEFAULT PARAMETERS: 0 DEG: Y
90 DEG: N
180 DEG: N
270 DEG: N

IN

COMMAND NAME

IN

PURPOSE

To add a PINUSE code "IN" to a device description file.

INPUT SEQUENCE

|ADD PINUSE| |IN|

or

|CHANGE PINUSE|

NOTES

This command is used only after the |ADD PINUSE|
or |CHANGE PINUSE| commands.

COMMAND NAME

INPUT DESIGN-RULES-CHECK RULES

PURPOSE

To specify the rules to be used by the system when you pick the DESIGN RULE CHK command. (When you pick INPUT DRC RULE, the system creates a text file containing a list of the rules you input.)

INPUT SEQUENCE

```

INPUT DRC RULE (prompt) - keyboard - ENTER (prompt)
                                     input-1
- keyboard - ENTER (prompt) - keyboard - ENTER (prompt)
  input-2                                     input-3
- keyboard - ENTER (prompt) - keyboard - ENTER (prompt)
  input-4                                     input-5
- keyboard - ENTER
  input-6
    
```

(The system prompts you for each KEYBOARD INPUT)

- KEYBOARD INPUT-1 defines the name of the rules text file you are now creating. Skip KEYBOARD INPUT-1 to use the system's default rules file name: PDRCPFILE.
- KEYBOARD INPUT-2 defines the layers you want checked. To specify more than one layer, use commas between layer numbers: 1,9,3,4 ENTER; or use a hyphen to specify a range of layers: 1-9 ENTER
- KEYBOARD INPUT-3 defines the minimum allowable line-to-line space in mils.
- KEYBOARD INPUT-4 defines the minimum allowable line-to-pad space in mils.
- KEYBOARD INPUT-5 defines the minimum allowable pad-to-pad space in mils.
- KEYBOARD INPUT-6 defines the minimum allowable trace width in mils.
- If you skip KEYBOARD INPUT-3,4,5, or 6 by picking ENTER, the system will enter zero as the minimum allowable value.

EXAMPLE

```

INPUT DRC RULE RULES1 ENTER 1,2 ENTER
1,5 ENTER 1,5 ENTER 2,5 ENTER 1,4 ENTER
    
```

NOTE

If you do not want the system to check for minimum trace width, skip KEYBOARD INPUT-6 or enter zero as the value.

INSERT VERTEX

COMMAND NAME

INSERT VERTEX

PURPOSE

To insert vertices on lines and connect-lines in symbol, schematic and board drawings.

INPUT SEQUENCE

INSERT VERTEX | --> Tablet --> (P1) (P2)
Menu

(P1) - Defines the line segment and highlights it in RED.

(P2) - Defines the new vertex point for the line.

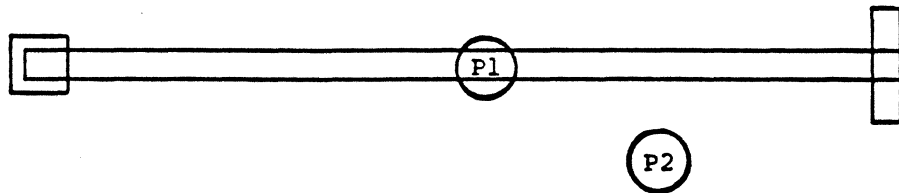
NOTES:

When inserting a vertex, the new vertex point must be outside the line segment defined by P1. You will receive an error message if the new vertex point (P2) is defined along the P1 line segment.

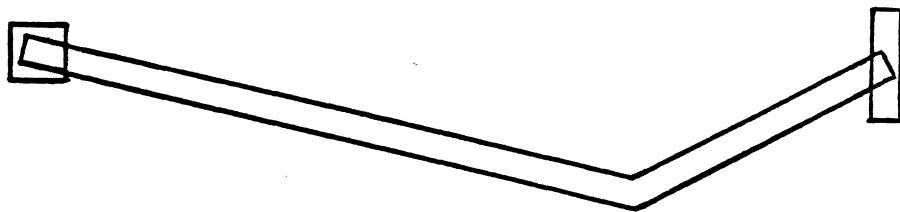
EXAMPLE:

INSERT VERTEX | (P1) (P2)

CURRENT CONNECT-LINE



NEW CONNECT-LINE



INTERACTIVE PLACEMENT

COMMAND NAME

INTERACTIVE PLACEMENT

PURPOSE

To flip to the menu page containing the commands used to interactively place and edit components on a board drawing.

INPUT SEQUENCE

INTERACTIVE PLACEMENT

NOTES

There are three types of interactive placement commands:

1. Commands used to ADD components
2. Command used to EDIT components
3. Commands used to CHECK on placement status

I/O WEIGHT

COMMAND NAME I/O WEIGHT

PURPOSE To define to the system the relative importance and placement priority of IC-I/O connections and IC-IC connections. Based on the weight factor specified, AUTOMATIC PLACEMENT will prefer placement of an IC near an I/O, over placement near an IC with connections.

INPUT SEQUENCE I/O WEIGHT (I/O WEIGHT) - Keyboard - ENTER
Input

- o The keyboard input is a value between 0 and 10. However, decimal inputs are valid. (e.g., 1.5)
- o If you input the number 1, IC-I/O connections will be equal to IC-IC connections. If you input the number 2, IC-I/O connections will be twice as important as IC-IC connections.
- o DEFAULT: 2.0

EXAMPLE I/O WEIGHT (I/O WEIGHT) 3 ENTER

RESULT IC-I/O placement is three times as important as IC-IC placement with connections.

COMMAND NAME

KEY EDIT TEXT

PURPOSE

This command transfers operator control to the optional Telesis keyboard terminal, and displays the requested text file on the keyboard terminal screen, ready for operator text editing commands.

INPUT SEQUENCE

KEY EDIT TEXT - keyboard - ENTER
input

- . KEYBOARD INPUT gives the name of the text file to be displayed for edit on the alphanumeric keyboard terminal.
- . If the text file already exists, it will be displayed with the cursor at the first character of the file, ready for editing.
- . If no such text file exists, the command will create a new file, and you will be able to start keying in text at the keyboard.

NOTES

- . The text file is created in the current project file.
- . You must have the Telesis optional keyboard terminal properly installed on the Telesis system before this command will operate.

KEYPAD

COMMAND NAME

KEYPAD

PURPOSE

To flip to the keypad menu page.

INPUT SEQUENCE

|KEYPAD|

NOTES

See the Section Keypad Commands for a complete description of the operations available using the keypad.

COMMAND NAME

LEFT JUSTIFY TEXT

PURPOSE

Set the text justification parameter to left justified. All text on a left justified text point will be to the right of the text point position. After this command has been picked, all text added to the active drawing, and all text picked in the UPDATE TXT PARAM command will be left justified.

INPUT SEQUENCELEFT JUST TEXT

COMMAND NAME

LINE DOWN

PURPOSE

To move the cursor down one line in a text file.
Used only when you have picked TEXT LEADTHRU to
create or edit the file.

INPUT SEQUENCE

LINE DOWN

COMMAND NAME

LINE UP

PURPOSE

To move the cursor up one line in a text file.
Used only when you have picked TEXT LEADTHRU to
create or edit the file.

INPUT SEQUENCE

LINE UP

COMMAND NAME

LINE LOCK 45/ON

PURPOSE

To specify that all line segments added to a drawing will be horizontal or vertical or at a 45° angle.

INPUT SEQUENCE

|LINE LOCK 45/ON|

EXAMPLE

|LINE LOCK 45/ON|

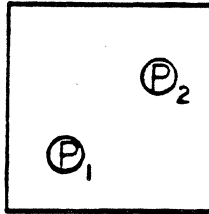
|ADD LINE|

Ⓟ₁

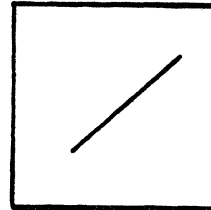
Ⓟ₂

|ENTER|

ACTION



RESULT



NOTES

- The segment's first vertex is placed at the first P pick (or at the last vertex of the last segment in a multi-segment line).
- The segment's second vertex is placed as close as possible to the second P pick.
- This command does not alter already existing lines in a drawing.

COMMAND NAME

LINE LOCK 90/ON

PURPOSE

To specify that all line segments added to a drawing will be horizontal or vertical.

INPUT SEQUENCE

|LINE LOCK 90/ON|

EXAMPLE

|LINE LOCK 90/ON|

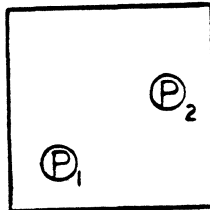
|ADD LINE|

Ⓟ₁

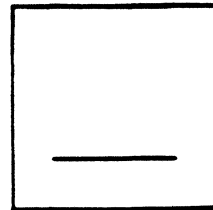
Ⓟ₂

|ENTER|

ACTION



RESULT



NOTES

- The segment's first vertex is placed at the first P pick (or at the last vertex of the last segment in a multi-segment line).
- The segment's second vertex is placed as close as possible to the second P pick.
- This command does not alter already existing lines in a drawing.

COMMAND NAME

LINE LOCK OFF

PURPOSE

To remove the line lock parameter set by the LINE LOCK 45 or LINE LOCK 90 commands.

INPUT SEQUENCE

LINE LOCK OFF

NOTES

This command does not alter already existing lines in a drawing.

LIST

COMMAND NAME LIST

PURPOSE To display on the function screen the settings for the auto-route parameters and the auto-placement parameters.

INPUT SEQUENCE |LIST|

LIST ELEMENT

COMMAND NAME

LIST ELEMENT

PURPOSE

To display the parameters of a specified element.

INPUT SEQUENCE

LIST ELEMENT (P) . . . ENTER

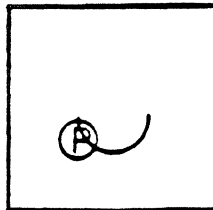
- (P) defines the element. It may be on any part of the element.
- To display the parameters of additional elements, input additional (P) picks.

EXAMPLE

LIST ELEMENT (P) ENTER

ACTION

RESULT displayed on function screen:



```

Element type - arc
Center - 5000 2000
Radius - 1000
Startangle - 3.124
End angle - 0.000
Layer - 3
Width - 0
Width justification center
Dash pattern - 1
Tag - 2
    
```

NOTES

When the element you pick has a label, the system will list the label type and text, for example:

LABEL	VALUE
2	U4

The explanation of label type numbers is as follows:

1 = SIGNAL NAME	5 = DEVICE TYPE
2 = REFERENCE DESIGNATOR	14 = PIN NAME
4 = PIN NUMBER	18 = VALUE

COMMAND NAME

LIST NO VIA ELIMINATION

PURPOSE

To display the list of NO-VIA-ELIMINATIONS specified with the SET NO VIA ELIM command.

INPUT SEQUENCE

LIST NO VIA ELIM

LIST PLACE-LOG

COMMAND NAME LIST PLACE-LOG

PURPOSE To list the PLACE-LOG text file that is created during
AUTOMATIC PLACEMENT. It contains all status information
and error conditions present after performing AUTOMATIC PLACEMENT.
This file is listed on the function screen.

INPUT SEQUENCE LIST PLACE-LOG

LIST ROUTER-LOG

COMMAND NAME

LIST ROUTER-LOG

PURPOSE

To display on the function screen the ROUTER-LOG that is in the current project file.

INPUT SEQUENCE

LIST ROUTER-LOG

COMMAND NAME

LOAD TEXT NETLIST

PURPOSE

To create or edit a net-data-base file and a NET-LOAD LOG file. When you pick LOAD TXT NETLIST, the system takes the information for the net-data-base from a text file rather than from a schematic drawing as with the EXTRACT NETLIST command. This text file must be in the current project. Device files and/or pin files must be in the current project or the SYSTEM-LIBRARY.

INPUT SEQUENCE

LOAD TXT NETLIST - keyboard - ENTER
input

- KEYBOARD INPUT is the name of the netlist text file that describes the NET-DATA-BASE to be loaded.

NOTES

- You may pick CANCEL after LOAD TXT NETLIST. The system will delete any work it has completed on the LOAD TXT NETLIST process.
- If no net data base exists in the current project file, the system will create one when the LOAD TXT NETLIST command is picked.
- If a net data base exists in the current project file, the system will edit it to bring it into conformance with the names/text file. However, components with assigned reference designators will not be edited.

COMMAND NAME

LOGIC RULE CHECK

PURPOSE

To instruct the system to check the signal nets in the net data base for faults or omissions, and to produce a text file named LDRC-LOG listing these errors or omissions.

INPUT SEQUENCELOGIC RULE CHK

COMMAND NAME

LIST FLOATING CONNECTORS

PURPOSE

To display the list of floating connectors specified with the SET FLOATING CON command.

INPUT SEQUENCE

LST FLOATING CON - keyboard - ENTER
input

- KEYBOARD INPUT is a component reference designator
- You may input only one reference designator.
Repeat the command to list the floating connectors additional components.

EXAMPLE

LST FLOATING CON J 1 ENTER

COMMAND NAME

LIST NET LINE WIDTH

PURPOSE

To display the list of nets and widths specified with the SET NET LIN WDTN command.

INPUT SEQUENCE

LST NET LIN WDTN

LST NO-ROUTE NET

COMMAND NAME

LIST NO-ROUTE NET

PURPOSE

To display the list of NO-ROUTES specified with the SET NO-ROUTE NET command.

INPUT SEQUENCE

LIST NO-ROUTE NET

COMMAND NAME

MATRIX PLOT

PURPOSE

To print a matrix plot of the active drawing. The plot is in black and white with solid and dashed lines.

INPUT SEQUENCE

MATRIX PLOT (prompt) - keyboard - ENTER (prompt)
input-1

- keyboard - ENTER
input-2

- KEYBOARD INPUT-1 specifies which colors (red, blue, green, violet or yellow) on the graphics screen are to be drawn in dashed lines in the matrix plot. All colors not specified here will be drawn in solid lines. Input R, B, G, V and/or Y. If you input more than one color, do not use any punctuation or spaces between your input, for example: RB.

Skip KEYBOARD INPUT-1 if you want no dashed lines in in the matrix plot. Just pick ENTER when the system prompts you for dashed lines.

- KEYBOARD INPUT-2 specifies the scale of the plot in relation to the drawing size.

You may skip KEYBOARD INPUT-2 if you want a scale of 1. Just pick ENTER when the system prompts you for scale.

EXAMPLE

PRINTER PLOT G ENTER .5 ENTER

RESULT: The matrix plot shows the red, blue, yellow and violet lines on the graphics screen as solid lines, and shows the green lines as dashed lines. The plot is at 1/2 scale. For example, if your drawing was 8-1/2 by 11 inches (SIZE A), the plot will be 4-1/4 by 5-1/2 inches.

NOTE

The plot shows only what is on the graphics screen. Before picking MATRIX PLOT, zoom in or out to display exactly what you want to print, and blank any layers containing graphics you do not want to see in the plot. After using this command, be patient; the system requires a time interval for calculating before the plotting is done - the larger the plot, the longer the interval.

COMMAND NAME

← MENU

PURPOSE

To display the preceeding menu page of a menu set on the function screen.

INPUT SEQUENCE

|← MENU|

NOTES

This command and the |MENU →| command are used with sets of several menus, allowing you to move from any of them to two linked to it.

MENU -->

COMMAND NAME

MENU -->

PURPOSE

To display the next menu page on the function screen.

INPUT SEQUENCE

|MENU -->|

NOTES

This command and the |MENU <--| command are used with sets of several menus, allowing you to move from any of the them to the two linked to it.

COMMAND NAME

MENU FROM TAPE

PURPOSE

To list a menu file as one of a series of items to be copied from a magnetic tape to the system.

INPUT SEQUENCE

MENU FROM TAPE - keyboard - | - keyboard - ENTER
input-1 input-2

- KEYBOARD INPUT-1 is the name of the project in which the menu file is filed.

If the menu file is not in a project file, or if it is in the current project file, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2.

- KEYBOARD INPUT-2 is the name of the menu file to be listed. It must be the exact menu file name.
- Always use a comma | after the project name to distinguish it from the menu file name. No comma is necessary if the project name is skipped.
- You may specify a revision after the project name or the menu file name. Input one blank space between the file name and the revision label. If you do not input a revision label, the most recently used revision will be used.

EXAMPLE

MENU FROM TAPE | 1 9 8 3 | , | A L P H A | ENTER

Result: The menu file "ALPHA" in the project file "1983" is placed on a list of items to be copied from magnetic tape to the system.

NOTES

This command is used only in conjunction with the COPY FROM TAPE command. Refer to that command description for further information.

COMMAND NAME

MENU TO TAPE

PURPOSE

To list a menu file as one of a series of items to be copied from the system to magnetic tape.

INPUT SEQUENCE

MENU TO TAPE - keyboard - | - keyboard - ENTER
input-1 input-2

- KEYBOARD INPUT-1 is the name of the project in which the menu file is filed.

If the menu file is not in a project file, or if it is in the current project file, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2.

- KEYBOARD INPUT-2 is the name of the menu file to be listed. It must be the exact menu file name.
- Always use a comma | after the project name to distinguish it from the menu file name. No comma is necessary if the project name is skipped.
- You may specify a revision after the project name or the menu file name. Input one blank space between the file name and the revision label. If you do not specify a revision label, the most recently used revision will be used.

EXAMPLE

MENU TO TAPE 1983, ALPHA ENTER

Result: The menu file "ALPHA" in the project file "1983" is placed on a list of items to be copied to magnetic tape.

NOTES

This command is used only in conjunction with the COPY TO TAPE command. Refer to that command description for further information.

COMMAND NAME

MIRROR OFF

PURPOSE

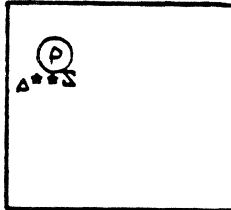
To remove the mirror-image text parameter set with the MIRROR ON command.

INPUT SEQUENCEMIRROR OFFEXAMPLEMIRROR OFFUPDATE TXT PARAM

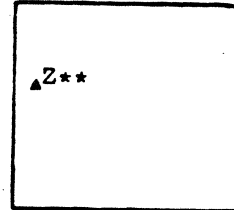
Ⓟ

ENTER

ACTION



RESULT



COMMAND NAME

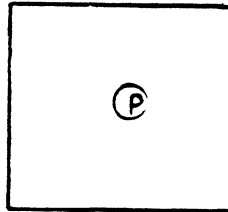
MIRROR ON

PURPOSE

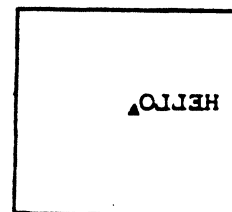
To specify that text added to a drawing be displayed as a mirror-image of left-to-right readable text. This command affects all subsequent text additions until the MIRROR OFF command is used.

INPUT SEQUENCEMIRROR ONEXAMPLE 1MIRROR ONADD NOTES H E L L O ENTER (P) ENTER

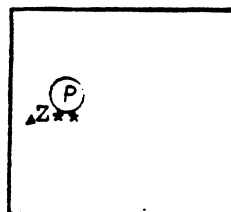
ACTION



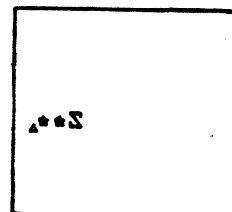
RESULT

EXAMPLE 2MIRROR ONUPDATE TXT PARAM (P) ENTER

ACTION



RESULT



NOTES

- This parameter may be used with any of the commands that add text to a drawing ADD REF DESIG, ATTCH PIN NAME, ATTCH REF DES, ASSIGN REF DES, UPDATE TXT PARAM, etc.
- This parameter does not alter any other text parameter such as size, slant, or justification.

MOVE COMPONENT

COMMAND NAME MOVE COMPONENT

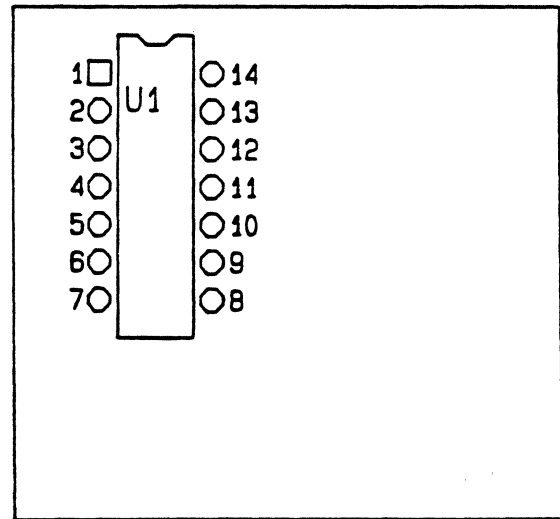
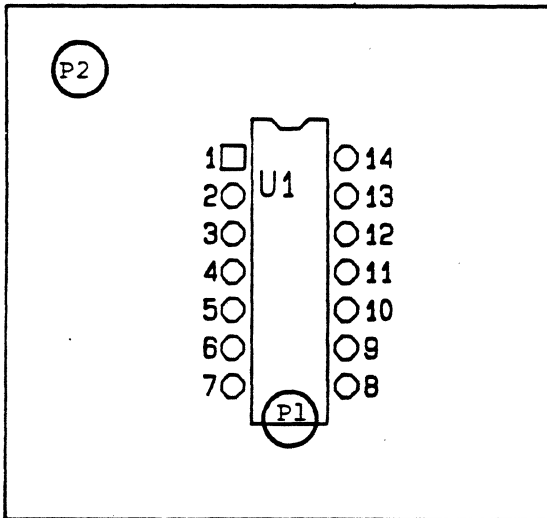
PURPOSE To move a component from one location to another on a board drawing during INTERACTIVE PLACEMENT.

INPUT SEQUENCE MOVE COMPONENT -Tablet- (P1) (P2) ENTER
Menu

- o (P1) - defines the component to be moved.
- o (P2) - defines the new board location.
- o After (P2) , you may pick additional components to be moved.

EXAMPLE MOVE COMPONENT (P1) (P2) ENTER

RESULT



NOTES

When the system moves a component to a new board location, it places the origin of the component at the picked location.

COMMAND NAME

MOVE ELEMENT

PURPOSE

To move an element from one location to another in a drawing.

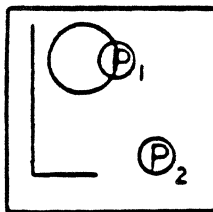
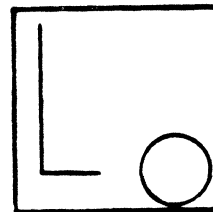
INPUT SEQUENCE

MOVE ELEMENT (P₁) (P₂) . . . ENTER

- (P₁) defines the element to be moved. It may be on any part of the element.
- (P₂) defines the new location.
- After (P₂), you may continue picking (P) s in the same manner to move additional elements.

EXAMPLE

MOVE ELEMENT (P₁) (P₂) ENTER

ACTIONRESULTNOTES

When the system moves an element to a new location, it places the origin of the element at the location picked.

COMMAND NAME

MOVE GROUP

PURPOSE

To move all members of the group, as a group. All members of the group move the same distance and in the same direction.

INPUT SEQUENCE

MOVE GROUP | \textcircled{P}_1 | \textcircled{P}_2 | ENTER

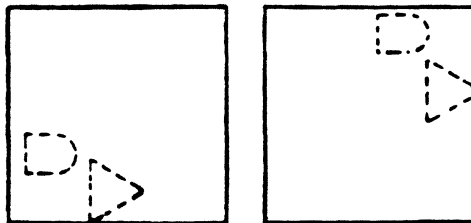
- \textcircled{P}_1 indicates the beginning of the "move vector." The move vector is a distance and direction you specify by the two picks of this command.
- \textcircled{P}_2 indicates the end of the "move vector."

EXAMPLE

MOVE GROUP | KEYPAD | X | 0 | Y | 0 | , | INCREMENT X | 1 | 0 | 0 | 0 |
INCREMENT Y | 1 | 0 | 0 | 0 | ENTER

ACTION

RESULT

NOTES

Since the move vector is only used by the command as a direction and distance, you might find the keypad using incremental X and Y as a convenient way to move a group of elements a specific distance.

MOVE SECTION

COMMAND NAME

MOVE SECTION

PURPOSE

To move a connect-line section to another area of your PC board drawing. Edited connect-lines allow you to open-up areas of your drawing.

INPUT SEQUENCE

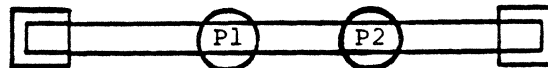
MOVE SECTION --> Tablet --> (P1) (P2) (P3)
Menu

- (P1) - Defines the entire connect-line segment. The segment is highlighted in RED. P1 also defines the first point on the segment to be moved.
- (P2) - Defines the second point on the connect-line segment to be moved.
- (P3) - Defines the new position on the drawing where the section is to be moved.

EXAMPLE:

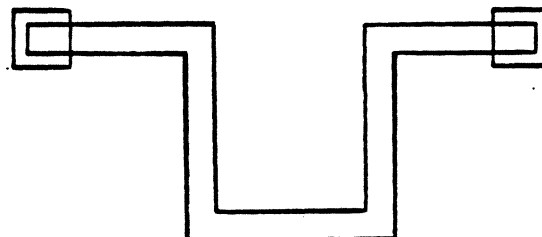
MOVE SECTION ---> Tablet ---> (P1) (P2) (P3)
Menu

CURRENT CONNECT-LINE



(P3)

NEW CONNECT-LINE



COMMAND NAME

MOVE SEGMENT

PURPOSE

To move a line segment from one location to another in a drawing.

INPUT SEQUENCE

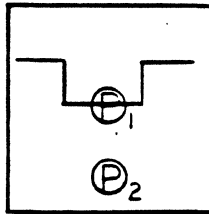
MOVE SEGMENT | \textcircled{P}_1 | \textcircled{P}_2 . . . | ENTER |

- \textcircled{P}_1 defines the segment to be moved.
- \textcircled{P}_2 defines the new location.
- After \textcircled{P}_2 , you may continue picking pairs of \textcircled{P} s to move additional elements.

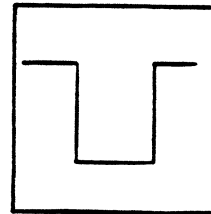
EXAMPLE

MOVE SEGMENT | \textcircled{P}_1 | \textcircled{P}_2 | ENTER |

ACTION



RESULT

NOTES

- Segments to which the moved segment is attached are extended or shortened so as to remain attached.
- Segment is placed in its new location parallel to its old location.
- Only vertical and horizontal segments may be moved. If you want to move other segments (not vertical or horizontal), use MOVE VERTEX for each end of the segment.

COMMAND NAME

MOVE SYMBOL

PURPOSE

To move a symbol from one location to another in a drawing.

INPUT SEQUENCE

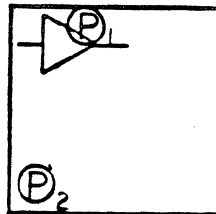
MOVE SYMBOL (P₁) (P₂) . . . ENTER

- (P₁) defines the symbol to be moved. It may be on any part of the symbol.
- (P₂) defines the new location.
- After (P₂), you may continue picking (P)s in the same manner to move additional symbols.

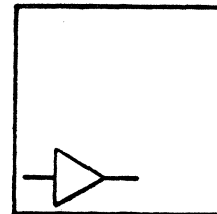
EXAMPLE

MOVE SYMBOL (P₁) (P₂) ENTER

ACTION



RESULT

NOTES

When the system moves a symbol to a new location it places the origin of the symbol at the location picked.

COMMAND NAME

MOVE TEXT

PURPOSE

To move an text (including its text point) from one location to another in a drawing.

INPUT SEQUENCE

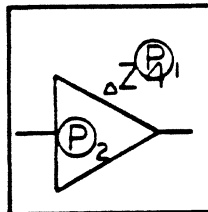
MOVE TEXT | (P₁) (P₂) . . . | ENTER |

- (P₁) defines the text to be moved. It may be on any part of the text.
- (P₂) defines the new location.
- After (P₂) you may continue picking (P)s in the same manner to move additional items of text.

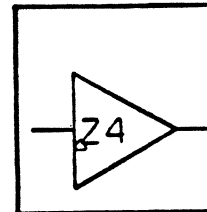
EXAMPLE

MOVE TEXT | (P₁) (P₂) | ENTER |

ACTION



RESULT

NOTES

When the system moves an text to a new location, it places the text point on the location picked.

WARNING: Do not use the MOVE TEXT command to move text from one element to another element. This command moves the text on the graphics screen, but it does not change the association of the text with the pin, symbol, component or net it originally annotated. For example, if you were to use this command to move a signal name from one net to another, your drawing would be mislabeled because the system would still consider the name to be associated with the first net.

COMMAND NAME

MOVE VERTEX

PURPOSE

To move a line vertex from one location to another in a drawing.

INPUT SEQUENCE

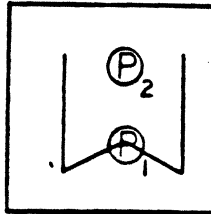
|MOVE VERTEX| (P)₁ (P)₂ . . . |ENTER|

- (P)₁ defines the vertex to be moved.
- (P)₂ defines the new location.
- After (P) , you may continue picking pairs of (P)s to move additional vertices.

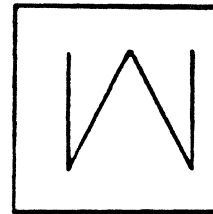
EXAMPLE

|MOVE VERTEX| (P)₁ (P)₂ |ENTER|

ACTION



RESULT

NOTES

Segments to which each moved vertex is attached are extended or shortened so as to remain attached.

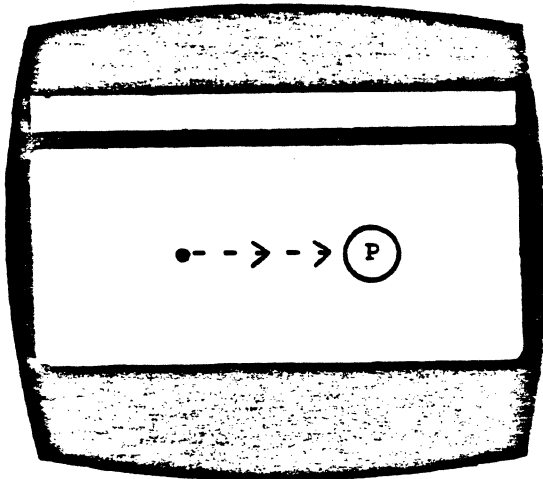
COMMAND NAME MOVE WINDOW

PURPOSE To move the WINDOW portion of your display within the ROAM space. This command is performed with your display in the WORLD view.

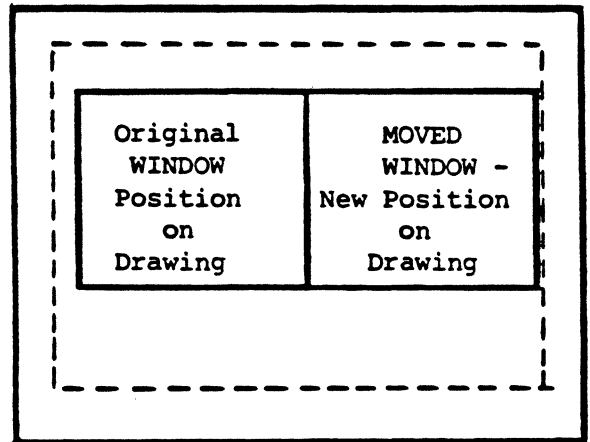
INPUT SEQUENCE MOVE WINDOW --> Tablet --> (P)
Menu

- o When the tablet menu is displayed on the function screen, you may move the WINDOW in any direction within the ROAM space. The direction is controlled with the light pen on the tablet menu.
- o When the WINDOW is moved to the new location, pick the tablet menu to "freeze" the WINDOW at that position on your drawing.

EXAMPLE: MOVE WINDOW --> Tablet --> (P)
Menu



RESULT:



COMMAND NAME

NC

PURPOSE

To add a PINUSE code "NC" to a device description file.

INPUT SEQUENCEADD PINUSE | NC

or

CHANGE PINUSENOTES

This command is used only after the ADD PINUSE or CHANGE PINUSE commands.

COMMAND NAME

NECK

PURPOSE

To change line width to a narrower (neck) width during an ADD CONNECTION command. Changes line width from the width set with the SET LINE WIDTH command to the width set with the SET NECK WIDTH command. The NECK command only affects the line segment between the (P) that precedes NECK and the (P) that follows it.

INPUT SEQUENCE

. . . (P)₁ NECK (P)₂

- . (P)₁ defines the beginning point of the segment.
- . (P)₂ defines the end point of the segment.
- . You may repeat the NECK command for each line segment you wish to draw at the neck width.

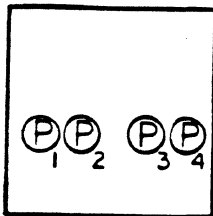
PARAMETERS

Neck Width

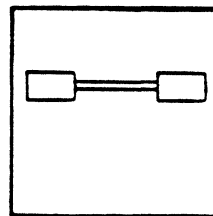
EXAMPLE

<u>SET LINE WIDTH</u>	<u>2</u>	<u>5</u>	<u>ENTER</u>	
<u>SET NECK WIDTH</u>	<u>1</u>	<u>2</u>	<u>ENTER</u>	
<u>ADD CONNECTION</u>	(P) ₁	(P) ₂	<u>NECK</u>	(P) ₃ (P) ₄ <u>ENTER</u>

ACTION



RESULT



COMMAND NAME

NET COMPARE

PURPOSE

Creates a text file NET-COMPARE-REPORT about the currently active board layout drawing with four sections:

1. NETLIST ERRORS AND OMISSIONS

This part includes these types of errors and omissions:

- . Unconnected signal end points
- . Conflicting annotation on components, signals or pins
- . Missing reference designators on components
- . Missing pin numbers on pins

The system highlights these errors on the graphics screen.

2. EXTRA CONNECTIONS

This part reports connections appearing on your board that do not appear on your schematic.

3. MISSING CONNECTIONS

This part reports connections appearing on your schematic that do not appear on your board.

4. COMPONENTS NOT ASSIGNED ON PCB

This part reports on reference designators appearing on your schematic that have not been assigned to the board with the ASSIGN REF DES command.

INPUT SEQUENCENET COMPARENOTES

To use this command, you must first have successfully used the EXTRACT NETLIST command on your schematic.

The reports on EXTRA CONNECTIONS and MISSING CONNECTIONS only include the extra or missing connections between components on which you have used the ASSIGN REF DES command.

When you repeat the NET COMPARE command, the existing report files are deleted and replaced by updated ones.

COMMAND NAME

NET DATABASE FROM TAPE

PURPOSE

To list a net data base file as one of a series of items to be copied from magnetic tape to the system.

INPUT SEQUENCE

NET-DB FROM TAPE - keyboard - , - keyboard ENTER
input-1 input-2

- . KEYBOARD INPUT-1 defines the name of the project in which the net data base is filed: You may skip KEYBOARD INPUT-1 if there is only one net data base file on the current tape section, or if it is in a project file with the same name as the current project.
- . KEYBOARD INPUT-2 is usually skipped. It defines the name of the net data base file. (By picking the NET-DB FROM TAPE, you automatically defined the name of the file, that is, NET-DATA-BASE. However, you may use KEYBOARD INPUT-2 to specify the revision label of the net data base you wish to list.)
- . Always use a comma , after a project name (KEYBOARD INPUT -1) to distinguish it from a net data base revision label. No comma is necessary if the project name is skipped. However, the comma is necessary when the net data base revision label is skipped.
- . You may specify a revision after the project name. If you do not, the most recently used revision will be used.
- . You may also specify the net data base revision. If you do not the most recently used revision will be used. When you input a net data base revision label, it is not necessary to precede it with the name of the file (NET-DATA-BASE).

EXAMPLENET-DB FROM TAPE ENTER

Result: The only net data base on the current tape section is placed on a list of items to be copied to the system from magnetic tape.

NOTES

This command is used only in conjunction with the COPY FROM TAPE command. Refer to that command description for further information.

Ordinarily, it is advisable to use the DRWNG FROM TAPE command to simultaneously copy a net data base and the board drawing to which it is linked. This assures that the board and the net data base remain together.

COMMAND NAME

NET DATA BASE TO TAPE

PURPOSE

To list a net data base file as one of a series of items to be copied from the system to magnetic tape.

INPUT SEQUENCE

NET-DB TO TAPE - keyboard - , - keyboard ENTER
input-1 input-2

- . KEYBOARD INPUT-1 defines the name of the project in which the net data base is filed:
 - a) if the net data base is filed in the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2;
 - b) if the net data base is filed in any other project, input the exact project name.
- . KEYBOARD INPUT-2 is usually skipped. It defines the name of the net data base file. (By picking the NET-DB TO TAPE command, you automatically defined the name of the file, that is, NET-DATA-BASE. However, you may use KEYBOARD INPUT-2 to specify the revision label of the net data base you wish to list.)
- . Always use a comma , after a project name (KEYBOARD INPUT -1) to distinguish it from a net data base revision label. No comma is necessary if the project name is skipped. However, the comma is necessary when the net data base revision label is skipped.
- . You may specify a revision after the project name. If you do not, the most recently used revision will be used.
- . You may also specify the net data base revision. If you do not the most recently used revision will be used. When you input a net data base revision label, it is not necessary to precede it with the name of the file (NET-DATA-BASE).

EXAMPLENET-DB TO TAPE | A|L|P|H|A|, | ENTER|

Result: The net data base in project ALPHA is placed on a list of items to be copied to tape.

NOTES

This command is used only in conjunction with the COPY TO TAPE command. Refer to that command description for further information.

Ordinarily, it is advisable to use the DRWG TO TAPE command to simultaneously copy a net data base and the board drawing to which it is linked. This assures that the board and the net data base remain together.

COMMAND NAME

NETLOCK

PURPOSE

To flip to the NETLOCK MENU. The netlock menu has the commands for highlighting, dehighlighting, and netlocking.

INPUT SEQUENCENETLOCK

COMMAND NAME

NETLOCK OFF

PURPOSE

To remove the effect of the NETLOCK ON command. After you pick NETLOCK OFF, the system will allow you to make connections on the board drawing even if these connections do not agree with the information in the net data base.

INPUT SEQUENCE

NETLOCK OFF

COMMAND NAME

NETLOCK ON

PURPOSE

To require that the only nets you can place in a board drawing be the same as nets shown in the net data base. After you pick NETLOCK ON, the system will prevent you from making a connection between pins if this connection is not shown in the net data base. If you attempt to add such a connection, the system will not place the segment of the line that connects to an unacceptable connect point. All other segments of the line will be placed.

INPUT SEQUENCENETLOCK ON

COMMAND NAME

NEW DRAWING

PURPOSE

To flip to menu page used for setting drawing extents.

INPUT SEQUENCE

|NEW DRAWING|

NEW DRAWING NAME

COMMAND NAME

NEW DRAWING NAME

PURPOSE

To create and name a new drawing and, optionally, to assign a revision label.

INPUT SEQUENCE

NEW DRAWING NAME | - keyboard - | ENTER |
input

- . KEYBOARD INPUT defines drawing file name and revision label.
- . Revision label is optional. If you don't enter a revision, the revision is automatically set as 1.
- . Drawing name may be up to 18 alphanumeric characters. Do not use blank spaces in name.
- . Revision label may be up to 4 alphanumeric characters. Do not use blank spaces in label.
- . Revision label follows name and must be preceded by a blank space.

PARAMETERS

- . Selection as BOARD DRAWING or OTHER DRAWING
- . DRAWING SIZE: A Size, B Size, C Size, Other Size

EXAMPLE

NEW DRAWING NAME | A|L|P|H|A | 1 | ENTER |

NOTES:

BE CAREFUL!: Make sure that there is no existing drawing by the same name, when you are naming your drawing. Otherwise, you may have 2 drawing files with the same name and revision label.

COMMAND NAME

NEW FLOPPY

PURPOSE

To prepare an unused floppy disk for use with the Telesis system, and to flip to the ARCHIVE-FLOPPY menu set.

INPUT SEQUENCE

NEW FLOPPY

COMMAND NAME

NEW PROJECT

PURPOSE

To create and name a new project file.

INPUT SEQUENCE

NEW PROJECT - keyboard - ENTER
input

- . KEYBOARD INPUT defines project name and revision label.
- . Revision label is optional. If you do not enter a revision, the revision is automatically set as 1.
- . Project name may be up to 18 alphanumeric characters. Do not use blank spaces in a name.
- . Revision label may be up to 4 alphanumeric characters. Do not use blank spaces in label.
- . Revision label follows name and must be preceded by a blank space.

EXAMPLE

NEW PROJECT N O V A I ENTER

COMMAND NAME

NEW TAPE

PURPOSE

To prepare a magnetic tape for use with the Telesis system as a new tape.

INPUT SEQUENCE

NEW TAPE (prompt) ->PAGE

- BE CAREFUL!! Using the NEW TAPE command will delete any existing data on the tape so the system prompts you to warn you of this and to confirm your intention. Pick the ->PAGE command at the top of the function screen to confirm your NEW TAPE

NOTES

A tape reel must be mounted on the tape drive, and it must have a write enable ring inserted in the tape reel.

<u>COMMAND NAME</u>	NEW USER MENUS
<u>PURPOSE</u>	To create and name a menu file.
<u>INPUT SEQUENCE</u>	<p><u>NEW USER MENUS</u> - keyboard - <u>ENTER</u> input</p> <ul style="list-style-type: none"> KEYBOARD INPUT is the menu file name and (optional) revision label. <p>Menu file name may be up to 18 alphanumeric characters with no blank spaces allowed.</p> <p>Revision label follows file name and must be preceded by a blank space. If no revision label is entered, the system uses the default revision label: 1.</p> <p>Revision label may be up to 4 alphanumeric characters with no blank spaces allowed.</p>
<u>EXAMPLE</u>	<u>NEW USER MENUS</u> <u>A</u> <u>L</u> <u>P</u> <u>H</u> <u>A</u> <u>ENTER</u>

NEXT

COMMAND NAME

NEXT

PURPOSE

To distinguish last input from next output.
Used only with other commands. See individual
command names for use with particular commands.

]NPUT SEQUENCE

|NEXT|

NUM P5 EXECUTES

COMMAND NAME

NUMBER OF PASS 5 EXECUTIONS

PURPOSE

To specify the number of times the auto router should execute the PASS 5 type of routing.

INPUT SEQUENCE

NUM P5 EXECUTES - keyboard - ENTER
input

- KEYBOARD INPUT is an integer that may not be greater than 10.

PARAMETERS

EXAMPLE

NUM P5 EXECUTES 5 ENTER

DEFAULT

2

COMMAND NAME

OCA

PURPOSE

To add a PINUSE code "OCA" to a device description file.

INPUT SEQUENCEADD PINUSE | OCA

or

CHANGE PINUSENOTES

This command is used only after the ADD PINUSE or CHANGE PINUSE commands.

COMMAND NAME

OCL

PURPOSE

To add a PINUSE code "OCL" to a device description file.

INPUT SEQUENCEADD PINUSE | OCL

or

CHANGE PINUSENOTES

This command is used only after the ADD PINUSE
or CHANGE PINUSE commands.

COMMAND NAME

OLD DRAWING

PURPOSE

To activate an existing drawing file.

INPUT SEQUENCE

OLD DRAWING - keyboard - ENTER
input

- . KEYBOARD INPUT must be the exact name of a drawing file existing in the current project file.
- . KEYBOARD INPUT may include revision label. If it does not, most recently used revision is activated.

EXAMPLE

OLD DRAWING | S | C | H | E | M | I | ENTER

COMMAND NAME

OLD FLOPPY

PURPOSE

To flip to the ARCHIVE-FLOPPY menu set when the floppy disk in use is one that has already been used with the Telesis system.

INPUT SEQUENCE

OLD FLOPPY

COMMAND NAME

OLD PROJECT

PURPOSE

To activate an existing project file.

INPUT SEQUENCE

OLD PROJECT - keyboard - ENTER
input

- . KEYBOARD INPUT must be the exact name of an existing project file.
- . KEYBOARD INPUT may include revision label. If it does not, the most recently used revision is activated.

EXAMPLE

OLD PROJECT | N | O | V | A | I | ENTER

COMMAND NAME

OLD TAPE

PURPOSE

To indicate that the magnetic tape in use is one on which Telesis system data has already been stored.

INPUT SEQUENCE

OLD TAPE

COMMAND NAME

OLD USER MENUS

PURPOSE

To open an existing menu file.

INPUT SEQUENCE

OLD USER MENUS - keyboard - ENTER
input

- KEYBOARD INPUT is the menu file name and (optional) revision label.

Revision label follows the file name and must be preceded by a blank space. If no revision label is specified here, the system opens the most recently used revision of the file.

EXAMPLE

OLD USER MENUS A L P H A ENTER

OOPS!

COMMAND NAME

OOPS!

PURPOSE

To cancel the last input from the keyboard, keypad or tablet.

INPUT SEQUENCE

|OOPS!|

EXAMPLE

|NEW DRAWING NAME| |A|B|D| |OOPS!| |C| |ENTER|

Drawing Name: ABC

NOTES

This command does not always function after you have picked |NEXT| or |ENTER|, nor after minimum input is completed in a command that does not require |NEXT| or |ENTER|, such as |ADD CIRCLE|.

COMMAND NAME

OTHER DRAWINGS

PURPOSE

To flip to the menu set used for creating or editing schematic drawings or symbol drawings, as opposed to board drawings.

INPUT SEQUENCE

OTHER DRAWINGS

COMMAND NAME

OTHER SIZE

PURPOSE

To specify the size of a drawing if it is other than A,B,C, or D size.

INPUT SEQUENCE

keyboard keyboard
 |OTHER SIZE| - input - |ENTER| - input - |ENTER|
 keyboard keyboard
 - input - |ENTER| - input - |ENTER|

- . FIRST KEYBOARD INPUT specifies lowest x coordinate value.
- . SECOND KEYBOARD INPUT specifies lowest y coordinate value.
- . THIRD KEYBOARD INPUT specifies uppermost x coordinate value.
- . FOURTH KEYBOARD INPUT specifies uppermost y coordinate value.
- . Minimum x or y coordinate value is - 32,500.
- . Maximum x or y coordinate value is 32,500.

EXAMPLE

|OTHER SIZE| |0| |ENTER| |0| |ENTER| |1|0|0|0|0|
 |ENTER| |1|0|0|0|0| |ENTER|

OUT

COMMAND NAME

OUT

PURPOSE

To add a PINUSE code "OUT" to a device description file.

INPUT SEQUENCE

ADD PINUSE | OUT

or

CHANGE PINUSE

NOTES

This command is used only after the ADD PINUSE
or CHANGE PINUSE commands.

PEN PLOT

COMMAND NAME

PEN PLOT

PURPOSE

To plot the active drawing on the optional Telesis pen plotter. (The Hewlett-Packard HP7580A pen plotter.)

INPUT SEQUENCE

PEN PLOT - keyboard - ENTER keyboard - ENTER
input-1 input-2

- . KEYBOARD INPUT-1 gives the name of the text file that controls the assignment of data base layers to plotter pens.
- . KEYBOARD INPUT-2 gives the scale at which the displayed area of the drawing is to be plotted.

COMMAND NAME

. PENPLOT ARTWORK

PURPOSE

To pen plot the filmsheet graphics specified in a photoplot filmsheet text file.

INPUT SEQUENCE

PENPLOT ARTWORK (prompt) - keyboard - ENTER (prompt)
input-1

- keyboard - ENTER
input-2

- KEYBOARD INPUT-1 specifies the name of the filmsheet text file to be pen plotted. It must be exactly the name of the filmsheettext file.
- KEYBOARD INPUT-2 specifies the scale at which the pen plot is to be made. You may omit KEYBOARD INPUT-2 by picking ENTER if you wish to plot at a scale of 1:1.

EXAMPLE

PENPLOT ARTWORK | C | O | M | P | O | N | E | N | T | - | S | I | D | E | - | A | R | T |
ENTER | 2 | ENTER

COMMAND NAME PENPLOT BACKGROUND

PURPOSE To plot the ACTIVE or INACTIVE drawing in a "background" mode. This command uses the -PLOT created with the CREATE PENPLOT FILE command.

INPUT SEQUENCE PENPLOT BACKGROUND | (NAME OF FILE TO BE PLOTTED)-Keyboard- ENTER |
Input

(PLOT SCALE ENTER=1) -Keyboard- ENTER |
Input

- o The operator must open the project file prior to picking the PENPLOT BACKGROUND command.
- o The first keyboard input is the -PLOT file name that was created with the CREATE PENPLOT FILE command. If the drawing is actively displayed, simply pick ENTER to locate the latest version of the -PLOT file.

If the drawing is inactive, enter the name of the -PLOT file to be used. The -PLOT suffix does not need to be input.

NOTE: If more than one -PLOT file exists in the current project file, ensure that the proper file name is selected. Otherwise, the plotter may plot an undesired portion of the drawing.

- o The second keyboard input is the PLOT SCALE. If ENTER is picked without a plot scale, the system defaults to SCALE 1.
- o The system first checks that the plotter is on-line and not presently operating. If the plotter is not on-line, the function screen message line displays:

PEN PLOTTER NOT ON-LINE

If the plotter is presently operating, the message line displays:

PEN PLOTTER BUSY, PLOT NOT STARTED

- o When the plotter is on-line, and available, the system proceeds to create a "background" copy of the -PLOT file. As the system copies the file, the message line displays:

COPYING FILE TO BACKGROUND

EXAMPLE PENPLOT BACKGROUND | (NAME OF FILE TO BE PLOTTED) WINDOW 1 ENTER |
(PLOT SCALE ENTER=1) 3 ENTER |

Resulting file used by the system: WINDOW-PLOT 1

When the plotter begins to operate, and when the system "beeps", the operator may interactively continue working on the Telesis system.

PLACE ALL

COMMAND NAME

PLACE ALL

PURPOSE

To place all unplaced components stored in the net data base during INTERACTIVE PLACEMENT. Unplaced components may include ICs, DISCRETES and I/Os.

INPUT SEQUENCE

PLACE ALL -Tablet Menu- (P) ENTER

- o PLACE ALL - the function screen message line displays the reference designator, device type, and symbol (package) name of the first unplaced component stored in the net data base.

EXAMPLE PLACE C1/ CAP/ CAPRAD300

- o (P) - defines the board location on your drawing for the first unplaced component. The function screen message line displays:

(PICK NEXT TO CONTINUE)

- o Pick ENTER to place the component named in the prompt and to complete the PLACE ALL command.

OR

Pick NEXT to place the component named in the prompt and to display the next component reference designator, device type and symbol (package) name.

- o You may bypass the reference designator, device type, and symbol (package) name displayed on the message line by picking NEXT when the system displays this information.
- o If all unplaced components stored in the net data base have been bypassed, the message line displays:

(NO COMPONENTS PLACED)

- o When all the unplaced components stored in the net data base have been displayed, placed and bypassed, the function screen message line displays:

(PLACEMENT COMMAND COMPLETE)

EXAMPLE PLACE ALL (PLACE C1/ CAP/ CAPRAD300) (P) (PICK NEXT TO CONTINUE)

PLACE BY DEVICE

COMMAND NAME

PLACE BY DEVICE

PURPOSE

To place the unplaced components stored in the net data base by specifying the DEVICE. This command may be used during INTERACTIVE PLACEMENT.

INPUT SEQUENCE

PLACE BY DEVICE (DEVICE OF COMPONENTS TO PLACE) - Keyboard Input

ENTER -Tablet- P ENTER
Menu

- o The keyboard input is the device type of the unplaced component (Ex. 74L74). Pick ENTER.
- o The function screen message line displays the reference designator, device type, and symbol (package) name of the component.

EXAMPLE: PLACE U2/ 74L74/ DIP14

- o P defines the board location on the drawing for the component named in the prompt. The function screen message line displays:

(PICK NEXT TO CONTINUE)

- o Pick ENTER to place the component named in the prompt and to complete the PLACE BY DEVICE command. The message line displays:

(PLACEMENT COMMAND COMPLETE)

OR

Pick NEXT to place the component named in the prompt and to display the next component of that same device type.

- o You may bypass the reference designator, device type, and symbol (package) name displayed in the prompt by picking NEXT when the system displays this information:
- o If all unplaced components named in each prompt are bypassed, the message line displays:

(NO COMPONENTS PLACED)

EXAMPLE

PLACE BY DEVICE (DEVICE OF COMPONENT TO PLACE) 74L74 ENTER

(PLACE U2/ 74L74/ DIP14) P (PICK NEXT TO CONTINUE)

COMMAND NAME

PLACE BY REFDES

PURPOSE

To place the unplaced components stored in the net data base by specifying the reference designator of each component. This command may be used during INTERACTIVE PLACEMENT.

INPUT SEQUENCE

PLACE BY REFDES (REF DES OF COMPONENT TO PLACE) - Keyboard Input

ENTER -Tablet- (P) ENTER
Menu

- o The keyboard input is the reference designator of the unplaced component (Ex. U1). Pick ENTER.
- o The function screen message line displays the reference designator, device type, and symbol (package) name of the component.

EXAMPLE: PLACE U1/ 74LS00/ DIP14

- o (P) defines the board location on the drawing for the component named in the prompt. The function screen message line displays:

(PICK NEXT TO CONTINUE)

- o Pick ENTER to place the component named in the prompt and to complete the PLACE BY REFDES command.

OR

Pick NEXT to place the component named in the prompt and to input the reference designators of additional components. The message line displays:

(REF DES OF COMPONENT TO PLACE)

- o You may bypass the reference designator, device type, and symbol (package) name displayed in the prompt by picking NEXT when the system displays this information:

The system then reissues the (REF DES OF COMPONENT TO PLACE) prompt.

- o If all unplaced components named in each prompt are bypassed, the message line displays:

(NO COMPONENTS PLACED)

EXAMPLE

PLACE BY REFDES (REF DES OF COMPONENT TO PLACE) U1 ENTER

(PLACE U1/ 74LS00/ DIP14) (P) (PICK NEXT TO CONTINUE)

PLACE DISCRETES

COMMAND NAME

PLACE DISCRETES

PURPOSE

To begin interactive placement of all unplaced DISCRETE components stored in the net data base. The system issues a prompt on the function screen message line displaying each reference designators, device type, and symbol (package) name.

INPUT SEQUENCE

PLACE DISCRETES - Tablet Menu - (P) ENTER

- o PLACE DISCRETES - the function screen message line displays the reference designator, device type, and symbol (package) name of the first DISCRETE stored in the net data base.

EXAMPLE: PLACE C1/ CAP/ CAPRAD300

- o (P) - defines the board location on your drawing for the first DISCRETE. The function screen message line displays:

(PICK NEXT TO CONTINUE)

- o Pick ENTER if you wish to place the DISCRETE named in the prompt and to complete the PLACE DISCRETES command.

OR

Pick NEXT to place the DISCRETE named in the prompt and to display the next DISCRETE reference designator, device type and symbol (package) name.

- o You may bypass the reference designator, device type and symbol (package) name displayed on the message line by picking NEXT when the system displays this information.

If all unplaced DISCRETES stored in the net data base are bypassed, the message line displays:

(NO COMPONENTS PLACED)

- o When all the unplaced DISCRETES stored in the net data base have been displayed, placed and bypassed, the function screen message line displays:

(PLACEMENT COMMAND COMPLETE)

EXAMPLE PLACE DISCRETES (PLACE C1/ CAP/ CAPRAD300) (P) (PICK NEXT TO CONTINUE)

PLACE ICS

COMMAND NAME

PLACE ICS

PURPOSE

To begin interactive placement of all unplaced ICs stored in the net data base. The system issues a prompt on the function screen message line displaying each reference designators, device type, and symbol (package) name.

INPUT SEQUENCE

PLACE ICS | - Tablet Menu - (P) | ENTER |

- o PLACE ICS | - the function screen message line displays the reference designator, device type, and symbol (package) name of the first IC stored in the net data base.

EXAMPLE: PLACE U1/ 74LS00/ DIP14

- o (P) - defines the board location on your drawing for the first IC. The function screen message line displays:

(PICK NEXT TO CONTINUE)

- o Pick ENTER | if you wish to place the IC named in the prompt and to complete the PLACE ICS | command.

OR

Pick NEXT | to place the IC named in the prompt and to display the next IC reference designator, device type and symbol (package) name.

- o You may bypass the reference designator, device type and symbol (package) name displayed on the message line by picking NEXT | when the system displays this information.

If all unplaced ICS stored in the net data base are bypassed, the message line displays:

(NO COMPONENTS PLACED)

- o When all the unplaced ICS stored in the net data base have been displayed, placed and bypassed, the function screen message line displays:

(PLACEMENT COMMAND COMPLETE)

EXAMPLE | PLACE ICS | (PLACE U1/ 74LS00/ DIP14) (P) (PICK NEXT TO CONTINUE)

COMMAND NAME

PLACE I/OS

PURPOSE

To begin interactive placement of all unplaced I/O components stored in the net data base. The system issues a prompt on the function screen message line displaying each reference designator, device type, and symbol (package) name.

INPUT SEQUENCE

PLACE I/OS - Tablet Menu - (P) ENTER

- o PLACE I/OS - the function screen message line displays the reference designator, device type, and symbol (package) name of the first I/O stored in the net data base.

EXAMPLE: PLACE J/ CONNECTOR/ CON15S/156

- o (P) - defines the board location on your drawing for the first I/O. The function screen message line displays:

(PICK NEXT TO CONTINUE)

- o Pick ENTER if you wish to place the I/O named in the prompt and to complete the PLACE I/OS command.

OR

Pick NEXT to place the I/O named in the prompt and to display the next I/O reference designator, device type and symbol (package) name.

- o You may bypass the reference designator, device type and symbol (package) name displayed on the message line by picking NEXT when the system displays this information.

If all unplaced I/OS stored in the net data base are bypassed, the message line displays:

(NO COMPONENTS PLACED)

- o When all the unplaced I/OS stored in the net data base have been displayed, placed and bypassed, the function screen message line displays:

(PLACEMENT COMMAND COMPLETE)

EXAMPLE PLACE I/OS (PLACE J/ CONNECTOR/ CON15S/156) (P) (PICK NEXT TO CONTINUE)

PLACED STATUS

COMMAND NAME

PLACED STATUS

PURPOSE

To list the components currently placed in the board drawing. The component list is displayed on the function screen.

INPUT SEQUENCE

PLACED STATUS

- o The PLACED STATUS command lists the reference designator, device type, symbol (package) name, drawing coordinates and the component rotation.

EXAMPLE: Typical line display

```
U11 /7400 /DIP14 @( 6000, 5525) rot=0
```

- o Components are listed regardless of the placement procedure previously used:

Automatic Placement
Interactive Placement
Manual Placement (ADD SYMBOL, ASSIGN REF DES)

COMMAND NAME

POWER

PURPOSE

To add a PINUSE code "POWER" to a device description file.

INPUT SEQUENCEADD PINUSE | POWER

or

CHANGE PINUSENOTES

This command is used only after the ADD PINUSE
or CHANGE PINUSE commands.

COMMAND NAME

PRINT BILL OF MATERIALS REPORT

PURPOSE

To print the current project's bill of materials report file.

INPUT SEQUENCE

PR BOM-REPORT

COMMAND NAME

PRINT COMPONENT-REPORT

PURPOSE

To print the current project's component report file.

INPUT SEQUENCE

PR COMPONENT-RPT

COMMAND NAME

PRINT EXTRACTION-LOG

PURPOSE

To print the current project's netlist extraction log file.

INPUT SEQUENCE

|PR EXTRCTION-LOG|

PRINT

COMMAND NAME PRINT

PURPOSE To print text files and long messages displayed on the function screen.

INPUT SEQUENCE |PRINT|

NOTES

- o You must have the matrix printer option on your Telesis system. |PRINT| outputs the entire text file or message.

When the system "beeps" while the printer is operating, you may pick a new menu box and continue your work on the Telesis system. |CANCEL| does not stop the printer operation once it has started.

COMMAND NAME

PRINT LDRC-LOG

PURPOSE

To print the current project's LDRC-LOG text file.

INPUT SEQUENCE

PRINT LDRC-LOG

PRINT EXEC FILE

COMMAND NAME PRINT EXECUTE FILE

PURPOSE To print an existing execute file on the optional matrix printer.

INPUT SEQUENCE |PRINT EXEC FILE| (EXECUTE FILE NAME) -Keyboard- |ENTER|
Input

- o |PRINT EXEC FILE| is located on the |EXECUTE MENU|
- o The keyboard input is the execute file name. Input the file name and the revision label. Omit the revision if printing the latest version.

EXAMPLE |PRINT EXEC FILE| (EXECUTE FILE NAME) OVERNIGHT TEST |ENTER|

Refer to the UTILITIES section of the manual for an example of a typical execute file output to the matrix printer.

COMMAND NAME

PRINT OR PLOT

PURPOSE

To flip to the menu page used for PRINT and PLOT commands.

INPUT SEQUENCE

PRINT OR PLOT

PRINT PLACE-LOG

COMMAND NAME PRINT PLACE-LOG

PURPOSE To print the PLACE-LOG text file that is created during
AUTOMATIC PLACEMENT.

INPUT SEQUENCE PRINT PLACE-LOG

NOTES You must have the matrix printer option on the Telesis
system to print the PLACE-LOG.

COMMAND NAME

PRINT ROUTER-LOG

PURPOSE

To instruct the matrix printer to print the ROUTER-LOG text file that is in the current project file.

INPUT SEQUENCE

PRINT ROUTER-LOG

PRINT TEXT FILE

COMMAND NAME

PRINT TEXT FILE

PURPOSE

To obtain a printed copy of a text file using a matrix printer.

INPUT SEQUENCE

PRINT TEXT FILE | - keyboard - | ENTER |
input

- . KEYBOARD INPUT defines the name of the text file. It must be the exact name of a text file existing in the current project file.
- . KEYBOARD INPUT may include the revision label. If it does not, the most recently used revision is printed.

EXAMPLE

PRINT TEXT FILE | APERTURE-TAB | ENTER |

Result: Printer prints out the text file named APERTURE-TAB.

COMMAND NAME

PRINT NCDRILL-LOG

PURPOSE

To print the current project's NCDRILL-LOG text file.

INPUT SEQUENCE

PRINT NCDRILL-LOG

COMMAND NAME

PRINT NET-COMPARE-REPORT

PURPOSE

To print the current project's net-compare report file.

INPUT SEQUENCE

|PR-NET COMPR-RPT|

COMMAND NAME

PRINT NETLIST-REPORT

PURPOSE

To print the current project's list-by-nets report file.

INPUT SEQUENCE

PR-NETLIST-RPT

COMMAND NAME

PRINT PHOTOPLOT-LOG

PURPOSE

To print the current project's PHOTOPLOT-LOG text file.

INPUT SEQUENCE

PR PHOTOPLOT-LOG

PROJECT INDEX

COMMAND NAME

PROJECT INDEX

PURPOSE

To display a list of the contents of a project file.

INPUT SEQUENCE

PROJECT INDEX - keyboard - ENTER
input

- . KEYBOARD INPUT must be the exact name of an existing project file.
- . KEYBOARD INPUT may include revision label. If it does not, the contents of the most recently used revision are displayed.

EXAMPLE

PROJECT INDEX | NOVA | ENTER

Function screen display:

```
contents of project NOVA rev 2
drawing SCHEM rev 1      created 18-MAR-82 15:32:15
drawing SCHEM rev 2      created 25-MAR-82 10:43:35
file NET-DATA-BASE rev 1 created 26-MAR-82 14:24:12
text file BOM REPORT rev 1 created 26-MAR-82 15:35:48

total number of entries: 4
```

PROJECT TO TAPE

COMMAND NAME

PROJECT TO TAPE

PURPOSE

To list a project file as one of a series of items to be copied from the system to magnetic tape.

INPUT SEQUENCE

PROJECT TO TAPE - keyboard - ENTER
input

- KEYBOARD INPUT defines the name of the project to be listed:
 - a) to list the current project, skip the KEYBOARD INPUT and pick ENTER;
 - b) to list any other project, input the exact project name.
- You may specify a revision label after the project name. If you do not, the most recently used revision will be used.

EXAMPLE

PROJECT TO TAPE | ALPHA | ENTER

Result: The project ALPHA is placed on a list of items to be copied to magnetic tape.

NOTES

This command is used only in conjunction with the COPY TO TAPE command. Refer to that command description for further information.

COMMAND NAME

PROJECT FROM TAPE

PURPOSE

To list a project file as one of a series of items to be copied from a magnetic tape to the system.

INPUT SEQUENCE

PROJ FROM TAPE - keyboard - ENTER
input

- . KEYBOARD INPUT defines the name of the project to be listed. It must be the exact project name.
- . You may specify a revision label after the project name. If you do not, the most recently used project will be used.

EXAMPLE

PROJ FROM TAPE ALPHA ENTER

Result: The project ALPHA is placed on a list of items to be copied from magnetic tape to the system.

NOTES

This command is used only in conjunction with the COPY FROM TAPE command. Refer to that command description for further information.

PUNCH DRILL TAPE

COMMAND NAME

PUNCH DRILL TAPE

PURPOSE

To instruct the system to punch a numerical control drill paper tape using the information in the NCDRILL-TAPE text file.

INPUT SEQUENCE

PUNCH DRILL TP

COMMAND NAME

PASS 1 PIN KEEP AWAY

PURPOSE

To specify the pin "keep away" distance to be used by the auto router during PASS 1. All segments of connect lines running parallel to pin rows (component orientation) must keep this specified distance away from the pins. To pass closer to a pin, or to connect to a pin, the connection must turn in a perpendicular direction.

INPUT SEQUENCE

P1 PIN KEEP AWAY - keyboard - ENTER
input

- KEYBOARD INPUT is a number of grid units.

EXAMPLE

P1 PIN KEEP AWAY 3 ENTER

DEFAULT

2

COMMAND NAME

PASS 1 WINDOW EXPANSION

PURPOSE

To specify how far outside an ideal "routing window" the auto router may place a connection during PASS 1. An ideal "routing window" is a rectangle with the two pins that are to be connected at opposite corners.

INPUT SEQUENCE

|P1 WINDOW EXPAN| - keyboard - |ENTER|
input

- KEYBOARD INPUT is a number of grid units.

EXAMPLE

|P1 WINDOW EXPAN|2|ENTER|

Result: The auto router will place connections that extend no more than 2 grid units in any direction outside of an ideal "routing window."

DEFAULT

5

COMMAND NAME

PASS 2 PIN KEEP AWAY

PURPOSE

To specify the pin "keep away" distance to be used by the auto router during PASS 2. All segments of connect lines running parallel to pin rows (component orientation) must keep this specified distance away from the pins. To pass closer to a pin, or to connect to a pin, the connection must turn in a perpendicular direction.

INPUT SEQUENCE

P2 PIN KEEP AWAY - keyboard - ENTER
input

- KEYBOARD INPUT is a number of grid units.

EXAMPLE

P2 PIN KEEP AWAY 2 ENTER

DEFAULT

3

COMMAND NAME

PASS 2 WINDOW EXPANSION

PURPOSE

To specify how far outside an ideal "routing window" the auto router may place a connection during PASS 2. An ideal "routing window" is a rectangle with the two pins that are to be connected at opposite corners.

INPUT SEQUENCE

P2 WINDOW EXPAN - keyboard - ENTER
input

- KEYBOARD INPUT is a number of grid units.

EXAMPLE

P2 WINDOW EXPAN 2 ENTER

Result: The auto router will place connections that extend no more than 2 grid units in any direction outside of an ideal "routing window."

DEFAULT

6

COMMAND NAME

PASS 5 JOG SIZES

PURPOSE

To specify the maximum "jog sizes" allowed to the auto router during PASS 5. A "jog" is a vertical connect line segment on a predominantly horizontal routing layer; and it is a horizontal connect line segment on a predominantly vertical routing layer.

INPUT SEQUENCE

P5 JOG SIZES - keyboard - ENTER
input

- KEYBOARD INPUT is a number of grid units.
- You may specify a value for each execution of PASS 5 by placing a comma (,) between values. The system will use the first value for the first execution, the second value for the second execution, and so on. The system will use the default value for any execution where you have not specified a value.

EXAMPLE

P5 JOG SIZES 3 , 4 ENTER

DEFAULT

5 (for all executions)

COMMAND NAME

PASS 5 LAYER PAIRS

PURPOSE

To specify the layer pairs to be used by the auto router during PASS 5.

INPUT SEQUENCE

P5 LAYER PAIRS - keyboard - ENTER
input

- KEYBOARD INPUT is a pair of layer numbers separated by a comma (,); for example 1,2
- You may specify pairs for each execution of PASS 5 by placing a comma between each pair. The system will use the first pair for the first execution of PASS 5, the second pair for the second execution, and so on. The system will use the default layer pair for any execution where you have not specified a layer pair.

EXAMPLE

P5 LAYER PAIRS 1,2,3,4 ENTER

Result: The system will use layers 1 and 2 during the first execution of PASS 5, and it will use layers 3 and 4 during the second execution of PASS 5.

DEFAULT

1,2 (for all executions)

COMMAND NAME

PASS 5 PIN KEEP AWAY

PURPOSE

To specify the pin "keep away" distance to be used by the auto router during PASS 5. All segments of connect lines running parallel to pin rows (component orientation) must keep this specified distance away from the pins. To pass closer to a pin, or to connect to a pin, the connection must turn in a perpendicular direction.

INPUT SEQUENCE

P5 PIN KEEP AWAY - keyboard - ENTER
input

- KEYBOARD INPUT is a number of grid units.
- You may specify a value for each execution of PASS 5 by placing commas (,) between values. The system will use the first value for the first execution, the second value for the second execution, and so on. The system will use a default value for any execution where you have not specified a value.

EXAMPLE

P5 PIN KEEP AWAY 2 , 0 ENTER

DEFAULT

0 (for all executions)

COMMAND NAME

PASS 5 ROUTER TYPES

PURPOSE

To specify the type of auto router (line probe, maze runner or both) to be used during PASS 5.

INPUT SEQUENCE

P5 ROUTER TYPES - keyboard - ENTER
input

- KEYBOARD INPUT is L or M or B (for line probe, maze, runner or both).
- You may specify a value for each execution of PASS 5. No punctuation or space is needed between values. The system will use the first value for the first execution, the second value for the second execution, and so on. The system will use a default value for any execution where you have not specified a value.

EXAMPLE

P5 ROUTER TYPES B L ENTER

Result: The system will use both the line probe and the maze runner routing types on the first execution of PASS 5, but it will use only the line probe routing type on the second execution of PASS 5.

DEFAULT

B (for all executions)

COMMAND NAME

PASS 5 VIAS ALLOWED

PURPOSE

To specify whether or not the auto router may add vias during PASS 5.

INPUT SEQUENCE

P5 VIAS ALLOWED - keyboard - ENTER
input

- KEYBOARD INPUT is Y or N (for yes or no)
- You may specify a value for each execution of PASS 5. No punctuation or space is needed between values. The system will use the first value for the first execution, the second value for the second execution, and so on. The system will use a default value for any execution where you have not specified a value.

EXAMPLE

P5 VIAS ALLOWED N Y ENTER

Result: The system will not add vias during the first execution of PASS 5, but it will add vias during the second execution of PASS 5.

DEFAULT

Y (for all executions)

COMMAND NAME

PASS 5 WINDOW EXPANSION

PURPOSE

To specify how far outside an ideal "routing window" the auto router may place a connection during PASS 5. An ideal "routing window" is a rectangle with the two pins that are to be connected at opposite corners.

INPUT SEQUENCE

P5 WINDOW EXPAN - keyboard - ENTER
input

- KEYBOARD INPUT is a number of grid units.
- You may specify a value for each execution of PASS 5 by placing commas (,) between values. The system will use the first value for the first execution, the second value for the second execution, and so on. The system will use a default value for any execution where you have not specified a value.

EXAMPLE

P5 WINDOW EXPAN 2 , 5 ENTER

Result: The auto router will place connections that extend no more than 2 grid units in any direction outside of an ideal "routing window" during the first execution of PASS 5; and no more than 5 grid units during the second execution of PASS 5. During subsequent executions, if any, it will use the default value.

DEFAULT

8 (for the first execution)

16 (for all subsequent executions)

COMMAND NAME

RATSNEST

PURPOSE

To display the shortest possible interconnections between the unconnected pins of each net on your board layout. And also to display histograms of channel usage.

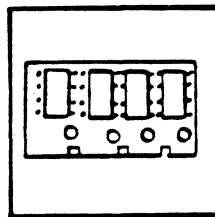
INPUT SEQUENCE

| RATSNEST |

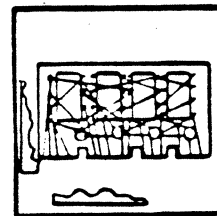
EXAMPLE

| RATSNEST |

BEFORE



AFTER

NOTES

To use this command, you must first have created a net data base.

The RATSNEST will only include those nets connecting components on which you have used the ASSIGN REF DES command.

REMOTE DIAGNOSTICS

COMMAND NAME REMOTE DIAGNOSTICS

PURPOSE To allow remote diagnostics to be performed on a Telesis system.
This command can only be used after specific instructions
from the Telesis Customer Support Unit.

INPUT SEQUENCE | REMOTE DIAGNOSTICS |

NOTES This command does not operate without the assistance of the
Telesis Customer Support Unit.

REPAINT WORLD

COMMAND NAME

REPAINT WORLD

PURPOSE

To repaint the WORLD portion of your drawing displayed on the graphics screen. Use this command to "refresh" the WORLD portion of the drawing after you have performed interactive tasks (ADD SYMBOL, ADD CONNECTION, etc.).

INPUT SEQUENCE

REPAINT WORLD

- . Enter this command from the WORLD menu page.

NOTES

Graphics screen repainting time varies with the amount of graphics displayed in the WORLD portion of the drawing.

COMMAND NAME

REWIND TAPE

PURPOSE

To rewind a magnetic tape to the beginning of the first section on the tape.

INPUT SEQUENCE

REWIND TAPE

COMMAND NAME

RIGHT JUSTIFY TEXT

PURPOSE

Set the text justification parameter to right justified. All text on a right justified text point will be to the left of the text point position. After this command has been picked, all text added to the active drawing, and all text picked in the UPDATE TXT PARAM command will be right justified.

INPUT SEQUENCE

RIGHT JUST TEXT

ROAM

COMMAND NAME

ROAM

PURPOSE

To move the WINDOW display around within a ROAM space to locate portions of a drawing during interactive tasks.

INPUT SEQUENCE

|ROAM|

- . Current menu flips to the tablet menu.
- . When the light pen is moved to one of four edges of the tablet menu, the WINDOW portion of your viewing area moves in that same direction within the ROAM space.
- . You have full |ROAM| capability when adding, editing and deleting connections and symbols.
- . The |ROAM| function stops when you move the light pen way from the function screen.

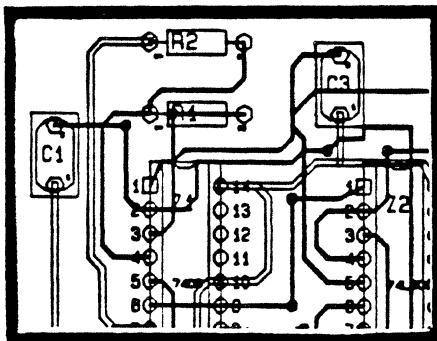
NOTES

The ROAM space is assigned by the system when you command |NEW WINDOW|, |NEW WORLD|, |DRAWING| or |ZOOM RATIO|. Use the |WORLD| command to display your current ROAM space and WINDOW display.

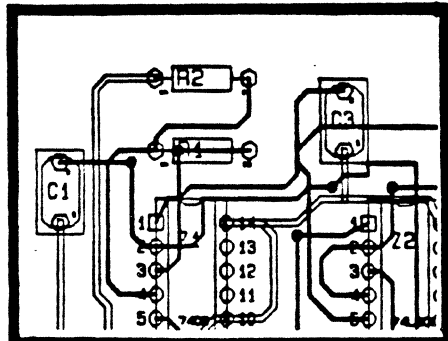
EXAMPLE

|ROAM|----> Move the light pen to the top of the tablet menu.

CURRENT WINDOW



RESULT



ROTATE SYMBOL

COMMAND NAME

ROTATE SYMBOL

PURPOSE

To rotate a symbol about its origin in a drawing.

INPUT SEQUENCE

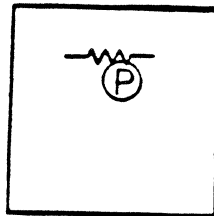
ROTATE SYMBOL - keyboard input - ENTER | P . . . ENTER

- KEYBOARD INPUT defines the angle of rotation in degrees. It must be a multiple of 90° . Use a minus sign (-) before the number of degrees for clockwise rotation. Otherwise, rotation will be counter-clockwise.
- P defines symbol to be rotated. It may be on any part of the symbol.
- Pick additional Ps to rotate additional symbols at the same angle.
- All text that is part of the symbol will rotate with the symbol.

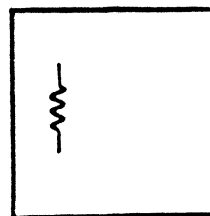
EXAMPLE

ROTATE SYMBOL | 90 | ENTER | P | ENTER

ACTION



RESULT



COMMAND NAME

ROTATE TEXT

PURPOSE

To rotate text about its text point in a drawing.

INPUT SEQUENCE

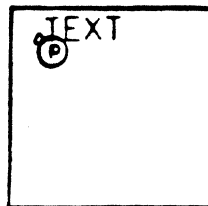
ROTATE TEXT - keyboard - ENTER (P) . . ENTER
input

- KEYBOARD INPUT defines the angle of rotation in degrees. It must be a multiple of 90. Rotation will be counter-clockwise unless you input a minus (-) sign before the number of degrees, in which case, rotation will be clockwise.
- (P) identifies the text to be rotated. It may be on any part of the text.
- Pick additional (P)s to rotate additional text at the same angle. Use NEXT after (P) to input another angle of rotation for additional (P)s.

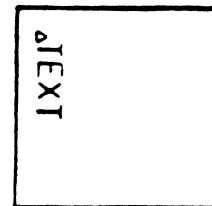
EXAMPLE

ROTATE TEXT - 90 ENTER (P) ENTER

ACTION



RESULT



COMMAND NAME

ROUTE BOARD

PURPOSE

To instruct the auto router to interconnect the currently active board drawing.

INPUT SEQUENCE

ROUTE BOARD

- You may pick CANCEL after ROUTE BOARD. This will stop the auto routing process, but it will leave any completed connections in place.

PARAMETERS

ROUTER GRID SIZE	SKIP PASS 1	NUM P5 EXECUTES
ROUTING LAYERS	P1 WINDOW EXPAN	P5 VIAS ALLOWED
ROUTER LINE WDTN	P1 PIN KEEP AWAY	P5 ROUTER TYPES
COMP ORIENTATION	SKIP PASS 2	P5 LAYER PAIRS
DIAGONAL ALLOWED	P2 WINDOW EXPAN	P5 WINDOW EXPAN
	P2 PIN KEEP AWAY	P5 PIN KEEP AWAY
		P5 JOG SIZES

NOTES

The first time you use one of these commands: ROUTE BOARD, ROUTE BY WINDOW, ROUTE PIN PAIR, ROUTE NET, EDIT CONNECTIONS, or VIA ELIMINATE after entering the router menu set, there will be a considerable delay, while the system creates the set-up files it needs for the router. There will be no delay for subsequent uses of these commands unless you leave the router menu set or make major changes in the parameter settings.

COMMAND NAME

ROUTE BY WINDOW

PURPOSE

To instruct the auto router to interconnect only within a specified window of the currently active board drawing. Any two-pin connections with one or more pins falling outside this window will not be routed.

INPUT SEQUENCE

ROUTE BY WINDOW | P₁ | P₂ | ENTER |

- P₁ is one corner of the rectangular window.
- P₂ is the opposite corner of the rectangular window.
- You may pick CANCEL after ROUTE BY WINDOW. This will stop the auto routing process, but it will leave any completed routes in place.

PARAMETERS

ROUTER GRID SIZE	SKIP PASS 1	NUM P5 EXECUTES
ROUTING LAYERS	P1 WINDOW EXPAN	P5 VIAS ALLOWED
ROUTER LINE WIDTH	P1 PIN KEEP AWAY	P5 ROUTER TYPES
COMP ORIENTATION	SKIP PASS 2	P5 LAYER PAIRS
DIAGONAL ALLOWED	P2 WINDOW EXPAN	P5 WINDOW EXPAN
	P2 PIN KEEP AWAY	P5 PIN KEEP AWAY
		P5 JOG SIZES

NOTES

The first time you use one of these commands: ROUTE BOARD, ROUTE BY WINDOW, ROUTE PIN PAIR, ROUTE NET, EDIT CONNECTIONS, or VIA ELIMINATE, after entering the router menu set, there will be a considerable delay, while the system creates the set-up files it needs for the router. There will be no delay for subsequent uses of these commands unless you leave the router menu set or make major changes in the parameter settings.

COMMAND NAME

ROUTE NET

PURPOSE

To instruct the auto router to interconnect only specified nets in the currently active board drawing.

INPUT SEQUENCE

ROUTE NET - keyboard - ENTER
input

- KEYBOARD INPUT is a net name or number.
- To input more than one net name and/or number, use commas (,) between names and/or numbers.
- You may pick CANCEL after ROUTE NET. This will stop the auto routing process, but it will leave any completed routes in place.

PARAMETERS

ROUTER GRID SIZE	SKIP PASS 1	NUM P5 EXECUTES
ROUTING LAYERS	P1 WINDOW EXPAN	P5 VIAS ALLOWED
ROUTER LINE WDTN	P1 PIN KEEP AWAY	P5 ROUTER TYPES
COMP ORIENTATION	SKIP PASS 2	P5 LAYER PAIRS
DIAGONAL ALLOWED	P2 WINDOW EXPAN	P5 WINDOW EXPAN
	P2 PIN KEEP AWAY	P5 PIN KEEP AWAY
		P5 JOG SIZES

EXAMPLE

ROUTE NET 4,5,7,10 ENTER

Result: The system will route nets: 4,5,7 and 10.

NOTES

The first time you use one of these commands: ROUTE BOARD, ROUTE BY WINDOW, ROUTE PIN PAIR, ROUTE NET, EDIT CONNECTIONS, or VIA ELIMINATE, after entering the router menu set, there will be a considerable delay, while the system creates the set-up files it needs for the router. There will be no delay for subsequent uses of these commands unless you leave the router menu set or make major changes in the parameter settings.

COMMAND NAME

ROUTE PIN PAIR

PURPOSE

To instruct the auto router to interconnect only specified pin pairs in the currently active board drawing.

INPUT SEQUENCE

ROUTE PIN PAIR | P₁ | P₂ - ENTER
input

- P₁ is one component pin.
- P₂ is the second component pin of the pair.
- To input more than one pin pair, use the NEXT command after P₂. and continue picking pin pairs.
- You may pick CANCEL after ROUTE PIN PAIR. This will stop the routing process, but it will leave any completed connections in place.

PARAMETERS

ROUTER GRID SIZE	SKIP PASS 1	NUM P5 EXECUTES
ROUTING LAYERS	P1 WINDOW EXPAN	P5 VIAS ALLOWED
ROUTER LINE WDTN	P1 PIN KEEP AWAY	P5 ROUTER TYPES
COMP ORIENTATION	SKIP PASS 2	P5 LAYER PAIRS
DIAGONAL ALLOWED	P2 WINDOW EXPAN	P5 WINDOW EXPAN
	P2 PIN KEEP AWAY	P5 PIN KEEP AWAY
		P5 JOG SIZES

NOTES

The system will display an error message on the function screen if a pin pair does not belong to the same net, or if the connection has already been made.

The first time you use one of these commands:

ROUTE BOARD , ROUTE BY WINDOW , ROUTE PIN PAIR ,
ROUTE NET , EDIT CONNECTIONS , or VIA ELIMINATE

after entering the router menu set, there will be a considerable delay, while the system creates the set-up files it needs for the router. There will be no delay for subsequent uses of these commands unless you leave the router menu set or make major changes in the parameter settings.

COMMAND NAME

ROUTER

PURPOSE

To flip to the auto router menu set.

INPUT SEQUENCE

ROUTER

ROUTER GRID SIZE

<u>COMMAND NAME</u>	ROUTER GRID SIZE
<u>PURPOSE</u>	To specify the grid size to be used by the auto router.
<u>INPUT SEQUENCE</u>	ROUTER GRID SIZE - keyboard - ENTER input
<u>EXAMPLE</u>	ROUTER GRID SIZE 3 0 ENTER
<u>DEFAULT</u>	25

<u>COMMAND NAME</u>	ROUTER LINE WIDTH
<u>PURPOSE</u>	To specify the line width to be used by the auto router.
<u>INPUT SEQUENCE</u>	<u>ROUTER LINE WIDTH</u> - keyboard - <u>ENTER</u> input
	● KEYBOARD INPUT is a number in mils.
<u>EXAMPLE</u>	<u>ROUTER LINE WIDTH 10 ENTER</u>
<u>DEFAULT</u>	Line width last set with the <u>SET LINE WIDTH</u> command.

ROUTING LAYERS

COMMAND NAME

ROUTING LAYERS

PURPOSE

To specify the drawing layers that are to be used as routing layers by the auto router.

INPUT SEQUENCE

ROUTING LAYERS - keyboard - ENTER - keyboard - ENTER
input-1 input-2

- KEYBOARD INPUT-1 gives the drawing layer number of each layer that is to be routed in a primarily horizontal direction.
- KEYBOARD INPUT-2 gives the drawing layer number of each layer that is to be routed in a primarily vertical direction.
- To list more than one layer in either KEYBOARD INPUT, use a comma (,) between layer number.

EXAMPLE

ROUTING LAYERS 1 , 3 ENTER 2 , 4 ENTER

NOTES

Drawing layers 1 through 14 are the only allowable routing layers.

DEFAULT

1 (horizontal) 2 (vertical)

RUN DEVICE PLACEMENT

COMMAND NAME RUN DEVICE PLACEMENT

PURPOSE To specify if automatic placement is to place all user-named DEVICES stored in the net data base.

INPUT SEQUENCE | RUN DEVICE PLACEMENT | (RUN DEVICE PLACEMENT [Y/N])

- Keyboard - | ENTER |
 Input

- o The keyboard input is the character input Y, or the character input N. (Y=yes, N=no)

NOTES The | RUN DEVICE PLACEMENT | command is an | AUTOMATIC PLACEMENT | parameter.

A DEVICE is an IC or a DISCRETE component that is placed on a unique grid during automatic placement. Use the | DEVICE NAMES | command to name the component you wish to specify as a DEVICE. You may input up to five device types.

Use the | DEVICE GRID | command to define a matrix of valid locations for DEVICE placement.

Refer to the PLACEMENT section of this manual for additional information on automatic placement of DEVICES.

RUN DISCRETE PLACEMENT

COMMAND NAME

RUN DISCRETE PLACEMENT

PURPOSE

To specify if automatic placement is to place all unplaced DISCRETES stored in the net data base.

INPUT SEQUENCE

RUN DISCRETE PLACEMENT (RUN DISCRETE PLACEMENT [Y/N])

- Keyboard - ENTER
Input

- o The keyboard input is the character input Y, or the character input N. (Y=yes, N=no)

NOTES

The RUN DISCRETE PLACEMENT command is an AUTOMATIC PLACEMENT parameter.

RUN IC PLACEMENT

COMMAND NAME RUN IC PLACEMENT

PURPOSE To specify if automatic placement is to place all
unplaced ICs stored in the net data base.

INPUT SEQUENCE |RUN IC PLACEMENT| (RUN IC PLACEMENT [Y/N]) - Keyboard - |ENTER|
Input

- o The keyboard input is the character input Y, or
the character N. (Y=yes, N=no)

NOTES The |RUN IC PLACEMENT| command is an |AUTOMATIC PLACEMENT|
parameter.

COMMAND NAME

SAVE DRAWING NEW REVISION

PURPOSE

To store the current drawing as a new revision with a new revision label.

INPUT SEQUENCE

keyboard
 |SAVE DRW NEW RV| - input - |ENTER|

KEYBOARD INPUT defines revision label.
 It may be one to four alphanumeric characters.

EXAMPLE

|SAVE DRW NEW RV| |4| |ENTER|

NOTES

- If the drawing was begun with the |NEW DRAWING| command, it will be stored under the revision label you specify.
- If the drawing was begun with the |OLD DRAWING| command, it will be stored under the revision label you specify, and the old drawing will be retained as a separate revision with its original revision label.

COMMAND NAME

SAVE DRAWING SAME REVISION

PURPOSE

To store the current drawing without specifying new revision label.

INPUT SEQUENCE

keyboard
|SAVE DRW SAME RV| - input - |ENTER|

NOTES

- If the drawing was begun with the |NEW DRAWING| command, system will store it with the revision label: 1.
- If the drawing was begun with the |OLD DRAWING| command, system will store it with the same revision label as the old drawing, and the old drawing itself will be deleted.

COMMAND NAME

SAVE FILE

PURPOSE

To store the currently active text file without giving it a new revision label. Used only when you have picked TEXT LEADTHRU to create or edit a file.

INPUT SEQUENCESAVE FILENOTES

- If the text file was newly created, the system will save it as revision 1 when you pick SAVE FILE.
- If the text file was opened from an old version, the system will store it with the old revision label; and the old version will be deleted.

COMMAND NAME

SAVE NEW REVISION

PURPOSE

To save the currently open menu file and give it a new revision label.

INPUT SEQUENCE

|SAVE NEW REV| - keyboard - |ENTER|
input

- KEYBOARD INPUT is the revision label. It may be up to 4 alphanumeric characters with no blank spaces allowed.

EXAMPLE

|SAVE NEW REV|4|ENTER|

NOTES

- If the menu file was opened with the |NEW USER MENUS| command, the system will save it with the revision label you specify.
- If the menu file was opened with the |OLD USER MENUS| command, the system will save it with the revision label you specify, and the old version of the menu file will be retained as a separate revision with the original revision label.

COMMAND NAME

SAVE USER MENUS

PURPOSE

To save the currently open menu file without specifying a new revision label.

INPUT SEQUENCESAVE USER MENUSNOTES

- If the menu file was opened with the NEW USER MENUS command, the system will store it with the revision label:1.
- If the menu file was opened with the OLD USER MENUS command, the system will store it with the same revision label as the old file, and the old menu file itself will be deleted.

SCALE SYMBOL

COMMAND NAME

SCALE SYMBOL

PURPOSE

To reduce or increase the size of a symbol added to a drawing.

INPUT SEQUENCE

SCALE SYMBOL ^{keyboard} - input - ENTER (P) . . . ENTER

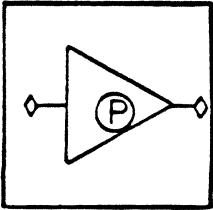
PARAMETERS

- KEYBOARD INPUT defines the ratio of increase or reduction. Use a number > 1 to increase symbol size. Use a number < 1 to reduce symbol size.
- (P) defines the symbol to be scaled. It may be on any part of the symbol.
- Pick additional (P)s to scale additional symbols at the same ratio.

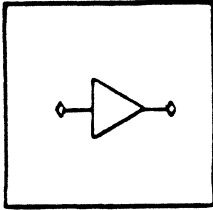
EXAMPLE

SCALE SYMBOL | .5 | ENTER (P) | ENTER

ACTION



RESULT



NOTES

The symbol's reference point remains on the same coordinates.

COMMAND NAME

SECTION DOWN

PURPOSE

To move the cursor down one section in a text file.
Used only when you have picked TEXT LEADTHRU
to create or edit the file.

INPUT SEQUENCE

SEC DOWN

SECT FROM TAPE

COMMAND NAME

SECT FROM TAPE

PURPOSE

To list all files in the current tape section as items to be copied from the tape to the system.

INPUT SEQUENCE

SECT FROM TAPE

NOTES

If the tape is not currently at the beginning of a section, the next complete section will be treated as the current section.

This command is used only in conjunction with the COPY FROM TAPE command. Refer to that command description for further information.

COMMAND NAME

SECTION UP

PURPOSE

To move the cursor up one section in a text file.
Used only when you have picked TEXT LEADTHRU
to create or edit the file.

INPUT SEQUENCESEC UP

COMMAND NAME

SET ACTIVE LAYER

PURPOSE

To specify the layer on which elements are to be added.

INPUT SEQUENCE

SET ACTIVE LAYER - keyboard - ENTER
input

- KEYBOARD INPUT defines the layer number. It may be 0 to 255.

EXAMPLE

SET ACTIVE LAYER | 3 | ENTER

COMMAND NAME

SET CHARACTER HEIGHT

PURPOSE

To specify the height of text characters for all subsequent text labels added to the drawing.

INPUT SEQUENCE

SET CHAR HT - keyboard - ENTER
input

- . KEYBOARD INPUT defines the character height in mils.

EXAMPLE

SET CHAR HT | 2 | 5 | ENTER

DEFAULT

Character Height 156

SET CHAR SLANT

COMMAND NAME

SET CHARACTER SLANT

PURPOSE

To specify the angle at which text characters are to be placed for all subsequent text labels added to the drawing.

INPUT SEQUENCE

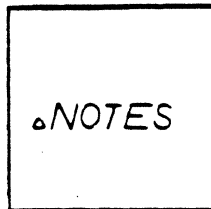
|SET CHAR SLANT| - keyboard - |ENTER|
input

- KEYBOARD INPUT defines angle of character slant in degrees.

EXAMPLE

|SET CHAR SLANT| |20| |ENTER|

RESULT



NOTES

Slant is clockwise from vertical.

DEFAULT

0 (vertical)

COMMAND NAME

SET CHARACTER SPACE

PURPOSE

To specify the space between text characters for all subsequent text labels added to the drawing.

INPUT SEQUENCE

SET CHAR SPACE - keyboard - ENTER
input

- KEYBOARD INPUT defines the space between characters in mils.

EXAMPLE

SET CHAR SPACE | 5 | 0 | ENTER

DEFAULT

39

SET CHAR WIDTH

COMMAND NAME

SET CHARACTER WIDTH

PURPOSE

To specify the width of text characters for all subsequent text labels added to the drawing.

INPUT SEQUENCE

SET CHAR WIDTH - keyboard- ENTER
input

- . KEYBOARD INPUT defines character width in mils.

EXAMPLE

SET CHAR WIDTH | 200 | ENTER

DEFAULT

117

COMMAND NAME

SET CONNECT POINT SIZE

PURPOSE

To specify the size at which connect points will be displayed in a drawing.

INPUT SEQUENCE

SET CNCT PT SIZE - keyboard- ENTER
input

- KEYBOARD INPUT defines the connect point size in mils.

EXAMPLE

SET CNCT PT SIZE | 100 | ENTER

DEFAULT

50

SET FLOATING CON

COMMAND NAME

SET FLOATING CONNECTORS

PURPOSE

To specify that certain connect points be treated as floating connectors by the auto router. (That is, when one of the auto route commands is picked, the system will treat the connect points listed here as interchangeable.)

INPUT SEQUENCE

SET FLOATING CON - keyboard - ENTER - keyboard - ENTER
input-1 input-2

- KEYBOARD INPUT-1 is the component reference designator. It must be exactly the same as the reference designator in the board drawing.
- You may input only one reference designator. Repeat the SET FLOATING CON command to list more than one component.
- KEYBOARD INPUT-2 is the list of pin numbers. Use a comma (,) between pin numbers, or you may use a hyphen (-) to input a series of pin numbers.

EXAMPLE

SET FLOATING CONJ1ENTER1-12ENTER

Result: Connect points with pin numbers 1 through 12 on a component with reference designator J1 will be treated as interchangeable by the auto router.

NOTES

This setting remains in effect until you change it with the DEL FLOATING CON command, or until you leave the auto router menu set by picking the DONE command on this menu page.

SET GRID SIZE

COMMAND NAME

SET GRID SIZE

PURPOSE

To specify the interval between points in the grid matrix.

INPUT SEQUENCE

SET GRID SIZE - input - ENTER - input - ENTER

- . INPUT should be an integer, > 1 expressing the grid point interval in mils.
- . FIRST KEYBOARD INPUT sets the x interval.
- . SECOND KEYBOARD INPUT sets the y interval.
- . x and y intervals need not be the same.

EXAMPLE

SET GRID SIZE | 1 | 0 | 0 | 0 | ENTER | 1 | 0 | 0 | 0 | ENTER

SET LAYER PAIR

COMMAND NAME

SET LAYER PAIR

PURPOSE

To specify the active layer and the alternate layer to be used with the DRILL and SWAP commands.

INPUT SEQUENCE

SET LAYER PAIR (prompt) - keyboard - ENTER
INPUT-1

(prompt) - keyboard - ENTER
INPUT-2

- KEYBOARD INPUT-1 specifies the active layer. It may be any layer number from 0-255.
- KEYBOARD INPUT-2 specifies the layer to be alternated with the active layer when the DRILL or SWAP command is used. It may be any layer number from 0-255, except that it must not be the same as the layer specified in KEYBOARD INPUT-1.

EXAMPLE

SET LAYER PAIR | 3 | ENTER | 14 | ENTER

SET LINE SPACING

COMMAND NAME

SET LINE SPACING

PURPOSE

To specify the distance (in mils) between multi-line text entries when using the ADD NOTES command.

INPUT SEQUENCE

SET LINE SPACING (Enter line-to-line spacing) - Keyboard-ENT
Input

o Keyboard input defines the line spacing (in mils).

EXAMPLE:

SET LINE SPACING (Enter line-to-line spacing) 300 ENTER

DEFAULT:

125

SET LINE WIDTH

COMMAND NAME

SET LINE WIDTH

PURPOSE

To specify the width of lines added to the drawing subsequent to the SET LINE WIDTH command.

INPUT SEQUENCE

keyboard
SET LINE WIDTH - input - ENTER

- KEYBOARD INPUT is a number > 0 defining line width in mils.
- Non-zero width lines display with 1/2 the width extending beyond the endpoint. This is to show how the line will actually look when photoplotted.

EXAMPLE

SET LINE WIDTH | 7 | 5 | ENTER

NOTES

- This parameter command affects lines, connections, arcs, circles and other elements added after using it. Already existing elements are not affected.
- Lines added with zero width will display and pen plot with each segment shown as a single line. If you want zero width lines to photoplot, you specify a width in the PHOTOPLOT-CON control text file.

DEFAULT

0

COMMAND NAME

SET NECK WIDTH

PURPOSE

To specify the line neck width to be used with the NECK command.

INPUT SEQUENCE

SET NECK WIDTH ^{keyboard} - input - ENTER

- . KEYBOARD INPUT is a number > 0 defining line neck width in mils.

EXAMPLE

SET NECK WIDTH | 1 | 2 | ENTER

DEFAULT

0

SET NET LIN WDTN

COMMAND NAME

SET NET LINE WIDTH

PURPOSE

To specify that a certain net or nets be routed at a particular width by the auto router. (That is, when one of the auto route commands is picked, the system will route the nets specified here at the width specified here while all other nets will be routed at the width established with the SET LINE WIDTH command.)

INPUT SEQUENCE

SET NET LIN WDTN | - keyboard - ENTER | - keyboard - ENTER |
input-1 input-2

- KEYBOARD INPUT-1 is the net name or number.
- Use a comma (,) between net names or numbers to input more than one.
- KEYBOARD INPUT-2 is the line width in mils to be used for the net or nets named in KEYBOARD INPUT-1.
- You may only input one line width in KEYBOARD INPUT-2. Repeat the command to list other nets at other line widths.

EXAMPLE

SET NET LIN WDTN | 6 | ENTER | 5 | ENTER |

Result: Net number 6 will be routed at 5 mil width.

NOTES

This setting remains in effect until you change it with the DEL NET LIN WDTN command, or until you leave the auto router menu set by picking the DONE command on this menu page.

COMMAND NAME

SET NO-ROUTE NET

PURPOSE

To specify that a certain net or nets be treated as NO-ROUTES by the auto router. (That is, when one of the auto route commands is picked, the system will not route the nets specified with this command.)

INPUT SEQUENCE

SET NO-ROUTE NET - keyboard - ENTER
input

- KEYBOARD INPUT is the net name or number.
- Use a comma (,) between net names or numbers to input more than one.

EXAMPLE

SET NO-ROUTE NET 2 , 6 ENTER

NOTES

This setting remains in effect until you change it with the DEL NO-ROUTE NET command or until you leave the auto router menu set by picking the DONE command on this menu page.

COMMAND NAME

SET NO VIA ELIMINATION

PURPOSE

To specify that a certain net or nets be left unchanged when the VIA ELIMINATE command is used. (That is, when the VIA ELIMINATE command is picked, the system will not eliminate any vias in the net specified with this command.)

INPUT SEQUENCE

SET NO VIA ELIM - keyboard - ENTER
input

- KEYBOARD INPUT is the net name or number.
- Use a comma (,) between net names or numbers to input more than one.

EXAMPLE

SET NO VIA ELIM | 2 | , | 6 | ENTER

NOTES

This setting remains in effect until you change it with the DEL NO VIA ELIM command or until you leave the auto router menu set.

SET PARAMETERS

COMMAND NAME

SET PARAMETERS

PURPOSE

To flip to the menu page used for setting drawing parameters.

INPUT SEQUENCE

SET PARAMETERS

SET PLCMNT PARAM

COMMAND NAME SET PLACEMENT PARAMETERS

PURPOSE To flip to the menu page containing the commands used to set up the AUTOMATIC PLACEMENT parameters.

INPUT SEQUENCE SET PLCMNT PARAM

NOTES The SET PLCMNT PARAM command allows you to set the following AUTOMATIC PLACEMENT parameters:

<u>RUN IC PLACEMENT</u>	<u>IC ROTATION</u>
<u>RUN DEVICE PLACEMENT</u>	<u>DEVICE ROTATION</u>
<u>RUN DISCRETE PLACEMENT</u>	<u>DISCRETE ROTATION</u>
<u>POSITION WEIGHTS</u>	<u>DEVICE NAMES</u>
<u>IC GRID</u>	<u>I/O WEIGHT</u>
<u>DEVICE GRID</u>	<u>KEEPOUT LAYERS</u>
<u>DISCRETE GRID</u>	<u>COMPONENT OUTLINE LAYER</u>

COMMAND NAME

SET ROUTER PARAMETERS

PURPOSE

To flip to the menu page used for setting auto router parameters.

INPUT SEQUENCE

SET ROUTER PARMS

COMMAND NAME

SET SKIP LAYERS

PURPOSE

To specify that a layer (or layers) are to be blanked whenever the DRAWING command is used.

INPUT SEQUENCE

SET SKIP LAYERS - keyboard - ENTER
INPUT

- KEYBOARD INPUT defines the layer number. It may be 0 to 255.
- To specify more than one layer, use commas between layer numbers: 1,9,34 ENTER; or use a hyphen to specify a range of layers: 1-9 ENTER.

EXAMPLE

SET SKIP LAYERS 0,53 ENTER

NOTES

The specified skip layer(s) will be blanked only after the DRAWING command is used. These layers will be displayed as usual whenever the other display commands (ZOOM, WINDOW etc.) are used.

COMMAND NAME

SET TRAP SIZE

PURPOSE

To specify an area of search around a (P) pick, for use when the system searches for an element in order to perform a command such as DELETE or MOVE.

INPUT SEQUENCE

keyboard
SET TRAP SIZE - input - ENTER

- . KEYBOARD INPUT should be an integer > 1 expressing a distance in mils.

EXAMPLE

SET TRAP SIZE | 5 | 0 | 0 | ENTER

DEFAULT

50

COMMAND NAME

SET TEXT LINE ANGLE

PURPOSE

To specify the angle at which lines of text are to be placed in subsequent text points added to the drawing.

INPUT SEQUENCE

keyboard

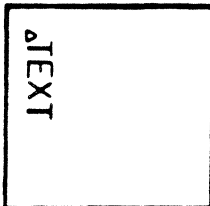
SET TXT LINE ANG - input - ENTER

KEYBOARD INPUT defines angle of text line in degrees. A positive number angles text line clockwise from horizontal. A negative number angles text line counter-clockwise from horizontal.

EXAMPLE

SET TXT LINE ANG -90 ENTER

RESULT

DEFAULT

0 (horizontal)

COMMAND NAME

SET TEXT POINT SIZE

PURPOSE

To specify the size at which text points will be displayed for text points subsequently added to the drawing.

INPUT SEQUENCE

keyboard
|SET TXT PNT SIZE| - input - |ENTER|

- . KEYBOARD INPUT defines the text point size in mils.

EXAMPLE

|SET TXT PNT SIZE| |1|0|0| |ENTER|

DEFAULT

50

SHIFT

COMMAND NAME

SHIFT WINDOW

PURPOSE

To shift the display window to another area of the active drawing.

INPUT SEQUENCE

SHIFT WINDOW

Ⓟ₁

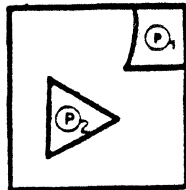
Ⓟ₂

- Ⓟ₁ indicates the beginning of the "shift vector". The shift vector is a distance and direction you specify by the two picks of this command.
- Ⓟ₂ indicates the end of the "shift vector."
- After you have picked Ⓟ₂, the system displays the drawing shifted in the direction and distance you have picked.

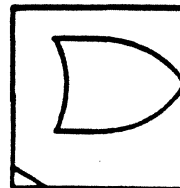
EXAMPLE

SHIFT Ⓟ₁ Ⓟ₂

ACTION



RESULT



SHOW COPY LIST

COMMAND NAME

SHOW COPY LIST

PURPOSE

To display on the function screen the list of files you have input for copying to magnetic tape or from magnetic tape.

INPUT SEQUENCE

SHOW COPY LIST

COMMAND NAME

SKIP LAYERS OFF

PURPOSE

To undo the effect of the SET SKIP LAYERS command.

INPUT SEQUENCE

SKIP LAYERS OFF

COMMAND NAME

SKIP PASS 1

PURPOSE

To instruct the auto router to skip PASS 1 when one of the auto route commands is used.

INPUT SEQUENCE

SKIP PASS 1 - keyboard - ENTER
input

- KEYBOARD INPUT is Y or N (for yes or no)

EXAMPLE

SKIP PASS 1 Y ENTER

DEFAULT

N (no)

COMMAND NAME

SKIP PASS 2

PURPOSE

To instruct the auto router to skip PASS 2 when one of the auto route commands is used.

INPUT SEQUENCE

SKIP PASS 2 - keyboard - ENTER
input

- KEYBOARD INPUT is Y or N (for yes or no)

EXAMPLE

SKIP PASS 2 | Y | ENTER

DEFAULT

N (no)

COMMAND NAME

STATUS

PURPOSE

To display on the function screen a table showing current drawing file name, project file name, and all currently set parameters.

INPUT SEQUENCE

|STATUS|

EXAMPLE

|STATUS|

Resulting function screen display:

```

SYSTEM STATUS
Project: ABCPROJECT
Drawing: SCHEM1
EXTENTS:
  xl 0      xu 34,000  Active-Layer  2
  yl 0      yu 22,000  Line-Lock   90
GRID: NO DSP  TRAP: 250  CNC PT SIZE  50
  gridx 500      TXT PT SIZE  50
  gridy 500  LIN-WID 25      CTR-JST
TEXT:fnt 1 hgt .2 wdt .15 spc .05
  slant 0 ctr-jst ang 0 In-sp .1
NOT-MIRRORED

```

COMMAND NAME

STEP & REPEAT ELEMENT

PURPOSE

To create a set of copies of an element, the copies in an array of columns and rows. The columns and rows do not necessarily have to be horizontal and vertical, nor do the columns have to be at right angles to the rows.

INPUT SEQUENCE

STEP & REPEAT - keyboard - ENTER - keyboard - ENTER
input-1 input-2

Ⓟ₁ Ⓟ₂ Ⓟ₃ ENTER

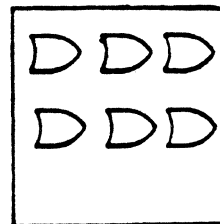
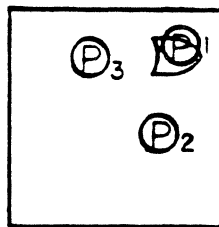
- . KEYBOARD INPUT-1 gives the number of columns to be stepped.
- . KEYBOARD INPUT-2 gives the number of rows to be stepped.
- . Ⓟ₁ identifies the element to be copied.
- . Ⓟ₂ gives the distance and direction from the element origin for the column steps.
- . Ⓟ₃ gives the distance and direction from the element origin for the row steps.

EXAMPLE 1

STEP & REPEAT | 2 | ENTER | 3 | ENTER | Ⓟ₁ Ⓟ₂ Ⓟ₃ | ENTER

ACTION

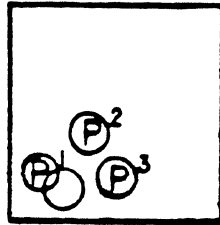
RESULT



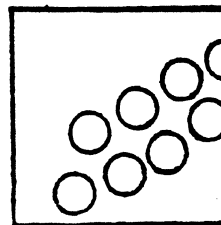
EXAMPLE 2

STEP & REPEAT | 4 | ENTER | 3 | ENTER | P₁ P₂ P₃ | ENTER

ACTION



RESULT

NOTES

- Either the number of columns or the number of rows requested may be only one, if you wish. If either is set as one, the command will only ask one directional step after you identify the element.
- Both the column step and row step are considered offsets from the origin of the element to be copied. Both steps may be any length and in any direction, as long as all elements will fit inside the drawing extents. If not all copies can fit inside the drawing, the command will display: "THE NUMBER OF ROWS AND COLUMNS DO NOT FIT" and cancel.
- The origin of each copy is exactly at the column-row point step.
- You can pick any part of the element to be copied when you pick to identify it. The STEP & REPEAT command will, however, take the origin of the element as the starting point for the step and repeat array.
- You must pick either ENTER or NEXT to actually start the step and repeat process. Pick OOPS! if you wish to correct one or more of the inputs to the command before you have picked ENTER or NEXT.
- If you picked NEXT to begin the command process, you will be able to enter the entire input sequence again with a different element.
- Connect lines cannot be copied.
- No elements attached or connected to the element after it was added to the drawing will copy with it. (No attached labels, no connect lines.)

COMMAND NAME

STEP AND REPEAT GROUP

PURPOSE

To create a set of copies of a group in an array of columns and rows.

INPUT SEQUENCE

keyboard
`|STEP & REPEAT GR| - INPUT-1 - |ENTER| - keyboard`
`|ENTER| (P), (P2), (P3), . . . |ENTER|`

- . KEYBOARD INPUT-1 is the number of columns in the array.
- . KEYBOARD INPUT-2 is the number of rows in the array.
- . (P)₁ establishes a reference point on the group to be copied.
- . (P)₂ specifies the point at which this reference point is to be placed in the second column when the group is copied.
- . (P)₃ specifies the point at which this reference point is to be placed in the second row when the group is copied.

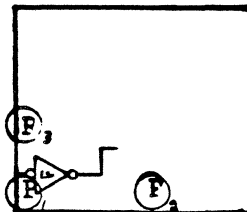
PARAMETERS

- . GRID
- . TRAP

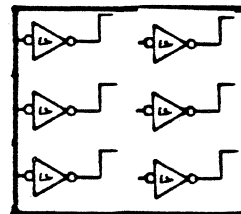
EXAMPLE

`|STEP & REPEAT GR| 2 |ENTER| 3 |ENTER| (P), (P2), (P3), |ENTER|`

ACTION



RESULT



NOTES

- Reference designators will be copied if they are part of a group. If the reference designator was placed with the ASSIGN REF DES command in the original group, the original will retain its link to the net data base, but the copy will have no link to the net data base.
- The copy will have the same connections and floating ends (if any) as the original group. No new connections will be made when the copy is made even if you place a floating end in a copy directly on the connect point of another element in the drawing.
- The columns and rows do not necessarily have to be horizontal and vertical, nor do the columns have to be at right angles to the rows.
- If you specify only one column or row, the system will prompt you for only the second row or the second column, not both.

COMMAND NAME

SWAP

PURPOSE

To change the active layer from the currently active one to the alternate one.

INPUT SEQUENCESWAPNOTES

Before using the SWAP command, you must use the SET LAYER PAIR command to specify the text layers that you wish to alternate as active. Each time you use the SWAP command, the active layer switches from the current one of these two layers to the other one, and the active layer becomes the alternate one.

COMMAND NAME

SYMBOL FROM TAPE

PURPOSE

To list a symbol file as one of a series of items to be copied from a magnetic tape to the system.

INPUT SEQUENCE

SYMBOL FROM TAPE - keyboard - , - keyboard - ENTER
input-1 input-2

- . KEYBOARD INPUT-1 defines the name of the project in which the symbol is filed. You may skip KEYBOARD INPUT-1 if the symbol file you wish to copy (KEYBOARD INPUT-2) is the only one with that name on the current tape section, or if it is in a project file with the same name as the current project.
- . KEYBOARD INPUT-2 defines the name of the symbol file to be listed. It must be the exact symbol file name.
- . Always use a comma , after the project name (KEYBOARD INPUT-1) to distinguish it from the symbol name. No comma is necessary if the project name is skipped.
- . You may specify a revision label for the project or symbol file. If you do not, the most recently used revision will be used.

EXAMPLE

SYMBOL FROM TAPE | DIODE350 | ENTER

Result: The symbol file DIODE350 is placed on a list of items to be copied from magnetic tape to the system. (It was the only symbol file with the name DIODE350 on the current tape section, so it was not necessary to input its project name.)

NOTES

This command is used only in conjunction with the COPY FROM TAPE command. Refer to that command description for further information.

COMMAND NAME

SYMBOL TO TAPE

PURPOSE

To list a symbol file as one of a series of items to be copied from the system to magnetic tape.

INPUT SEQUENCE

SYMBOL TO TAPE - keyboard - , - keyboard - ENTER
 input-1 input-2

- . KEYBOARD INPUT-1 defines the name of the project in which the symbol is filed:
 - a) if the symbol is in the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2.
 - b) if the symbol is in any other project, input the exact project name.
- . KEYBOARD INPUT-2 defines the name of the symbol file to be listed. It must be the exact symbol file name.
- . Always use a comma , after the project name (KEYBOARD INPUT-1) to distinguish it from the symbol name. No comma is necessary if the project name is skipped.
- . You may specify a revision after the project name or symbol file name. If you do not, the most recently used revision will be used.

EXAMPLE

SYMBOL TO TAPE | ALPHA, | DIODE350 | ENTER

Result: The symbol file DIODE350 in the project ALPHA is placed on a list of items to be copied to magnetic tape.

NOTES

This command is used only in conjunction with the COPY TO TAPE command. Refer to that command description for further information.

COMMAND NAME

SYSTEM INDEX

PURPOSE

To display a list of the contents of the system file.

INPUT SEQUENCESYSTEM INDEXEXAMPLESYSTEM INDEX

Function screen display:

```
contents of system directory
project ABC rev 1      created 18-MAR-82  14:31:27
project ABC rev 2      created 18-MAR-82  14:52:14
project NOVA rev 1     created 19-MAR-82  10:13:40
project ABC rev 3      created 23-MAR-82  12:45:17
project NOVA rev 2     created 24-MAR-82  14:32:30
total number of entries:5
```

SYSTEM-LIBRARY

COMMAND NAME

SYSTEM-LIBRARY

PURPOSE

To activate an existing project file named
SYSTEM-LIBRARY.

INPUT SEQUENCE

SYSTEM-LIBRARY

COMMAND NAME

TABLET

PURPOSE

To flip to the tablet menu page from the keypad menu.

INPUT SEQUENCE

|TABLET|

COMMAND NAME

TAPE SECTION INDEX

PURPOSE

To display a list of the contents of the current magnetic tape section.

INPUT SEQUENCE

|TAPE SECT INDEX|

TEXT

COMMAND NAME TEXT

PURPOSE To flip to the menu page containing the commands used to input, move and update text.

INPUT SEQUENCE |TEXT|

COMMAND NAME

TEXT FILES

PURPOSE

To flip to the menu set used for creating, editing,
or printing text files.

INPUT SEQUENCE

TEXT FILES

COMMAND NAME

TEXT FROM TAPE

PURPOSE

To list a text file as one of a series of items to be copied from a magnetic tape to the system.

INPUT SEQUENCE

TEXT FROM TAPE - keyboard - , - keyboard - ENTER
input-1 input-2

- KEYBOARD INPUT-1 defines the name of the project in which the text file is filed. You may skip KEYBOARD INPUT-1 if the text file you wish to copy (KEYBOARD INPUT-2) is the only one with that name on the current tape section, or if it is in a project file with the same name as the current project.
- KEYBOARD INPUT-2 defines the name of the text file to be listed. It must be the exact text file name.
- Always use a comma , after the project name (KEYBOARD INPUT-1) to distinguish it from the text file name. No comma is necessary if the project name is skipped.
- You may specify a revision label for the project or text file. If you do not, the most recently used revision will be used.

EXAMPLE

TEXT FROM TAPE ALPHA, EXTRACTION-LOG
ENTER

Result: The text file EXTRACTION-LOG in the project ALPHA is placed on a list of items to be copied from magnetic tape to the system.

NOTES

This command is used only in conjunction with the COPY FROM TAPE command. Refer to that command description for further information.

COMMAND NAME

TEXT LEADTHRU

PURPOSE

To flip to the menu page for choosing the type of text file that you want to edit or create using the system's text file lead-thru capability.

INPUT SEQUENCE

TEXT LEADTHRU

TEXT-POINTS

COMMAND NAME TEXT POINTS

PURPOSE To include the keyword TEXT-POINTS in the pen plot control file when using the EDIT PENPLOT-CON lead thru.

INPUT SEQUENCE TEXT POINTS

NOTES If TEXT-POINTS are included in the pen plot, they will be plotted at the size last set by the SET TXT PNT SIZE command. Variations in size shown on the graphics screen will not be shown in the pen plot.

COMMAND NAME

TEXT TO TAPE

PURPOSE

To list a text file as one of a series of items to be copied from the system to magnetic tape.

INPUT SEQUENCE

TEXT TO TAPE - keyboard - , - keyboard - ENTER
input-1 input-2

- . KEYBOARD INPUT-1 defines the name of the project in which the text file is filed:
 - a) if the text file is in the current project, skip KEYBOARD INPUT-1 and go directly to KEYBOARD INPUT-2.
 - b) if the text file is in any other project, input the exact project name.
- . KEYBOARD INPUT-2 defines the name of the text file to be listed. It must be the exact text file name.
- . Always use a comma , after the project name (KEYBOARD INPUT-1) to distinguish it from a text file name. No comma is necessary if the project name is skipped.
- . You may specify a revision after the project name or text file name. If you do not, the most recently used revision will be used.

EXAMPLE

TEXT TO TAPE EXTRACTION-LOG ENTER

Result: The text file EXTRACTION-LOG in the current project file is placed on a list of items to be copied to magnetic tape.

NOTES

This command is used only in conjunction with the COPY TO TAPE command. Refer to that command description for further information.

TRI

COMMAND NAME

TRI

PURPOSE

To add a PINUSE code "TRI" to a device description file.

INPUT SEQUENCE

|ADD PINUSE| |TRI|

or

|CHANGE PINUSE|

NOTES

This command is used only after the |ADD PINUSE|
or |CHANGE PINUSE| commands.

COMMAND NAME

TEXT NETLIST

PURPOSE

To flip to the menu with the LOAD TEXT NETLIST and related commands for creating the NET-DATA-BASE using a text input file, and for creating NETLIST-REPORT, BOM-REPORT, and COMPONENT-REPORT from the NET-DATA-BASE.

INPUT SEQUENCE

TEXT NETLIST

UNBLANK ALL

COMMAND NAME

UNBLANK ALL

PURPOSE

To re-display all colors and their assigned layers previously blanked on the active drawing with commands from the BLANK/UNBLANK menu.

INPUT SEQUENCE

UNBLANK ALL

- o The UNBLANK ALL commands are located on the BLANK/UNBLANK menu on Telesis 2.1 systems only; these systems have the graphics processor for the WORLD, ROAM, and ZOOM softkeys.
- o When the operator picks UNBLANK ALL, the system re-displays all colors and their assigned layers on the active drawing.

NOTES

If BLANK ALL was previously picked, the UNBLANK ALL command must be used to re-display all colors and the grid specification on the active drawing.

UNBLANK (COLOR OPTION)

BLUE
GREEN
RED
VIOLET
YELLOW

COMMAND NAME UNBLANK BLUE (or other color option)

PURPOSE To re-display a color and its assigned layer previously blanked on the active drawing with commands from the BLANK/UNBLANK menu.

INPUT SEQUENCE UNBLANK BLUE (or other color option)

- o The UNBLANK commands are located on the BLANK/UNBLANK menu on Telesis 2.1 systems only; these systems have the graphics processor for the WORLD, ROAM, and ZOOM sofkeys.
- o When UNBLANK BLUE (or other color option) is picked, the system instantly unblanks all layers assigned to that color on the active drawing.

NOTES If the operator first picks BLANK ALL, the various UNBLANK commands may be used to re-display any number of colors and their assigned layers prior to editing. This allows clear visibility on a congested drawing when interactive commands are used to edit the displayed (unblanked) layers.

COMMAND NAME

UNDELETE LINE

PURPOSE

To restore the last deleted line to a text file.
Used only when you have picked TEXT LEADTHRU
to create or edit a file.

INPUT SEQUENCEUNDELETE LINENOTES

The system will restore the deleted line on the line below the current cursor position regardless of the line's previous location.

COMMAND NAME

UNDELETE SECTION

PURPOSE

To restore the last deleted section to a text file. Used only when you have picked TEXT LEADTHRU to create or edit the file.

INPUT SEQUENCE

UNDELETE SECTION

NOTES

The system will restore the deleted section on the line below the current cursor position regardless of the section's previous location.

UNPLACED STATUS

COMMAND NAME

UNPLACED STATUS

PURPOSE

To list the unplaced board components stored in the net data base. The unplaced component list is displayed on the function screen.

INPUT SEQUENCE

UNPLACED STATUS

- o The UNPLACED STATUS command lists the reference designator, device type and symbol (package) name for each unplaced component.

EXAMPLE: Typical line display

U12 /7410 /DIP14

COMMAND NAME

UPDATE TEXT

PURPOSE

To replace the existing text on an existing text point with new text character.

INPUT SEQUENCE

keyboard
 |UPDATE TEXT| - input - |ENTER| (P) . . . |ENTER|

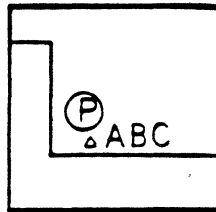
- KEYBOARD INPUT defines text that will replace the existing text on each selected text point. It may be up to 24 alphanumeric characters.
- (P) defines the location of each text point to be replaced with the new text.
- Use the |NEXT| command after a (P) to replace the text on another textpoint.

EXAMPLE

|UPDATE TEXT| |S|T|R|O|B|E| |ENTER| (P) |ENTER|

ACTION

RESULT



COMMAND NAME

UPDATE TEXT PARAMETERS

PURPOSE

To change the text parameters of a selected text point to the current values set in the system. You use this command to change the size, slant, justification and orientation of the text on any text point.

INPUT SEQUENCE

UPDATE TXT PARAM (P) . . . ENTER

- (P) identifies the text point to have its parameters updated. The text on the text point highlights. You can pick OOPS! at this time, if you don't want the highlighted text point changed. When you pick either another text point, or ENTER, the highlighted text disappears and is replaced by the same text, but formatted by the present system text parameters.
- You can continue to pick any number of text points for updating.

PARAMETERS

TRAP	TEXT HEIGHT	TEXT WIDTH
TEXT SPACE	TEXT SLANT	TEXT LINE ANGLE
TEXT JUSTIFICATION	TEXT POINT SIZE	

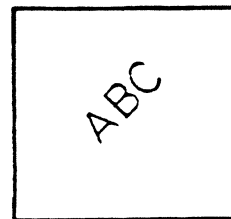
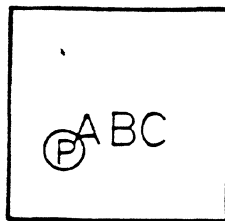
EXAMPLE

SET TXT LINE ANG | 4 | 5 | ENTER

UPDATE TXT PARAM | (P) | ENTER

ACTION

RESULT



NOTES

The updated text parameters become the permanent parameters controlling the selected text points. Any text changes on the text points using UPDATE TEXT, ASSIGN REF DES, or CHANGE REF DES, etc., will use the updated text parameters.

COMMAND NAME

USER MENUS

PURPOSE

To flip to the menu page containing the commands. used to open, edit, and save user-defined menu files.

INPUT SEQUENCE

|USER MENUS|

<u>COMMAND NAME</u>	VIA ELIMINATE
<u>PURPOSE</u>	To instruct the auto router to eliminate as many vias as possible from the connections in the current board drawing.
<u>INPUT SEQUENCE</u>	VIA ELIMINATE
<u>NOTES</u>	The first time you use one of these commands: ROUTE BOARD , ROUTE BY WINDOW , ROUTE PIN PAIR , ROUTE NET , EDIT CONNECTIONS , or VIA ELIMINATE after entering the router menu set, there will be a considerable delay, while the system creates the set-up files it needs for the router. There will be no delay for subsequent uses of these commands unless you leave the router menu set or make major changes in the parameter settings.

COMMAND NAME

WINDOW

PURPOSE

To zoom in on a selected rectangular area of a drawing.

INPUT SEQUENCE

|WINDOW| (P₁) (P₂) |ENTER|

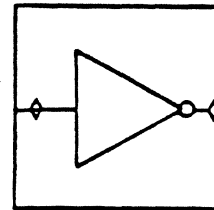
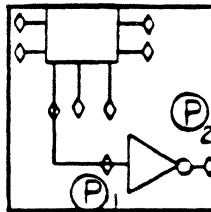
- (P₁) defines one corner of window area to be displayed.
- (P₂) defines the opposite corner of window area to be displayed.

EXAMPLE

|WINDOW| (P₁) (P₂) |ENTER|

ACTION

RESULT



WORLD

COMMAND NAME

WORLD

PURPOSE

To display the current portion of your drawing where you can view and perform editing tasks. The current ROAM space and WINDOW proportions are displayed when you command WORLD.

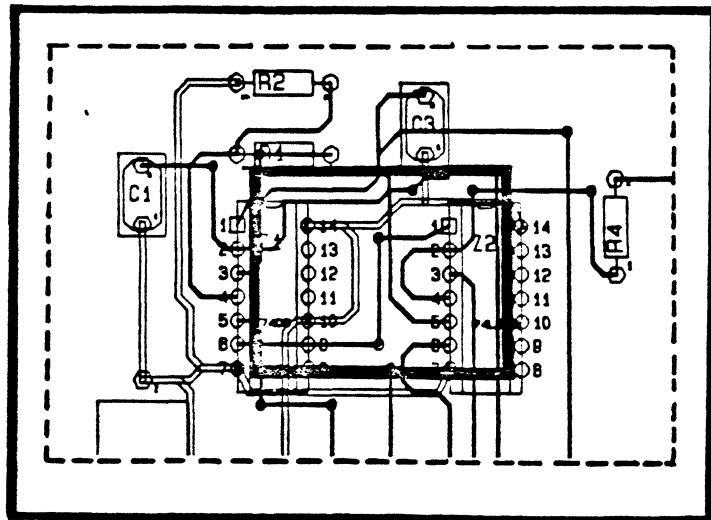
INPUT SEQUENCE

WORLD

- . It displays the current WORLD view of your drawing. It may be the entire drawing or only a portion.
- . The current menu flips to the WORLD menu with five available options:
 - o NEW WORLD
 - o MOVE WINDOW
 - o NEW WINDOW
 - o DRAWING
 - o REPAINT WORLD
- . This command displays the WINDOW (solid box) and the ROAM space ("dotted" rectangle) on the graphics screen.

EXAMPLE

WORLD



COMMAND NAME

ZOOM

PURPOSE

To zoom-in and zoom-back the WINDOW display at ratios of 2:1, 4:1 and 1:1. These ratios are set by the system.

INPUT SEQUENCE

- (P1) |ZOOM| (2:1 ratio) - Doubles the size of the current WINDOW.
- (P2) |ZOOM| (4:1 ratio) - Doubles the size of the P1 display.
- (P3) |ZOOM| (1:1 ratio) - Zooms back to the original WINDOW that was displayed prior to (P1).

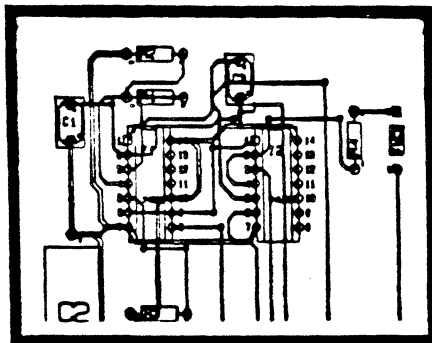
NOTES

|ZOOM| alters the size of the WINDOW without changing the ROAM space. If you wish to change the ROAM space as well as the WINDOW proportions while zooming, use the |ZOOM RATIO| command.

Use the |WORLD| command to view the WINDOW and the ROAM space.

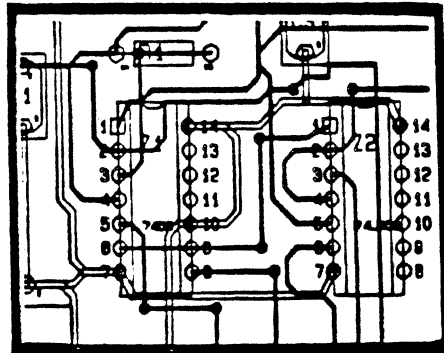
EXAMPLE

Current WINDOW display



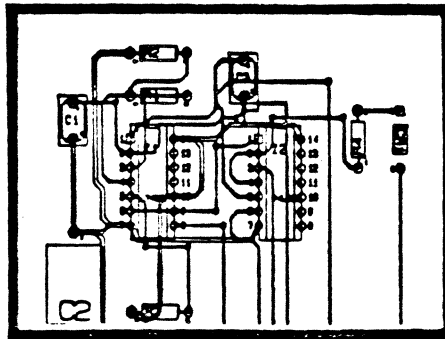
→

Pick ZOOM (2:1 ratio)

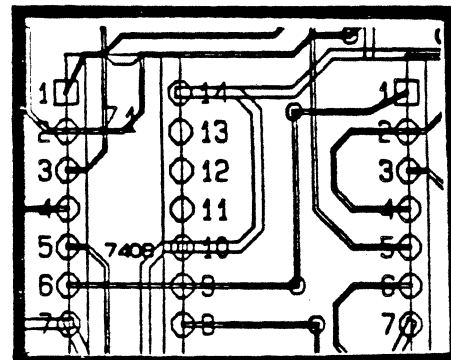


↓

Pick ZOOM (1:1 ratio)



Pick ZOOM (4:1 ratio)



←

ZOOM RATIO

COMMAND NAME

ZOOM RATIO

PURPOSE

To zoom and repaint the current display by defining a ratio on the keyboard menu.

INPUT SEQUENCE

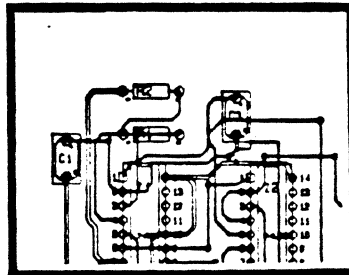
ZOOM RATIO | ----> Keyboard ----> ENTER |
input

- . Keyboard input defines the zoom ratio.
- . A number greater than 1 zooms in. (e.g., 2)
- . A number less than 1 zooms out. (e.g., .5)

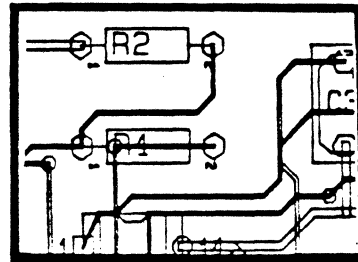
EXAMPLE

ZOOM RATIO | 3 | ENTER |

Current Display



RESULT



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ADD APERTURE

COMMAND NAME ADD APERTURE

PURPOSE To add aperture information to the APERTURE-TAB text file when using the EDIT APERTURE-TAB text leadthru.

INPUT SEQUENCE ADD APERTURE (STATION NUMBER) -Keyboard Input- ENTER

 (Select aperture shape) (Size) -Keyboard Input- ENTER

```
LINE  
CIRCLE  
SQUARE  
RECTANGLE  
OBLONG  
FLASH
```

- o The first keyboard input specifies the aperture wheel station number. There are 24 allowable stations on the aperture wheel.

When ENTER is picked after specifying the station number, the system displays a menu of apertures:

```
LINE    CIRCLE  
SQUARE    RECTANGLE  
OBLONG    FLASH
```

Select the desired aperture for the station number entered in the first keyboard input. The following prompts are issued for each shape listed below:

```
LINE (width)  
CIRCLE (width)  
SQUARE (width)  
RECTANGLE (width, height)  
OBLONG (width, height)  
FLASH ( flash name)
```

- o The second keyboard input specifies the aperture size (in mils) for the selected shape. When ENTER is picked, the system displays the line on the file with the appropriate aperture station D-code in the right margin. For example, STATION 1 on the aperture wheel is always assigned the code D10 on the Gerber 6240 Photoplotter.

EXAMPLE ADD APERTURE (STATION NUMBER) 1 ENTER SQUARE
_____ (WIDTH) 62 ENTER

Resulting line in the APERTURE-TAB text file:

1 SQUARE=.062 D10

NOTES

When specifying a FLASH, ten alphanumeric characters may be used. The operator must be sure that the photoplotting service is able to decode the flash name specified in the file.

ADD PINSWAP (cont.)

In the example, the PINORDER line specifies the pin names "A" and "B", with PINUSE, "IN" "IN", respectively. Therefore, since the pin names "A" and "B" are both specified as "IN", swappable pins exist for each identical function specified in the file. For example, FUNCTION G1 contains the swappable pins 1 and 2; FUNCTION G2 contains the swappable pins 4 and 5, etc.

EXAMPLE ADD PINSWAP (ENTER PIN NAMES) A B ENTER

Resulting line in device file:

PINSWAP 7400 A B

BLANK

COMMAND NAME BLANK

PURPOSE To blank all actively displayed colors and the grid specification on the active drawing. The operator may use this command to first blank all colors and their assigned layers, then unblank only the desired colors/layers. The unblanked layers (by color) may then be interactively edited.

INPUT SEQUENCE BLANK

- o The BLANK command is located on the softkey line of the DISPLAY menu on Telesis 2.1 systems only; these systems have the graphics processor for the WORLD, ROAM, and DISPLAY softkeys.
- o When the operator picks BLANK, the system blanks all colors and their assigned layers on the active drawing. The UNBLANK commands may then be used to selectively re-display blanked colors/layers for interactive editing.

BLUE PRIORITY

COMMAND NAME BLUE PRIORITY

PURPOSE To establish BLUE color priority on the actively displayed drawing. All drawing layers assigned the color BLUE will be displayed over other assigned colors (except RED) on the drawing.

This feature allows the operator to selectively control priority display of graphic elements, by color, allowing improved viewing of desired layers on dense drawings.

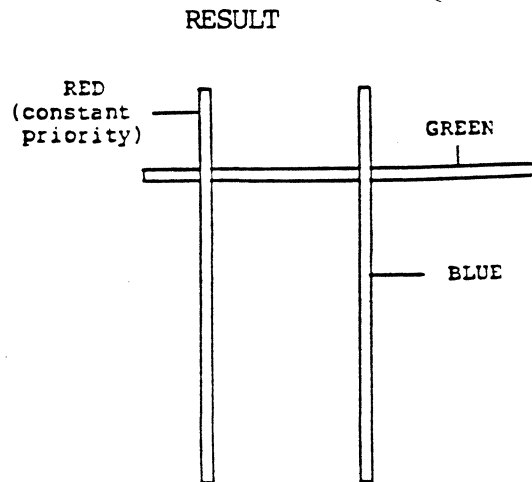
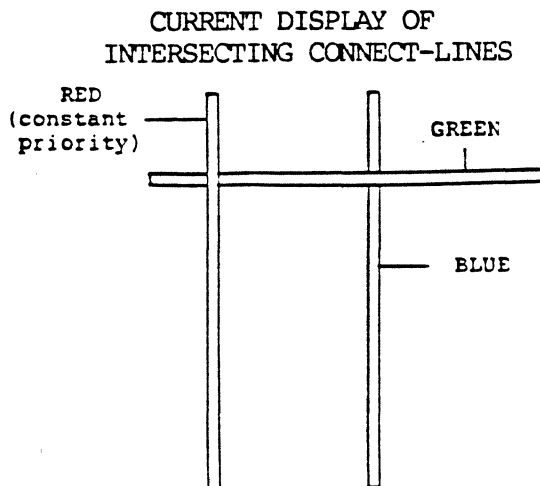
The BLUE PRIORITY command is located on the DISPLAY menu.

INPUT SEQUENCE BLUE PRIORITY

- o When the operator picks BLUE PRIORITY, the system displays BLUE over other displayed colors.

However, RED is the constant priority color, if assigned and displayed on the drawing.

EXAMPLE BLUE PRIORITY



THE COLOR BLUE IS PRIORITY SET OVER GREEN.

BOARD SYMBOLS

COMMAND NAME

BOARD SYMBOLS

PURPOSE

To flip to the menu set used for creating new board symbols, or editing existing ones.

INPUT SEQUENCE

BOARD SYMBOLS

BOTTOM

COMMAND NAME BOTTOM

PURPOSE To position the graphics screen cursor to the
_____ bottom of a PINORDER section, or to the bottom of
 of the file when using the EDIT DEVICE FILE text
 leadthru.

INPUT SEQUENCE BOTTOM

- o If the PINORDER section is highlighted with the asterisk (*) display, the cursor moves from its current position to the last line of the PINORDER section.

- o If the PINORDER section is not highlighted, BOTTOM will position the cursor to the last line of the file.

COMMAND NAME CANCEL ACTIVE EXECUTE FILE

PURPOSE To cancel the active version of an execute file.

INPUT SEQUENCE |CANCEL ACTV EXEC|

- o If the active file was previously saved, the system does not delete the original version and its revision label.
- o If the active execute file is a new file, the system simply cancels the file.

CANCEL PENPLOT BACKGROUND

COMMAND NAME CANCEL PENPLOT BACKGROUND

PURPOSE To terminate the currently active penplot started with the PENPLOT BACKGROUND command.

INPUT SEQUENCE CANCEL PENPLOT BACKGROUND

- o When CANCEL PENPLOT BACKGROUND is picked, there may be a slight delay before the plotter stops.

The system first completes the current plotting task from the -PLOT file prior to terminating the active pen plot.

CHANGE APERTURE

COMMAND NAME CHANGE APERTURE

PURPOSE To edit an existing aperture station line contained in the APERTURE-TAB text file, using the text leadthru capability.

INPUT SEQUENCE CHANGE APERTURE (STATION NUMBER) -Keyboard- ENTER
Input

(SELECT APERTURE) (SIZE) -Keyboard- ENTER
Input

LINE
CIRCLE
SQUARE
RECTANGLE
OBLONG
FLASH

- o The input sequence for the CHANGE APERTURE command is the same as the input sequence for the ADD APERTURE command. However, the operator may skip any prompt, except shape, for any information that remains unchanged on the line being edited.

EXAMPLE Existing line entry in the APERTURE-TAB text file displayed on the graphics screen:

1 SQUARE=.062 D10

CHANGE APERTURE (STATION NUMBER) ENTER

SQUARE (WIDTH) 75 ENTER

Resulting line:

1 SQUARE=.075 D10

CHANGE PAD GRAPHICS

COMMAND NAME CHANGE PAD GRAPHICS

PURPOSE To display the menu containing the available pad shape options when editing pad graphics of existing board symbols.

CHANGE PAD GRAPHICS is located on the SYMBOL CONVERSION/CONVERT SYMBOLS menu.

INPUT SEQUENCE CHANGE PAD GRAPHICS

- o The following pad shape command options are available:

PAD=CIRCLE	PAD=SQUARE
PAD=RECTANGLE	PAD=OBLONG
PAD=HEXAGON	PAD=OCTAGON
PAD=DIAMOND	PAD=POINT

- o When the operator completes symbol editing, the CREATE CONVERTED SYMBOL command may be used to create a bundled version of the symbol, combining the pad graphics, connect-points, and pin numbers for increased available disk space on the system.
- o NOTE 1: On symbols previously created with the CREATE SYMBOL command, the operator must first delete the existing pad shape(s) on the symbol (layer 52) using the keypad FIND LIN/CLIN filter prior to updating.

DO NOT DELETE THE EXISTING CONNECT-POINT ON LAYER 0.

Use the CHANGE PAD GRAPHICS command to update the connect-points with the above pad shape options, combining the pad the connect-point (layer 0).

- o NOTE 2: On symbols previously created with the CREATE CONVERTED SYMBOL command, the operator does not need to first delete the old pad graphics. Simply use the CHANGE PAD GRAPHICS command to edit the symbol prior to re-executing the CREATE CONVERTED SYMBOL command.

EXAMPLE CHANGE PAD GRAPHICS PAD=HEXAGON (SIZE) P ENTER

CHANGE PINUSE CONTINUATION

COMMAND NAME CHANGE PINUSE CONTINUATION LINE

PURPOSE To edit the existing PINUSE continuation line when using the EDIT DEVICE FILE text leadthru.

The new PINUSE information specified replaces the existing contents of the continuation line.

INPUT SEQUENCE CHANGE CONTINUATION LINE (PINUSE menu) -Menu- ENTER
displayed selections

- o The cursor must be moved to the PINUSE continuation line to be edited.
- o When CHANGE PINUSE CONTINUATION is picked, the system displays the menu with the PINUSE options. The selections made by the operator will replace the existing information on the continuation line when ENTER is picked.

EXAMPLE

Existing continuation line in the device file:

IN IN OUT

CHANGE PINUSE CONTINUATION IN OUT ENTER

Resulting continuation line:

IN OUT

CHANGE WHEEL

COMMAND NAME CHANGE WHEEL

PURPOSE To edit the WHEEL section of the APERTURE-TAB text
file when using the EDIT APERTURE-TAB text leadthru.

The graphics screen cursor must be moved to the
WHEEL line of the file prior to using the
CHANGE WHEEL command.

INPUT SEQUENCE CHANGE WHEEL (WHEEL NUMBER) -Keyboard- ENTER
Input

- o Currently, WHEEL 1 is the only allowable value. Skip the keyboard input to open the WHEEL section of the file for editing. Asterisks (*) will be displayed at the beginning of each line contained in the WHEEL section.
- o Use the LINE DWN command to position the cursor to the line to be edited. The CHANGE APERTURE and ADD APERTURE command may be used to change or add information to the WHEEL section.
- o When editing is complete, use the DONE command to cancel the display of asterisks defining the WHEEL section.

EXAMPLE CHANGE WHEEL (WHEEL NUMBER) ENTER

CHG CONTINUATION LINE

COMMAND NAME CHANGE CONTINUATION LINE

PURPOSE To edit the current data contained in a continuation line when using the EDIT DEVICE FILE text leadthru.

The new data specified replaces the existing contents of the continuation line.

INPUT SEQUENCE CHG CONTINUATION LINE (ENTER DATA) -Keyboard- ENTER
Input

- o The graphics screen cursor must be moved to the continuation line to be edited.
- o The keyboard input specifies the new data to replace the existing contents of the continuation line.

EXAMPLE Existing continuation line in the device file:

12 13 14

CHG CONTINUATION LINE (ENTER DATA) 12 13 ENTER

Resulting continuation line:

12 13

CHG EXEC FILE NM

COMMAND NAME CHANGE EXECUTE FILE NAME

PURPOSE To change the name of an existing execute file.

INPUT SEQUENCE |CHG EXEC FILE NM| (OLD NAME) -Keyboard- |ENTER|
Input
(NEW NAME) -Keyboard- |ENTER|
Input

- o The first keyboard input is the name of the existing execute file. Input the revision label if the execute file named in the prompt is not the latest revision.
- o The second keyboard input is the new name to be assigned to the execute file. The name may contain up to 18 alphanumeric characters with no blank spaces. A revision label with up to four alphanumeric characters may be specified. Separate the name from the revision label with a blank space.
- o Pick |ENTER| to change the execute file name. The function screen message line will display:

-NAME OF EXECUTE FILE ABC REV 1 CHANGED TO XYZ-

EXAMPLE |CHG EXEC FILE NM| (OLD NAME) ABC |ENTER|
(NEW NAME) XYZ |ENTER|

CHG EXEC FILE RV

COMMAND NAME CHANGE EXECUTE FILE REVISION

PURPOSE To change the revision label of an existing execute file.

INPUT SEQUENCE CHG EXEC FILE RV (NAME) -Keyboard- ENTER
Input
(NEW REV) -Keyboard- ENTER
Input

- o The first keyboard input specifies the name of the existing execute file. Input the old revision label if the execute file named in the prompt is not the latest revision.
- o The second keyboard input specifies the new revision. A revision may contain up to four alphanumeric characters with no blank spaces.
- o Pick ENTER to change the execute file revision label.

EXAMPLE CHG EXEC FILE RV (NAME) TEST 1 ENTER
(NEW REV) ABC ENTER

Result:

The execute file named TEST rev 1 is changed to TEST rev ABC.

COMP/FUNC/PIN SWAPPING

COMMAND NAME COMPONENT, FUNCTION, PIN SWAPPING

PURPOSE To flip to the menu page containing the commands used to interactively swap components, logic functions, and pins on the active board drawing.

INPUT SEQUENCE |COMP/FUNC/PIN SWAPPING|

- o The |COMP/FUNC/PIN SWAPPING| command is located on the |INTERACTIVE PLACEMENT| menu.

- o The following commands are available on the interactive swapping menu:

|SWAP COMPONENTS|
|SWAP FUNCTIONS|
|SWAP PINS|

|SWAP COMPONENTS BY REFDES|
|SWAP FUNCTIONS BY REFDES.PIN #|
|HILITE SWAPPABLE FUNCTIONS|
|HILITE SWAPPABLE PINS|

EXAMPLE |COMP/FUNC/PIN SWAPPING|

CONVERT SYMBOLS

COMMAND NAME CONVERT SYMBOLS

PURPOSE To open the menu set used to edit and convert existing board symbols. The CONVERT SYMBOLS command is located on the SYMBOL CONVERSION menus.

INPUT SEQUENCE CONVERT SYMBOLS

- o When CONVERT SYMBOLS is picked, the operator may use one of the ADD SYMBOL commands to add and edit an existing board symbol on the active drawing. For example, the CHANGE PAD GRAPHICS command may be used to edit the pad graphics within the symbol.
 - o When operator completes the editing of the the board symbol, the CREATE CONVERTED SYMBOL command may be used, creating a bundled version of the symbol.
- *
- Bundling reduces the number of data base identifiers (DBIDs) in a symbol by combining the pad graphics, connect-points, and pin numbers for increase available disk space on the system.

COPY EXEC FILE

COMMAND NAME COPY EXECUTE FILE

PURPOSE To make a copy of an existing execute file.

INPUT SEQUENCE |COPY EXEC FILE| (FROM) -Keyboard-, -Keyboard- |ENTER|
Input-1 Input-2
(TO) -Keyboard-, -Keyboard- |ENTER|
Input-3 Input-4

- o Keyboard input 1 is the name of the project (if any) from which the execute file is to be copied.

If the execute file is not in a project file, or if it is in the current project file, skip keyboard input-1 and proceed to keyboard input-2.

- o Keyboard input-2 is the name of the execute file to be copied.
- o Keyboard input-3 is the name of the project (if any) receiving the copy.
 - A) To copy at the system level or into the current project file, skip keyboard input-3 and go directly to keyboard input-4,
 - B) To copy into any other existing project, input the project name.
 - C) To copy into a new project, input the new project name.
- o Keyboard input-4 is the name of the execute file copy if different from the original execute file name (keyboard input-2). To use the same name for the copy as for the original, skip keyboard input-4.

COPY EXEC FILE (cont.)

- o Always use a comma (,) after project names to distinguish them from execute file names. A comma is not necessary if a project name is skipped. However, the comma is necessary if the execute file name is skipped and project name is input.
- o A revision label may be specified after any project name, or execute file name. Input one blank space between the file name and the revision label. If a revision label is not input, the most recent revision is used.
- o For floppy disk copies, use this command exactly as described above with the following exceptions:
 - A) To copy from a floppy disk, input the characters F: immediately after the COPY EXEC FILE command.
 - B) To copy to a floppy disk, input the characters F: immediately after the first ENTER in the input sequence.

EXAMPLE

COPY EXEC FILE (FROM) TEST, ABC ENTER (TO) F: ENTER

Result: The execute file, ABC, in project TEST is copied to floppy disk.

COPY EXEC FILE (FROM) TEST, ENTER (TO) ACC-TEST, ENTER

Result: The execute file files contained in the project TEST will be copied to the project ACC-TEST.

The function screen message line displays:

-PICK PAGE-> TO REVIEW LIST. PICK CANCEL TO BYPASS LIST.

Pick: PAGE->

The function screen issues a second message:

-ARE YOU SURE YOU WANT TO COPY ALL OF THE LISTED ITEMS?

ENTER CANCEL FOR NO
ENTER ->PAGE FOR YES

CREATE BOM-REPORT

COMMAND NAME CREATE BOM-REPORT

PURPOSE To create a bill-of materials text file from the
_____ latest NET-DATA-BASE file in the current project.

INPUT SEQUENCE |CREATE BOM-REPORT|

NOTES There must be a net data base file in the current
_____ project.

CREATE COMPONENT-REPORT

COMMAND NAME CREATE COMPONENT-REPORT

PURPOSE To create a list-by-components text file from the most
_____ recent NET-DATA-BASE file in the current project.
 The system names the file COMPONENT-REPORT.

INPUT SEQUENCE |CREATE COMPONENT-REPORT|

NOTES There must be a NET-DATA-BASE file in the current
_____ project file.

CREATE CONVERTED SYMBOL

COMMAND NAME CREATE CONVERTED SYMBOL

PURPOSE To create a bundled version of an existing board symbol edited on the temporary active drawing opened with the |SYMBOL CONVERSION| command.

*

Bundling reduces the number of data base identifiers (DBIDs) in a symbol by combining the pad graphics, connect-points, and pin numbers for increased available disk space on the system.

The |CREATE CONVERTED SYMBOL| command is located on the |SYMBOL CONVERSION / CONVERT SYMBOLS| menus.

INPUT SEQUENCE |CREATE CONVERTED SYMBOL|

- o When |CREATE CONVERTED SYMBOL| is picked, the system creates a bundled version of the symbol. The symbol shown on the graphics screen will disappear. The operator may then proceed to add and convert additional symbols on the same active drawing.
- o Symbols created with the |CREATE CONVERTED SYMBOLS| command will appear in the current project directory, with a SYMBOL-LOG text file.
- o When finished, the operator must use the |CANCEL ACTV DRW| command on the drawing opened with the |SYMBOL CONVERSION| command.

EXAMPLE |CREATE CONVERTED SYMBOL|

CREATE DRAWING cont.)

- o Pick OOPS! to cancel the current window definition and to de-highlight drawing elements prior to re-defining the window.
- o Pick ENTER to create the drawing currently defined by the window; the drawing is created under the name originally specified by the keyboard input.

EXAMPLE

CREATE DRAWING (DRAWING NAME) MEMORY 1 ENTER

P1 P2 ENTER

CREATE/MERGE DRAWING

COMMAND NAME CREATE/MERGE DRAWING

PURPOSE To flip to the menu containing the commands used to
create and merge drawings.

INPUT SEQUENCE CREATE/MERGE DRAWING

- o The following commands are available on the CREATE/MERGE DRAWING menu:

CREATE DRAWING
MERGE DRAWING

MERGE MD DRAWING
DELETE WINDOW

EXAMPLE CREATE/MERGE DRAWING

CREATE NETLIST-REPORT

COMMAND NAME CREATE NETLIST-REPORT

PURPOSE To create a list-by-nets text file from the most
recent NET-DATA-BASE file in the current project.
The text file is named NETLIST-REPORT.

INPUT SEQUENCE CREATE NETLIST REPORT

NOTES There must be a NET-DATA-BASE file in the current
project directory.

DELETE

COMMAND NAME DELETE

PURPOSE To delete a line or section from a device
description file when using the EDIT DEVICE FILE
text leadthru. The cursor position defines the line
or section to be deleted.

INPUT SEQUENCE DELETE

- o Single lines or entire sections may be deleted.

- o Section headers cannot be deleted if the section is currently highlighted with the asterisk (*) display. For example, the PINORDER line cannot be deleted when the section is highlighted. However, if the cursor is positioned at the PINORDER line with the PINORDER section de-highlighted, the system deletes the entire section.

- o Single lines within a highlighted section can be deleted.

EXAMPLE DELETE

DELETE EXEC FILE (cont.)

NOTE: If the project name is specified without an execute file name, the function screen displays the message:

-PICK PAGE-> TO REVIEW LIST-
-PICK CANCEL TO BYPASS LIST-

The list on the function screen displays all execute files contained in the project specified. For example,

```
DELETE > PROJECT TEST REV 1 EXEC FILE
          ABCD REV 1
          XYZ REV 1
```

Pick: PAGE->

-ARE YOU SURE YOU WANT TO DELETE ALL OF
THE LISTED ITEMS?

-ENTER CANCEL FOR NO
-ENTER ->PAGE FOR YES

DELETE WINDOW

COMMAND NAME DELETE WINDOW

PURPOSE To delete the contents of the operator-defined window on the actively displayed drawing.

INPUT SEQUENCE DELETE WINDOW (P1) (P2) ENTER

- o (P1) - defines the first corner of the window.
- o (P2) - defines the opposite corner of the window.
- o Elements within the operator-defined window will highlight. Elements within the window that continue outside the window (i.e. connect-lines) as well as symbol elements with assigned reference designators will not be deleted.
- o Pick OOPS! to cancel the window displayed on the graphics screen, if the defined window is not desired.
- o Pick CANCEL to terminate the command.
- o If the operator-defined window contains symbols with assigned reference designators, the following message is displayed on the function screen:

-ELEMENTS WITH ASSIGNED REF DES ARE NOT DELETED-

The system deletes only those elements within the defined window that do not contain reference designators.
- o The operator may use the keypad find filters (i.e. FIND SYMBOL) to define specific elements to be deleted prior to defining the window on the graphics screen.

EXAMPLE DELETE WINDOW (P1) (P2) ENTER

COMMAND NAME

DERIVE CONNECTIVITY

PURPOSE

To instruct the system to attempt creation of CONNECT-LINES from LINES displayed on the active drawing.

When the operator uses the LOAD GERBER DATA command to reconstruct Gerber artfiles on the graphics screen, and then proceeds to place symbols at the proper pad indicators, DERIVE CONNECTIVITY may be used to create CONNECT-LINES from the reconstructed LINES displayed on the drawing.

INPUT SEQUENCEDERIVE CONNECTIVITY

- o When DERIVE CONNECTIVITY is picked, the system executes two PASSES over the drawing.
- o During the first PASS, the system scans the drawing for LINES. When a LINE is located, the system highlights it in RED, then "stretches" the line within a system defined trap (if required) in search of another LINE. If a LINE is located within the trap area, the system inserts a connect-point where the two lines merge. The first PASS simply prepares the drawing for the second PASS where CONNECT-LINES will be created.
- o During the second PASS, the system scans the drawing and searches for connect-points. These include symbol connect points, and connect-points added to the drawing during the first PASS at the various LINE end-points. As each connect-point is located, the system first attempts to locate a nearby line, then adds a "stretch" segment to the line (if required) so that a connect-line can be made.
- o When DERIVE CONNECTIVITY completes, all LINES not converted to CONNECT-LINES during the second PASS will remain as LINES (ADD LINE) on the drawing. The system then dehighlights the LINES and CONNECT-LINES displayed on the drawing.

NOTESTYPES OF CONNECTIONS OCCURRING DURING DERIVE CONNECTIVITY

LINE TO CONNECT-POINT
 LINE TO LINE (of same width)
 LINE TO LINE (of different widths)

CONNECT CONDITIONS DURING DERIVE CONNECTIVITY

1. LINES displayed on the drawing must exist within the DBLAYER range, 1 through 32.
2. The connect-points on the component symbols must exist within the DBLAYER range, 0 through 32.

Refer to the POST PROCESSING section of the manual for additional information on the DERIVE CONNECTIVITY command.

DISPLAY

COMMAND NAME DISPLAY

PURPOSE To flip to the menu containing the commands used to
selectively control displayed graphics on the active
drawing.

INPUT SEQUENCE DISPLAY

- o When DISPLAY is picked, the following menu appears on the function screen:

DRAW BOARD SYMBOL

COMMAND NAME DRAW BOARD SYMBOL

PURPOSE To open the menu set used to create or edit
board symbol drawings.

INPUT SEQUENCE DRAW BOARD SYMBOL

DRAW SCHEMATIC SYMBOL

COMMAND NAME DRAW SCHEMATIC SYMBOL

PURPOSE To open the menu set used to create or edit
_____ schematic symbol drawings.

INPUT SEQUENCE |DRAW SCHEMATIC SYMBOL|

DRAWING=WORLD

COMMAND NAME DRAWING=WORLD

PURPOSE To view the entire drawing on the graphics screen,
_____ showing the current roamspace and window definition.

INPUT SEQUENCE DRAWING=WORLD

- o The DRAWING=WORLD command is located on the WORLD menu on Telesis 2.1 systems; these systems have the graphics processor for the WORLD, ROAM and DISPLAY softkeys.

EXAMPLE DRAWING=WORLD

DRAWINGS/SYMBOLS

COMMAND NAME DRAWINGS/SYMBOLS

PURPOSE To flip to the menu page containing the commands
 for opening new or existing board, schematic, and
 symbol drawings.

INPUT SEQUENCE DRAWINGS/SYMBOLS

- o The following options are displayed on the DRAWINGS/SYMBOLS menu:

BOARD DRAWINGS
BOARD SYMBOLS

SCHEMATIC DRAWINGS
SCHEMATIC SYMBOLS
SYMBOL CONVERSION

EXAMPLE DRAWINGS/SYMBOLS

DWN

COMMAND NAME DWN

PURPOSE To move the graphics screen cursor down one line,
_____ or one section, when using the EDIT DEVICE FILE
text leadthru.

INPUT SEQUENCE DWN

- o If the PINORDER section is highlighted with asterisk (*) display, the cursor can only be moved within the section.

- o Pick DCNE to erase the asterisk display prior to moving the cursor down additional lines outside of the PINORDER section.

EDIT APERTURE-TAB

COMMAND NAME EDIT APERTURE TABLE TEXT FILE

PURPOSE To create or edit an existing aperture table
text file using the text leadthru capability.

INPUT SEQUENCE |EDIT APERTURE-TAB| (REV) -Keyboard- |ENTER|
Input

- o The text file must be named APERTURE-TAB. If creating a new file, the system automatically names the file APERTURE-TAB when the operator-defined revision label is input. A revision may contain up to four alphanumeric characters.

NOTE: If the revision label is omitted, the system assigns "rev 1" to the file when the operator executes the |SAVE FILE| command.

- o If the file named APERTURE-TAB already exists in the current project, the operator may specify the revision when opening the file for editing.

Omitting the revision label will open the latest version of the file.

EXAMPLE |EDIT APERTURE-TAB| (REV) ABC |ENTER|

Result: The system opens a new text file named APERTURE-TAB rev ABC, or opens the existing file of the same name and revision.

EDIT FILE

COMMAND NAME

EDIT FILE

PURPOSE

To menu-back and return to the active text file for additional editing while using the TEXT LEADTHRU capability. This command is also available during the creation and editing of execute files.

INPUT SEQUENCE

EDIT FILE

ENGLISH UNITS

COMMAND NAME ENGLISH UNITS

PURPOSE To specify English units when opening a new
_____ drawing file. One unit is .001 inches, or 1 mil.

INPUT SEQUENCE ENGLISH UNITS

FIX ALL

COMMAND NAME FIX ALL

PURPOSE To fix all components, swappable logic functions, and swappable pins on the active board drawing prior to selectively freeing components, functions, and pins for automatic swapping. The FIX ALL command is located on the AUTOMATIC PLACEMENT menu.

INPUT SEQUENCE FIX ALL

- o When FIX ALL is picked the following messages will appear on the function screen:
 - ALL COMPONENTS ARE FIXED -
 - ALL SWAPPABLE FUNCTIONS ARE FIXED -
 - ALL SWAPPABLE PINS ARE FIXED -

- o Fixed components, functions, and pins are not available for automatic swapping when the operator uses the AUTO-PLACE BOARD command on the active board drawing.

EXAMPLE FIX ALL

FIX ALL COMPONENTS

COMMAND NAME FIX ALL COMPONENTS

PURPOSE To fix all components on the active board drawing prior to using the auto-swapping capability. Fixed components on the drawing are not available for swapping during execution of AUTO-PLACE BOARD command on the placed board drawing.

INPUT SEQUENCE FIX ALL COMPONENTS

- o When the operator picks FIX ALL COMPONENTS, the function screen message line displays the following message:

-ALL COMPONENTS ARE FIXED-

EXAMPLE FIX ALL COMPONENTS

Use the LIST FIXED COMPONENTS command to verify the fixing of all components on the active board drawing.

FIX ALL FUNCTIONS

COMMAND NAME FIX ALL FUNCTIONS

PURPOSE To fix all swappable functions on the active board drawing prior to using the auto-swapping capability. Fixed functions on the drawing are not available for swapping during execution of the AUTO-PLACE BOARD command on the placed board drawing.

INPUT SEQUENCE FIX ALL FUNCTIONS

- o When the operator picks FIX ALL FUNCTIONS, the the function screen message line displays:

-ALL SWAPPABLE FUNCTIONS ARE FIXED-

EXAMPLE FIX ALL FUNCTIONS

Use the LIST FIXED FUNCTIONS command to verify the fixing of all swappable functions on the drawing.

FIX ALL PINS

COMMAND NAME FIX ALL PINS

PURPOSE To fix all swappable pins on the active board drawing prior to using the auto-swapping capability. Fixed pins on the drawing are not available for swapping during execution of the AUTO-PLACE BOARD command on the placed board drawing.

INPUT SEQUENCE FIX ALL PINS

- o When the operator picks the FIX ALL PINS command, the function screen message line displays:

-ALL SWAPPABLE PINS ARE FIXED-

EXAMPLE FIX ALL PINS

FIX ALL PINS IN COMPONENT

COMMAND NAME FIX ALL PINS IN COMPONENT

PURPOSE To fix all swappable logic function pins on an IC component on the active board drawing prior to using the auto-swapping capability. Fixed pins on the drawing are not available for swapping during execution of the AUTO-PLACE BOARD command on the placed board drawing.

INPUT SEQUENCE FIX ALL PINS IN COMPONENT -Tablet- P... ENTER
Menu

- o P - defines the first component with all swappable pins highlighting. Additional components picks will highlight and fix swappable pins on additional components. Currently highlighted pins de-highlight when additional components are picked.
- o CANCEL will not fix highlighted pins on the last selected component.
- o Pick ENTER to fix all swappable pins highlighted on the last component to complete the command.

EXAMPLE FIX ALL PINS IN COMPONENT P... ENTER

FIX ALL PINS IN FUNCTION

COMMAND NAME FIX ALL PINS IN FUNCTION

PURPOSE To selectively fix all swappable pins on IC component logic functions on the active board drawing. The operator must select one pin within the logic function to highlight and fix its swappable pins.

INPUT SEQUENCE FIX ALL PINS IN FUNCTION -Tablet- (P)... ENTER
Menu

- o (P) - defines and highlights the swappable pins of a single IC logic function.

An improper selection will result in the following message on the function screen message line:

-SELECT POINT IS NOT A SWAPPABLE FUNCTION-

- o Additional picks will highlight and fix swappable pins of additional logic functions, with de-highlighting and fixing occurring on previous selections.
- o CANCEL will not fix the last highlighted swappable pins on the last selected logic function.
- o Pick ENTER to fix all swappable pins on the last selected logic function and to complete the command.

EXAMPLE FIX ALL PINS IN FUNCTION (P).... ENTER

FIX COMPONENT [SELECT]

COMMAND NAME FIX COMPONENT [SELECT]

PURPOSE To fix a component(s) on the active board drawing by selecting the component(s) with the light pen prior to using the auto-swapping capability. Fixed components on the drawing are not available for swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE FIX COMPONENT [SELECT] -Tablet- Ⓟ... ENTER
Menu

- o Ⓟ - defines and highlights the component to be fixed. Additional picks will highlight and fix additional components on the drawing.
- o CANCEL will not fix the last selected component highlighted.
- o Pick ENTER to fix the last selected component and to complete the command. The fixed components will not be available for swapping.

EXAMPLE FIX COMPONENT [SELECT] Ⓟ.... ENTER

Use the LIST FIXED COMPONENTS command to verify fixing of the components selected during the command.

FIX COMPONENTS BY WINDOW

COMMAND NAME FIX COMPONENTS BY WINDOW

PURPOSE To fix components on the active board drawing by
 defining a window around each component(s) to be
 fixed prior to using the auto-swapping capability.

Fixed components on the drawing are not available
for swapping during execution of the AUTO-PLACE BOARD
command.

INPUT SEQUENCE |FIX COMPONENTS BY WINDOW| (P1) (P2) |ENTER|

- o (P1)- defines the first corner of the window.
- o (P2)- defines the opposite corner of the window.
- o After the second pick, the system draws a highlighted window around the component with the following message displayed on the function screen:

-PICK ENTER OR NEXT TO PROCESS CURRENT WINDOW-

Pick |NEXT| to fix the component(s) defined within the window and to continue the command. The tablet menu remains displayed for additional window definitions. The following message will appear:

-ALL COMPONENTS WITHIN THE WINDOW ARE FIXED-

- o Pick |ENTER| to fix the last component(s) defined by the window and to complete the command.
- o |CANCEL| will not fix components defined in the current window.

EXAMPLE |FIX COMPONENTS BY WINDOW| (P1) (P2) |NEXT| (P1) (P2) |ENTER|

FIX FUNCTION [SELECT PIN]

COMMAND NAME FIX FUNCTION [SELECT PIN]

PURPOSE To selectively fix an IC component logic function on the active board drawing by selecting one pin within the function, prior to using the auto-swapping capability. Fixed logic functions on the drawing are not available for swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE FIX FUNCTION [SELECT PIN] | -Tablet- (P)... | ENTER |
Menu

- o (P) - defines and highlights all pins associated with a single logic function.

Additional picks will highlight and fix additional logic functions on board components.

- o CANCEL will not fix the last selected function highlighted on the drawing.
- o Pick ENTER to fix the last selected function and to complete the FIX FUNCTION [SELECT PIN] command.

EXAMPLE FIX FUNCTION [SELECT PIN] | (P).... | ENTER |

Use the LIST FIXED FUNCTIONS command to list and verify fixing of the logic functions selected during command.

FIX FUNCTIONS [SELECT COMP]

COMMAND NAME FIX FUNCTIONS BY SELECTING COMPONENT

PURPOSE To fix IC logic functions by selecting components on the active board drawing. Fixed functions on IC components are not available for auto-swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE FIX FUNCTIONS [SELECT COMP] | -Tablet- (P)... | ENTER
Menu

- o (P) - defines the first component, with all with all swappable logic functions on the component highlighting. Additional picks will highlight and fix swappable functions on additional IC components. A component with highlighted functions will de-highlight when the operator picks additional components.
- o CANCEL will not fix highlighted functions on the last selected component.
- o Pick ENTER to fix those logic functions highlighted on the last selected component, and to complete the command.
- o Use the LIST FIXED FUNCTIONS command to list and verify fixing of functions on the components selected during the command.

EXAMPLE FIX FUNCTIONS [SELECT COMP] | (P)... | ENTER

FIX PIN [SELECT PIN]

COMMAND NAME FIX PIN [SELECT PIN]

PURPOSE To fix an IC logic function pin by selecting the component pin on the active board drawing prior to using the auto-swapping capability. Fixed swappable pins on IC components are not available for swapping during execution of the AUTO PLACE BOARD command.

INPUT SEQUENCE FIX PIN [SELECT PIN] | - Tablet - (P).... ENTER
Menu

- o (P) - defines and highlights the selected pin. If the pin selected is not swappable, the system issues the following message:

-SELECTED POINT IS NOT A SWAPPABLE PIN-

Additional picks will highlight additional swappable pins on IC component logic functions.

- o CANCEL will not fix the last swappable pin highlighted during the command sequence.
- o Pick ENTER to fix the last swappable pin highlighted and to complete the command.
- o Use the HILITE FIXED PINS ON COMP command to list and verify fixing of the selected pins.

EXAMPLE FIX PIN [SELECT PIN] | (P).... ENTER

Result: All swappable logic functions pins highlighted during the command are fixed and unavailable for auto-swapping.

FIX/FREE COMPONENTS

COMMAND NAME FIX/FREE COMPONENTS

PURPOSE To flip to the menu containing the commands used to selectively fix and free components prior to using the automatic swapping capability on the active board drawing.

The FIX/FREE COMPONENTS command is located on the AUTOMATIC PLACEMENT menu.

INPUT SEQUENCE FIX/FREE COMPONENTS

- o The following commands are located on the FIX/FREE COMPONENTS menu:

HILITE FIXED COMPONENTS
FIX ALL COMPONENTS
FIX COMPONENT [SELECT]
LIST FIXED COMPONENTS
FIX COMPONENTS BY WINDOW
FIX COMPONENT BY REFDES
HILITE FREE COMPONENTS
FREE ALL COMPONENTS
FREE COMPONENT [SELECT]
LIST FREE COMPONENTS
FREE COMPONENTS BY WINDOW
FREE COMPONENT BY REFDES

FIX/FREE FUNCTIONS

COMMAND NAME FIX/FREE FUNCTIONS

PURPOSE To flip to the menu containing the commands used to selectively fix and free IC component logic functions prior to using the automatic swapping capability on the active board drawing.

The FIX/FREE FUNCTIONS command is located on the AUTOMATIC PLACEMENT menu.

INPUT SEQUENCE FIX/FREE FUNCTIONS

- o The following commands are located on the FIX/FREE FUNCTIONS menu.

HILITE FIXED FUNCTIONS
FIX ALL FUNCTIONS
FIX FUNCTION [SELECT PIN]
FIX FUNCTIONS [SELECT COMP]
LIST FIXED FUNCTIONS
FIX FUNCTIONS BY WINDOW
FIX FUNCTION BY REFDES.PIN #
HILITE FREE FUNCTIONS
FREE ALL FUNCTIONS
FREE FUNCTION [SELECT PIN]
FREE FUNCTIONS [SELECT COMP]
LIST FREE FUNCTIONS
FREE FUNCTIONS BY WINDOW
FREE FUNCTION BY REFDES.PIN #

FIX/FREE PINS

COMMAND NAME FIX/FREE PINS

PURPOSE To flip to the menu containing the commands used to selectively fix and free component pins prior to using the automatic swapping capability on the active board drawing.

The FIX/FREE PINS command is located on the AUTOMATIC PLACEMENT menu.

INPUT SEQUENCE FIX/FREE PINS

- o The following commands are located on the FIX/FREE PINS menu:

HILITE FIXED PINS ON COMPONENT
FIX ALL PINS
FIX PIN [SELECT PIN]
FIX ALL PINS IN COMPONENT
FIX PINS BY WINDOW
FIX PIN BY REFDES.PIN #
FIX ALL PINS IN FUNCTION
HILITE FREE PINS ON COMP
FREE ALL PINS
FREE PIN [SELECT PIN]
FREE ALL PINS IN COMPONENT
FREE PINS BY WINDOW
FREE PIN BY REFDES.PIN #
FREE ALL PINS IN FUNCTION

FREE ALL

COMMAND NAME FREE ALL

PURPOSE To free all components, swappable functions, and swappable pins on the active board drawing prior to using the automatic swapping capability on the system. The FREE ALL command is located on the AUTOMATIC PLACEMENT menu.

INPUT SEQUENCE FREE ALL

- o When the FREE ALL command is picked, the function screen message line displays the following messages:
 - ALL COMPONENTS ARE FREE -
 - ALL SWAPPABLE FUNCTIONS ARE FREE -
 - ALL SWAPPABLE PINS ARE FREE -

- o Free components, functions, and pins are available for automatic swapping when the operator uses the AUTO-PLACE BOARD command on the placed or unplaced board drawing.

EXAMPLE FREE ALL

FREE ALL COMPONENTS

COMMAND NAME FREE ALL COMPONENTS

PURPOSE To free all components on the active board drawing prior to using the auto-swapping capability. Free components on the drawing are available for swapping during execution of AUTO-PLACE BOARD command on the placed board drawing.

INPUT SEQUENCE FREE ALL COMPONENTS

- o When the operator picks FREE ALL COMPONENTS, the function screen message line displays the following statement:

-ALL COMPONENTS ARE FREE-

EXAMPLE FREE ALL COMPONENTS

Use the LIST FREE COMPONENTS command to verify freeing of all components on the active board drawing.

FREE ALL FUNCTIONS

COMMAND NAME FREE ALL FUNCTIONS

PURPOSE To free all swappable IC component logic functions on the active board drawing prior to using the auto-swapping capability. Free functions on the drawing are available for swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE FREE ALL FUNCTIONS

- o When the operator picks FREE ALL FUNCTIONS, the the function screen message line displays:

-ALL SWAPPABLE FUNCTIONS ARE FREE-

EXAMPLE FREE ALL FUNCTIONS

Use the LIST FREE FUNCTIONS command to verify the freeing of all swappable logic functions on the drawing.

FREE ALL PINS

COMMAND NAME FREE ALL PINS

PURPOSE To free all swappable IC logic function pins on the active board drawing prior to using the auto-swapping capability. Free pins on the drawing are available for swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE FREE ALL PINS

- o When the operator picks the FREE ALL PINS command, the function screen message line displays:

-ALL SWAPPABLE PINS ARE FREE-

EXAMPLE FREE ALL PINS

FREE ALL PINS IN COMPONENT

COMMAND NAME FREE ALL PINS IN COMPONENT

PURPOSE To free all swappable logic function pins within an IC component on the active board drawing prior to using the auto-swapping capability. Free pins on the drawing are available for swapping during execution of the AUTO-PLACE BOARD command on the placed board drawing.

INPUT SEQUENCE FREE ALL PINS IN COMPONENT -Tablet- (P)... ENTER
Menu

- o (P) - defines the first component with all swappable pins highlighting. Additional component picks will highlight and free swappable pins on additional components. Currently highlighted pins de-highlight when additional components are picked.
- o CANCEL will not free highlighted pins on the last selected component.
- o Pick ENTER to free all swappable pins on the last highlighted component, and to complete the command.

EXAMPLE FREE ALL PINS IN COMPONENT (P).. ENTER

FREE ALL PINS IN FUNCTION

COMMAND NAME FREE ALL PINS IN FUNCTION

PURPOSE To selectively free the swappable pins within an IC component logic function on the active board drawing prior to using the auto-swapping capability. The operator must select one pin within the logic function to highlight and free its swappable pins.

INPUT SEQUENCE FREE ALL PINS IN FUNCTION -Tablet- (P)... ENTER
Menu

- o (P) - defines and highlights the swappable pins on a single logic function within an IC component. The operator must select one pin associated with the logic function.

An improper selection will result in the following statement on the function screen message line:

-SELECT POINT IS NOT A SWAPPABLE FUNCTION-

- o Additional picks will highlight and free swappable pins of additional logic functions, with de-highlighting and freeing occurring on previous selections.
- o CANCEL will not free the last highlighted swappable pins on the last selected logic function.
- o Pick ENTER to free all swappable pins on the last selected logic function and to complete the command.

EXAMPLE FREE ALL PINS IN FUNCTION (P).... ENTER

FREE COMPONENT [SELECT]

COMMAND NAME FREE COMPONENT [SELECT]

PURPOSE To free a component(s) on the active board drawing by selecting the component(s) with the light pen prior to using the auto-swapping capability. Free components on the drawing are available for swapping during execution of the AUTO-PLACE BOARD command on the placed board drawing.

INPUT SEQUENCE FREE COMPONENT [SELECT] -Tablet- (P)... ENTER
Menu

- o (P) - defines and highlights the component to be freed. Additional picks will highlight and free additional components on the drawing.
- o CANCEL will not free the last selected component highlighted.
- o Pick ENTER to free the last component highlighted during the command.

EXAMPLE FREE COMPONENT [SELECT] (P).... ENTER

Use the LIST FREE COMPONENTS command to verify freeing of the components selected during the command.

FREE COMPONENTS BY WINDOW

COMMAND NAME FREE COMPONENTS BY WINDOW

PURPOSE To free components on the active board drawing by defining a window around each component(s) to be freed prior to using the auto-swapping capability.

Free components on the drawing are available for swapping during execution of the AUTO-PLACE BOARD command on the placed board drawing.

INPUT SEQUENCE FREE COMPONENTS BY WINDOW (P1) (P2) ENTER

- o (P1) - defines the first corner of the window.
- o (P2) - defines the opposite corner of the window.
- o After the second pick, the system draws a highlighted window around the component with the following message displayed on the function screen:

-PICK ENTER OR NEXT TO PROCESS CURRENT WINDOW-

Pick NEXT to free the component(s) defined within the window and to continue the command. The tablet menu remains displayed for additional window definitions. The following message will appear:

-ALL COMPONENTS WITHIN THE WINDOW ARE FREE-

- o Pick ENTER to free the last component(s) defined by the window and to complete the command.

EXAMPLE FREE COMPONENTS BY WINDOW (P1) (P2) NEXT (P1) (P2) ENTER

FREE FUNCTION [SELECT PIN]

COMMAND NAME FREE FUNCTION [SELECT PIN]

PURPOSE To selectively free an IC component logic function on the active board drawing by selecting one pin within the function, prior to using the auto-swapping capability. Free logic functions on the drawing are are available for swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE FREE FUNCTION [SELECT PIN] | -Tablet- (P)... ENTER
Menu

- o (P)- defines and highlights all pins associated with a single logic function.

Additional picks will highlight and free additional logic functions on board components. An improper selection will result in the following error message:

-SELECTED POINT IS NOT A SWAPPABLE FUNCTION-

- o CANCEL will not free the last selected function highlighted on the drawing.
- o Pick ENTER to free the last selected function and to complete the FREE FUNCTION [SELECT PIN] command.

EXAMPLE FREE FUNCTION [SELECT PIN] | (P).... ENTER

Use the LIST FREE FUNCTIONS command to list and verify freeing of the logic functions selected during command.

FREE FUNCTIONS [SELECT COMP]

COMMAND NAME FREE FUNCTIONS BY SELECTING COMPONENT

PURPOSE To free IC component logic functions by selecting a component(s) on the active board drawing. Free functions on IC components are available for auto-swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE FREE FUNCTIONS [SELECT COMP] -Tablet- (P)... ENTER
Menu

- o (P) - defines the first component, with all with all swappable logic functions on the component highlighting. Additional picks will highlight and free swappable functions on additional IC components. A component with highlighted functions will de-highlight when the operator picks additional components.
- o CANCEL will not free highlighted functions on the last selected component.
- o Pick ENTER to free the highlighted logic functions on the last selected component and to complete the command.
- o Use the LIST FREE FUNCTIONS command to list and verify freeing of functions on the components selected during the command.

EXAMPLE FREE FUNCTIONS [SELECT COMP] (P)... ENTER

FREE FUNCTIONS BY WINDOW

COMMAND NAME FREE FUNCTIONS BY WINDOW

PURPOSE To free swappable IC logic functions by defining a window on the drawing, enclosing the logic function(s) to be freed prior to using the auto-swapping capability on the active board drawing. Free IC logic functions are available for swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE FREE FUNCTIONS BY WINDOW -Tablet- (P1) (P2) ENTER
Menu

- o (P1) - defines the first corner of the window.
- o (P2) - defines the opposite corner of the window.
- o After the second pick the system draws a highlighted window on the drawing, with the following message appearing on the function screen:

-PICK ENTER OR NEXT TO PROCESS CURRENT WINDOW-

- o Pick NEXT to free all swappable logic functions within the window and to continue the command with additional window definitions. When NEXT is picked, the system issues the message,

-ALL SWAPPABLE FUNCTIONS WITHIN THE WINDOW ARE FREE-

The tablet menu remains displayed for additional window definitions.

- o Pick ENTER to free all swappable IC logic functions defined by the last window definition and to complete the command. Use the LIST FREE FUNCTIONS command to list and verify the free functions.
- o CANCEL will not free swappable logic functions defined by the current window.

EXAMPLE

FREE FUNCTIONS BY WINDOW (P1) (P2) NEXT (P1) (P2) ENTER

FREE PIN [SELECT PIN]

COMMAND NAME FREE PIN [SELECT PIN]

PURPOSE To free an IC logic function pin by selecting the component pin on the active board drawing prior to using the auto-swapping capability. Free swappable pins on IC components are available for swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE FREE PIN [SELECT PIN] -Tablet- (P).... ENTER
Menu

- o (P) - defines and highlights the selected pin. If the pin selected is not swappable, the system issues the following message:

-SELECTED POINT IS NOT A SWAPPABLE PIN-

Additional picks will highlight and free additional swappable pins on IC component logic functions.

- o CANCEL will not free the last swappable pin highlighted during the command sequence.
- o Pick ENTER to free the last swappable pin highlighted and to complete the command.
- o Use the HILITE FREE PINS ON COMP command to list and verify freeing of the selected pins.

EXAMPLE FREE PIN [SELECT PIN] (P).... ENTER

Result: All swappable logic function pins highlighted during the command are free for auto-swapping during the AUTO-PLACE BOARD command.

FREE PINS BY WINDOW

COMMAND NAME FREE PINS BY WINDOW

PURPOSE To free swappable IC component pins by defining a window on the drawing, enclosing the pins to be freed prior to using the auto-swapping capability. Free logic function pins are available for swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE FREE PINS BY WINDOW | -Tablet- (P1) (P2) | ENTER |
Menu

- o (P1) - defines the first corner of the window.
- o (P2) - defines the opposite corner of the window.
- o After the second pick the system draws a highlighted window on the drawing with the system issuing the following message:

-PICK ENTER OR NEXT TO PROCESS CURRENT WINDOW-

Pick NEXT to free all swappable logic function pins within the defined window on the graphics screen and to continue the command. When NEXT is picked the system issues the following message:

-ALL SWAPPABLE PINS WITHIN THE WINDOW ARE FREE-

The tablet menu remains displayed for additional operator-defined window definitions on the drawing.

- o Pick ENTER to free all swappable pins defined by the last highlighted window and to complete the FIX PINS BY WINDOW command.
- o CANCEL will de-highlight the last operator-defined window, cancelling the processing of that window only.

EXAMPLE FREE PINS BY WINDOW | (P1) (P2) | NEXT | (P1) (P2) | ENTER |

GREEN PRIORITY

COMMAND NAME GREEN PRIORITY

PURPOSE To establish GREEN color priority on the actively displayed drawing. All displayed drawing layers assigned the color GREEN are displayed over other assigned colors (except red) on the drawing.

This feature allows the operator to selectively control priority display of graphic elements, by color on the graphics screen, allowing improved viewing of desired layers on dense drawings.

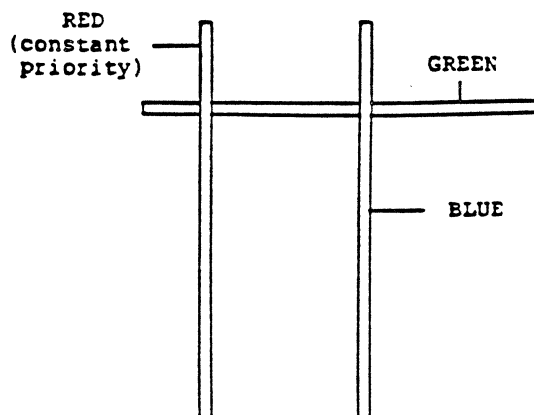
The GREEN PRIORITY command is located on the DISPLAY menu.

INPUT SEQUENCE GREEN PRIORITY

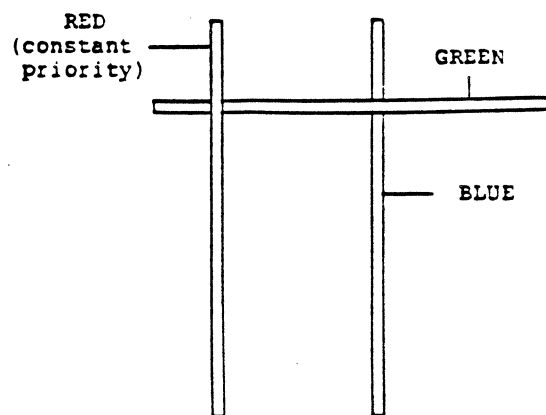
- o When the operator picks GREEN PRIORITY, the system establishes display priority of the color GREEN, over other displayed colors on the drawing. However, red is the constant priority color if assigned and displayed on the drawing.

EXAMPLE GREEN PRIORITY

Current display of intersecting connect-lines



Result



HILITE FIXED COMPONENTS

COMMAND NAME HILITE FIXED COMPONENTS

PURPOSE To highlight fixed components on the active board drawing. Fixed components will not swap during execution of the AUTO-PLACE BOARD command on the placed board drawing.

INPUT SEQUENCE HILITE FIXED COMPONENTS

- o When HILITE FIXED COMPONENTS is picked, the system highlights those components on the active board drawing that were fixed with one of the following commands:

FIX ALL
FIX ALL COMPONENTS
FIX COMPONENT [SELECT]
FIX COMPONENTS BY WINDOW
FIX COMPONENT BY REFDES

- o After all fixed components are highlighted, the the function screen issues the following message:

-PICK PAGE-> OR CANCEL TO CONTINUE-

- o Pick PAGE-> or CANCEL to re-display the FIX/FREE COMPONENTS menu.

EXAMPLE HILITE FIXED COMPONENTS

HILITE FIXED FUNCTIONS

COMMAND NAME HILITE FIXED FUNCTIONS

PURPOSE To highlight fixed IC component logic functions on the active board drawing. Fixed logic functions are not available for automatic swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE HILITE FIXED FUNCTIONS

- o When HILITE FIXED FUNCTIONS is picked, the system highlights the fixed logic functions on each IC component.

The system highlights the pins associated with each fixed function.

- o Fixed functions on the placed board drawing are those that were pre-assigned on the schematic, or text netlist prior to creating the net-data-base, or fixed with one on the following commands:

FIX ALL
FIX ALL FUNCTIONS
FIX FUNCTION [SELECT PIN]
FIX FUNCTIONS [SELECT COMP]
FIX FUNCTIONS BY WINDOW
FIX FUNCTION BY REFDES.PIN #

- o After all fixed functions have been highlighted, the system issues the following message on the function screen:

-PICK PAGE-> OR CANCEL TO CONTINUE-

- o Pick PAGE-> or CANCEL to de-highlight the fixed functions on each IC component, and to re-display the FIX/FREE FUNCTIONS menu.

EXAMPLE HILITE FIXED FUNCTIONS

HILITE FREE COMPONENTS

COMMAND NAME HILITE FREE COMPONENTS

PURPOSE To highlight free components on the active board drawing. Free components are available for auto-swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE HILITE FREE COMPONENTS

- o When HILITE FREE COMPONENTS is picked, the system highlights those components on the active board drawing that were freed with one of the following commands:

FREE ALL
FREE ALL COMPONENTS
FREE COMPONENT [SELECT]
FREE COMPONENTS BY WINDOW
FREE COMPONENT BY REFDES

- o After all free components highlight, the the function screen issues the following message:

-PICK PAGE-> OR CANCEL TO CONTINUE-

- o Pick PAGE-> or CANCEL to de-highlight the free components on the drawing and to re-display the FIX/FREE COMPONENTS menu.

EXAMPLE HILITE FREE COMPONENTS

HILITE FREE FUNCTIONS

COMMAND NAME HILITE FREE FUNCTIONS

PURPOSE To highlight free IC component logic functions on the active board drawing. Free functions are available for automatic swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE HILITE FREE FUNCTIONS

- o When HILITE FREE FUNCTIONS is picked, the system highlights the free logic functions on each IC component.

The system highlights the pins associated with each free function.

- o Free functions on the placed board drawing are those that were unassigned on the schematic, or text netlist prior to creating the net-data-base, or freed with one on the following commands:

FREE ALL
FREE ALL FUNCTIONS
FREE FUNCTION [SELECT PIN]
FREE FUNCTIONS [SELECT COMP]
FREE FUNCTIONS BY WINDOW
FREE FUNCTION BY REFDES.PIN #

- o After all free functions have been highlighted, the system issues the following message on the function screen:

-PICK PAGE-> OR CANCEL TO CONTINUE-

- o Pick PAGE-> or CANCEL to de-highlight the free functions on each IC component, and to re-display the FIX/FREE FUNCTIONS menu.

EXAMPLE HILITE FREE FUNCTIONS

12/84 COMMAND DESCRIPTION

HILITE FREE PINS ON COMP

COMMAND NAME HILITE FREE PINS ON COMPONENT

PURPOSE To highlight free swappable pins on IC component logic functions on the active board drawing. Free swappable pins are available for swapping during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE HILITE FREE PINS ON COMP -Tablet- (P)... ENTER
Menu

- o When the operator picks HILITE FREE PINS ON COMP, then selects a component on the drawing, the system highlights the free pins associated with each logic function. Additional picks will highlight free pins on additional components, with de-highlighting occurring on the previous selections.
- o Free pins on board components are those that were unassigned by the operator on the schematic, or text netlist prior to creating the net data base, or freed with one of the following commands:

FREE ALL
FREE ALL PINS
FREE PINS BY WINDOW
FREE PIN [SELECT PIN]
FREE PIN BY REFDES.PIN #
FREE ALL PINS IN COMPONENT
FREE ALL PINS IN FUNCTION

EXAMPLE HILITE FREE PINS ON COMP -Tablet- (P)... ENTER
Menu

Pick ENTER or CANCEL to terminate the command.

HILITE SWAPPABLE FUNCTIONS

COMMAND NAME HILITE SWAPPABLE FUNCTIONS

PURPOSE To highlight the swappable functions contained within an IC component on the active board drawing. This command may be used to view swappable functions prior to using the SWAP FUNCTIONS command.

INPUT SEQUENCE HILITE SWAPPABLE FUNCTIONS -Tablet-(P)(P)(P)... ENTER
Menu

- o The operator is required to select one pin associated with a single logic function on the component. Proper selection will highlight all swappable logic functions on the component.

- o If the pin selected is not associated with a swappable function, the short message line displays:

-SELECTED POINT IS NOT A SWAPPABLE FUNCTION-

- o Additional pin selections will highlight the swappable functions on other components, if selected by the operator.

- o Pick ENTER to dehighlight the last display of swappable functions on a component, and to terminate the HILITE SWAPPABLE FUNCTIONS command.

EXAMPLE HILITE SWAPPABLE FUNCTIONS - Tablet- (P)(P)(P)... ENTER
Menu

HILITE SWAPPABLE PINS

COMMAND NAME HILITE SWAPPABLE PINS

PURPOSE To highlight all swappable pins associated with a single IC component logic function on the active board drawing. This command may be used to view swappable pins prior to using the SWAP PINS command.

INPUT SEQUENCE HILITE SWAPPABLE PINS -Tablet - (P)(P)(P).. ENTER
Menu

- o The operator is required to select one pin on the component layer function to highlight all swappable pins within the single logic function.

If the pin selected is not a swappable pin, the functions screen message line displays:

-SELECTED POINT IS NOT A SWAPPABLE PIN-

- o Additional picks will highlight the swappable pins of additional logic functions on the same component, or on other components, if selected.
- o Pick ENTER to dehighlight the last display of swappable pins, and to terminate the HILITE SWAPPABLE PINS command.

EXAMPLE HIGHLIGHT SWAPPABLE PINS - Tablet - (P)(P)(P). ENTER
Menu

LIST FIXED COMPONENTS

COMMAND NAME LIST FIXED COMPONENTS

PURPOSE To list on the function screen all currently fixed components on the active board drawing. This is an informational command that may be used to check the fix/free status of components prior to using the auto-swapping capability during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE LIST FIXED COMPONENTS

- o When the LIST FIXED COMPONENTS command is picked, the system lists the assigned reference designator and the device type of each fixed component on the active board drawing.

EXAMPLE LIST FIXED COMPONENTS

Function screen display:

Reference Designator	Device
U8	7408
U7	7486
U6	4072B
U5	4082B
U4	4025B
U3	7430
U2	7413
U1	7400
R1	RES400
C1	CAPAX750

LIST FIXED FUNCTIONS

COMMAND NAME LIST FIXED FUNCTIONS

PURPOSE To list on the function screen all currently fixed IC component logic functions on the active board drawing. This is an informational command that may be used to check the fix/free status of single logic functions prior to using the auto-swapping capability during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE LIST FIXED FUNCTIONS

- o When the LIST FIXED FUNCTIONS command is picked, the system lists the function designator, function slot name, and the assigned reference designator of each component containing fixed functions on the active board drawing.

EXAMPLE LIST FIXED FUNCTIONS

Function screen display:

<u>Function Designator</u>	<u>Function Slot Name</u>	<u>Ref Des</u>
F1	G3	U8
F2	G4	U8
F3	G3	U7
F4	G4	U7
AND4	G4	U1

NOTES FUNCTION DESIGNATORS

If the net data base was created from a schematic drawing, the system assigns a function designator to each logic function slot on components created during the EXTRACT NETLIST command. For example, the system assigned function designator F1 to the function slot named G3 for the component U8. Function designators are simply system-assigned labels for logic functions.

LIST FIXED FUNCTIONS (cont.)

However, if the net data base was created from a text-input netlist containing the \$FUNCTIONS section, the operator-defined function designators specified in the text netlist are assigned to the appropriate component function slots during the LOAD TXT NETLIST command. For example, the operator-defined function designator AND4 specified in the netlist under \$FUNCTIONS is assigned to an available function slot for a particular device (i.e. 7400).

LIST FREE COMPONENTS

COMMAND NAME LIST FREE COMPONENTS

PURPOSE To list on the function screen all currently free components on the active board drawing. This is an informational command that may be used to check the fix/free status of components prior to using the auto-swapping capability during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE LIST FREE COMPONENTS

- o When the LIST FREE COMPONENTS command is picked, the system lists the assigned reference designator and the device type of each free component on the active board drawing.

EXAMPLE LIST FREE COMPONENTS

Function screen display:

Reference Designator	Device
U8	7408
U7	7486
U6	4072B
U5	4082B
U4	4025B
U3	7430
U2	7413
U1	7400
R1	RES400
C1	CAPAX750

LIST FREE FUNCTIONS

COMMAND NAME LIST FREE FUNCTIONS

PURPOSE To list on the function screen all currently free IC component logic functions on the active board drawing. This is an informational command that may be used to check the fix/free status of single logic functions prior to using the auto-swapping capability during execution of the AUTO-PLACE BOARD command.

INPUT SEQUENCE LIST FREE FUNCTIONS

- o When the LIST FREE FUNCTIONS command is picked, the system lists the function designator, function slot name, and the assigned reference designator of each component containing fixed functions on the active board drawing.

EXAMPLE LIST FREE FUNCTIONS

Function screen display:

Function Designator	Function Slot Name	Ref Des
F1	G3	U8
F2	G4	U8
F3	G3	U7
F4	G4	U7
AND4	G4	U1

NOTES FUNCTION DESIGNATORS

If the net data base was created from a schematic drawing, the system assigns a function designator to each function slot on components created during the EXTRACT NETLIST command. For example, the system assigned function designator F1 to the function slot named G3 for the component U8. Function designators are simply system-assigned labels for logic functions.

LIST FREE FUNCTIONS (cont.)

However, if the net data base was created from a text-input netlist containing the \$FUNCTIONS section, the operator-defined function designators specified in the text netlist are assigned to the appropriate component function slots during the LOAD TXT NETLIST command. For example, the operator-defined function designator AND4 specified in the netlist under \$FUNCTIONS is assigned to an available function slot for a particular device (i.e. 7400).

<u>COMMAND NAME</u>	LOAD GERBER DATA
<u>PURPOSE</u>	<p>To instruct the system to begin Gerber artfile reconstruction on the graphics screen. Gerber artfiles (on magnetic tape) generated by another CAD system can be loaded (GERBER FROM TAPE) to the Telesis system. When all prerequisite files have been created, the operator may pick <u>LOAD GERBER DATA</u> to start reconstruction of the Gerber lines and pad indicators on the graphics screen.</p> <p>The reconstructed pad indicators serve as reference points for manual or interactive placement of component symbols.</p>
<u>INPUT SEQUENCE</u>	<p><u>LOAD GERBER DATA</u></p> <ul style="list-style-type: none"> o When <u>LOAD GERBER DATA</u> is picked, the system processes the following prerequisite files with the following messages appearing on the function screen message line: <pre style="margin-left: 40px;"> PROCESSING GERBER-CON FILE PROCESSING APERTURE-TAB PROCESSING PHOTOPLLOT-PAR PROCESSING TAPE1-ART PROCESSING TAPE2-ART > Gerber files loaded PROCESSING TAPE3-ART from tape </pre> o As each artfile begins processing, lines and pad indicators will appear on the graphics screen. Lines will appear on the DBLAYERS specified in the GERBER-CON file, while pad indicators appear on the DBLAYER 109 for all artwork files. o When <u>LOAD GERBER DATA</u> completes processing, the operator may proceed to manually place component symbols at the pad indicators displayed on the graphics screen.

Refer to the POST PROCESSING section of the OPERATOR'S MANUAL for additional information on the prerequisites files, and examples of reconstructed lines and pad indicators used for component placement.

MAX FUNCTION SWAP TIME

COMMAND NAME MAXIMUM FUNCTION SWAP TIME

PURPOSE To specify in the automatic placement parameters
the maximum time (in minutes) to be allowed for
function swapping during execution of the
AUTO-PLACE BOARD command.

INPUT SEQUENCE MAX FUNCTION SWAP TIME (MAX FUN. SWAP TIME IN MINUTES)

-Keyboard- ENTER
Input

- o The keyboard input specifies the maximum number of minutes allowed for function swapping. The keyboard input must be positive; decimal values are not allowed.

DEFAULT VALUE: 60 MINUTES

- o During execution of the AUTO-PLACE BOARD command, function swapping will terminate when the maximum time (if needed) is reached.

EXAMPLE MAX FUNCTION SWAP TIME (MAX FUN SWAP TIME IN MINUTES)

10 ENTER

Result: The system will perform function swapping
for a maximum time of 10 minutes, if needed.

MAX IC SWAP TIME

COMMAND NAME MAXIMUM IC SWAP TIME

PURPOSE To specify in the automatic placement parameters
the maximum time (in minutes) to be allowed for
IC swapping during execution of the AUTO-PLACE BOARD
command.

INPUT SEQUENCE MAX IC SWAP TIME (MAX IC SWAP TIME IN MINUTES)

-Keyboard- ENTER
Input

- o The keyboard input specifies the maximum number of minutes allowed for IC swapping. The keyboard input must be positive; decimal values are not allowed.

DEFAULT VALUE: 60 minutes

EXAMPLE MAX IC SWAP TIME (MAX IC SWAP TIME IN MINUTES)

10 ENTER

Result: The system will run IC swapping for a maximum of 10 minutes, if needed.

MERGE

COMMAND NAME MERGE

PURPOSE To merge the contents of continuation line with the line entry directly above. The result is a single line entry, with the continuation line eliminated.

MERGE is an editing command available on the EDIT DEVICE FILE text leadthru.

INPUT SEQUENCE MERGE

- o The operator must first move the cursor to the line directly above the continuation line.

The MERGE command may then be used to move the contents of the continuation line to the line above.
- o If the cursor is positioned on a line that does not contain a continuation, and if MERGE is picked, the following message is displayed on the function screen:

-THIS LINE DOES NOT CONTAIN A CONTINUATION-

EXAMPLE Existing line displayed on the graphics screen with cursor () displayed:

```
  _ FUNCTION G4 7400 12 13,  
  11
```

MERGE

Resulting line displayed on the graphics screen:

```
  _ FUNCTION G4 7400 12 13 11
```

MERGE DRAWING

COMMAND NAME MERGE DRAWING

PURPOSE To merge the contents of a drawing into the active drawing displayed on the graphics screen.

This command may be used to merge repetitive design circuitry drawings previously created with CREATE DRAWING command.

INPUT SEQUENCE MERGE DRAWING (DRAWING NAME) -Keyboard- ENTER
 -Tablet- (P) ENTER
 Menu

- o The keyboard input is the name of the drawing to be merged. The drawing must exist in the current project file.
- o If the drawing to be merged was created with the CREATE DRAWING command, the light pen cursor will be attached to the center of the drawing. The operator may then select a placement location on the active drawing.

However, if the drawing to be merged was not created with the CREATE DRAWING command, the light pen cursor will be attached to the drawing origin.

- o The active drawing must be large enough to accept the drawing to be merged.
- o If the location picked is undesirable, the operator may pick COOPS! to re-attach the drawing to the light pen cursor.
- o Pick ENTER to merge the drawing to the location selected on the active drawing.

EXAMPLE MERGE DRAWING (DRAWING NAME) MEMORY 1 ENTER (P) ENTER

NOTES Note on the active board drawing:

- o The operator should create a net data base (from schematic or text netlist) that reflects the symbol and net information of the drawing to be merged. That is, when the operator uses the MERGE DRAWING command, the net data base will already have the appropriate net information. After the drawing is merged, the operator may use the UPDATE TEXT command on symbols contained in the merged drawing, then the ASSIGN ALL REFDES command. Interactive, automatic or manual placement may then be used to place the remaining components in the net data base.

COMMAND NAME MERGE MD DRAWING

PURPOSE To merge cross-hatching and dimensioning layers of a mechanical design drawing into an active PC board drawing.

INPUT SEQUENCE MERGE MD DRAWING (ENTER MD DRAWING NAME) -KEYBOARD- ENTER
INPUT

(ENTER CROSS HATCH LINE WIDTH) - KEYBOARD - ENTER
INPUT

- o The PC drawing must be active.
- o The first keyboard input is the MD drawing name. If the drawing name specified does not exist, the system will issue an error message on the function screen message line.
- o The second keyboard input is the cross-hatch line width. Enter the line width, or simply pick ENTER to default to a 0-line width. For example, if 12 is entered as the keyboard input, the cross-hatch line width will be constructed on the PC drawing at 12 mils on LAYER 33.
- o When the command sequence is terminated with ENTER, the system will transfer the contents of the MD cross-hatch layers to LAYER 33, and MD dimensioning layers to LAYER 35 on the active PC board drawing.

EXAMPLE MERGE MD DRAWING (ENTER MD DRAWING NAME) TEST ENTER
(ENTER CROSS HATCH LINE WIDTH) 12 ENTER

- NOTES
1. The existing MD drawing MUST BE THE SAME SIZE as the active board drawing.
 2. Mechanical Design software does not need to exist on the electrical system (PC/ES). An MD drawing may be copied into the same project as the PC drawing prior to using this capability.

METRIC UNITS

COMMAND NAME METRIC UNITS

PURPOSE To specify metric drawing units when opening a new drawing file.

With metric units, one unit is equal to .1 millimeters on drawings opened with the SCHEMATIC DRAWINGS or SCHEMATIC SYMBOLS command; on drawings opened with the BOARD DRAWINGS or BOARD SYMBOLS command, one unit is equal to .01 millimeters.

INPUT SEQUENCE METRIC UNITS

Available drawing sizes on schematic drawings:

<u>SIZE A4</u>	YL-1485	XU 1485
	YL-1050	YU 1050
<u>SIZE A3</u>	XL-2100	XU 2100
	YL-1485	YU 1485
<u>SIZE A2</u>	XL-2970	XU 2970
	YL-2100	YU 2100
<u>SIZE A1</u>	XL-4205	XU 4205
	YL-2970	YU 2970
<u>SIZE A0</u>	XL-5945	XU 5945
	YL-4205	YU 4205

Available drawing sizes on board drawings:

<u>SIZE A4</u>	XL -14850	XU 14850
	YL -10500	YU 10500
<u>SIZE A3</u>	XL -21000	XU 21000
	YL -14850	YU 14850
<u>SIZE A2</u>	XL -29700	XU 29700
	YL -21000	YU 21000

NOTES

Metric board symbols MUST be used on drawings opened with METRIC UNITS command. However, English schematic symbols may be used on a metric schematic drawing, and the reverse.

MOVE COMPONENT

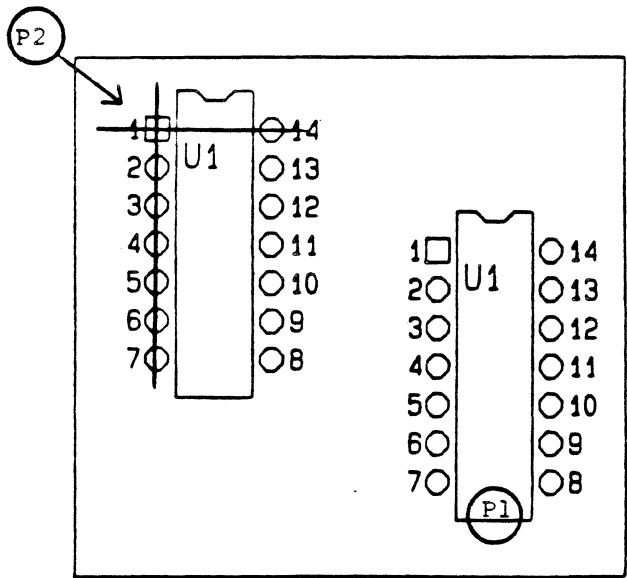
COMMAND NAME MOVE COMPONENT

PURPOSE To move a component from one location to another on a board drawing during INTERACTIVE PLACEMENT.

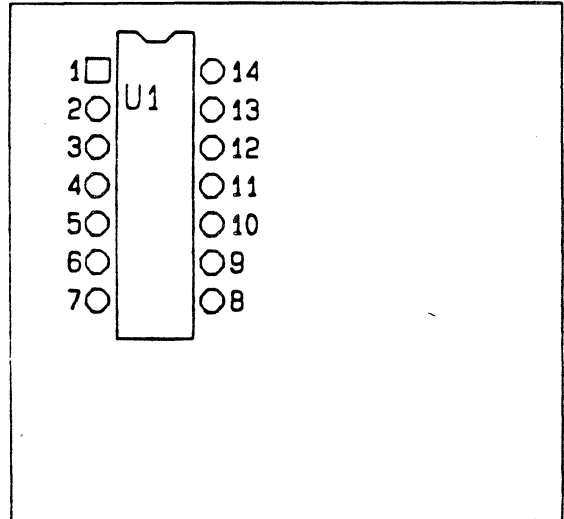
INPUT SEQUENCE |MOVE COMPONENT| -Tablet- (P1) (P2)
Menu

- o (P1) - defines the component to be moved. It may be on any part of the component. The symbol attaches to the cursor, with any ratsnest lines "rubberbanding" to the symbol.
- o (P2) - defines the new board location.

EXAMPLE |MOVE COMPONENT| (P1) (P2)



RESULT



MOVE SYMBOL

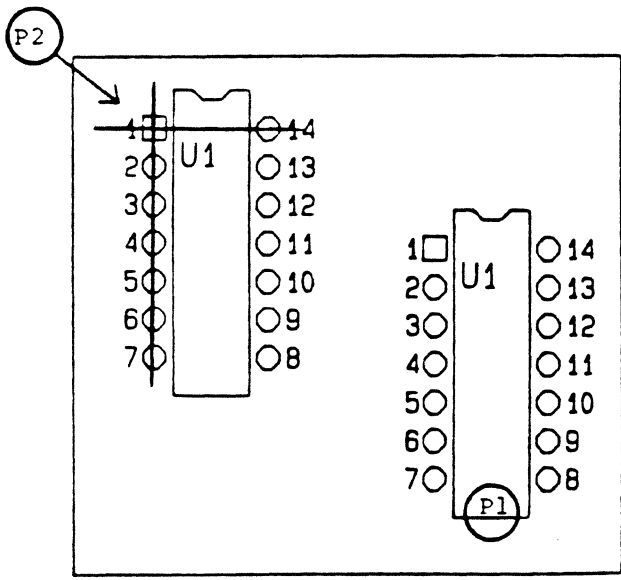
COMMAND NAME MOVE SYMBOL

PURPOSE To move a symbol from one location to another in a drawing.

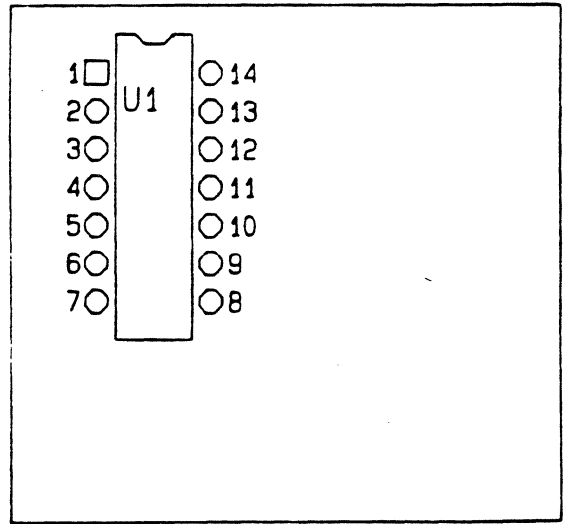
INPUT SEQUENCE |MOVE SYMBOL| (P1) (P2)

- o P1 defines the symbol to be moved. It may be on any part of the symbol. The symbol attaches to the cursor, with any ratsnest lines "rubberbanding" to the symbol.
- o P2 defines the new location.

EXAMPLE |MOVE SYMBOL| (P1) (P2)



RESULT



PRINT BOM-REPORT

COMMAND NAME PRINT BILL-OF-MATERIALS REPORT

PURPOSE To print the current project's BILL-OF-MATERIALS
_____ report file.

INPUT SEQUENCE | PRINT BOM-REPORT |

PRINT COMPONENT-REPORT

COMMAND NAME PRINT COMPONENT-REPORT

PURPOSE To print the current project's COMPONENT-REPORT
_____ file.

INPUT SEQUENCE PRINT COMPONENT-REPORT

PRINT EXTRACTION-LOG

COMMAND NAME PRINT EXTRACTION-LOG

PURPOSE To print the current project's netlist EXTRACTION-LOG file.

INPUT SEQUENCE |PRINT EXTRACTION-LOG|

PRINT NCDRILL-LOG

COMMAND NAME PRINT NCDRILL-LOG

PURPOSE To print the current project's NCDRILL-LOG text
_____ file.

INPUT SEQUENCE PRINT NCDRILL-LOG

PRINT NETLIST-REPORT

COMMAND NAME PRINT NETLIST-REPORT

PURPOSE To print the current project's list-by-nets report
_____ generated by the CREATE NETLIST-REPORT command.

INPUT SEQUENCE PRINT NETLIST-REPORT

12/84 COMMAND DESCRIPTION

PRINT NET-COMPARE-REPORT

COMMAND NAME PRINT NET-COMPARE-REPORT

PURPOSE To print the current project's NET-COMPARE-REPORT
file.

INPUT SEQUENCE PRINT NET-COMPARE-REPORT

REDRAW WORLD

COMMAND NAME REDRAW WORLD

PURPOSE To redraw the current WORLD view previously defined by the NEW WORLD command. The REDRAW WORLD command simply refreshes displayed graphics after interactive editing.

INPUT SEQUENCE REDRAW WORLD

RELOCATE DRAWING ORIGIN

COMMAND NAME RELOCATE DRAWING ORIGIN

PURPOSE To relocate the origin (0,0) of the actively displayed drawing by selecting a point on the drawing with the light pen, or by specifying explicit X,Y coordinates on the keypad menu.

INPUT SEQUENCE RELOCATE DRAWING ORIGIN -Tablet- (P) ENTER
Menu

- o With the tablet menu displayed, select a point on the drawing to define the location of the new drawing origin. When the point is selected, the function screen issues the following message:

-PICK ENTER TO ACCEPT NEW ORIGIN OR PICK OOPS!
OR CANCEL-

- o If ENTER is picked, the system will relocate the drawing origin to the point selected. The system will issue the following messages on the function screen:

-RELOCATE ORIGIN STARTED-
-RELOCATE ORIGIN COMPLETE-

- o The operator may use the keypad to define explicit X,Y drawing coordinates for the new origin location. For example,

RELOCATE DRAWING ORIGIN -Tablet- Keypad
Menu
X1000Y1000, ENTER

When specifying explicit coordinates, follow the the last input with a comma (,) prior to picking ENTER. A comma provides the capability to OOPS! or CANCEL if the resulting cross-hair displayed on the graphics screen is located at an undesirable location.

EXAMPLE RELOCATE DRAWING ORIGIN -Tablet- (P) ENTER
Menu

RESET PRIORITY

COMMAND NAME RESET PRIORITY

PURPOSE To reset display priority of assigned colors on the actively displayed drawing.

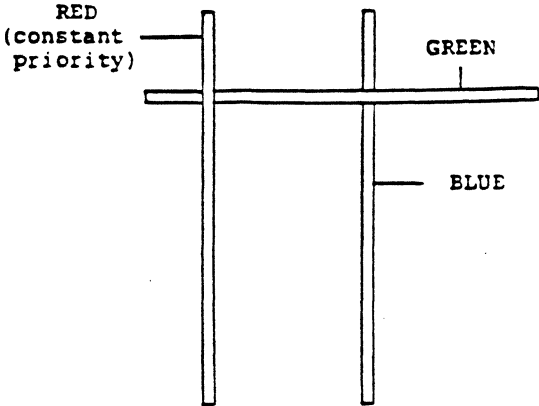
The RESET PRIORITY command is located on the DISPLAY menu. Color priority allows the operator to selectively control priority display of graphic elements, by color, for improved viewing of desired elements on dense drawings.

INPUT SEQUENCE RESET PRIORITY

- o When the operator picks RESET PRIORITY, the system re-establishes the color BLUE as the priority color on the drawing, with RED maintaining the highest priority (constant).

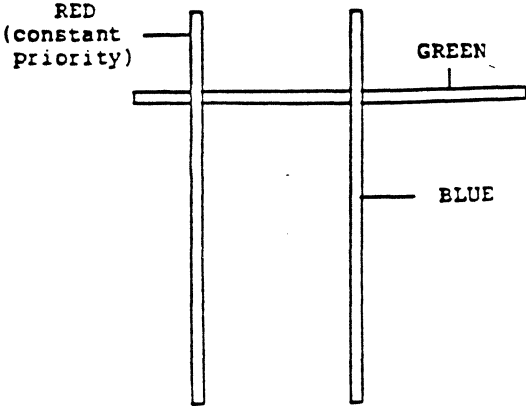
EXAMPLE RESET PRIORITY

Current display



Intersecting connect-lines

Result



The color BLUE is reset to priority.

ROAMSPACE=WORLD

COMMAND NAME ROAMSPACE=WORLD

PURPOSE To fit the entire drawing into the roamspace after using the DRAWING=WORLD command. The window is re-established in the center of the roamspace.

INPUT SEQUENCE ROAMSPACE=WORLD

ROUTER LINE WIDTH

COMMAND NAME ROUTER LINE WIDTH

PURPOSE To specify the line width to be used during automatic routing.

INPUT SEQUENCE |ROUTER LINE WIDTH| (DEFAULT ROUTING LINE WIDTH)

-Keyboard Input |ENTER|

- o The keyboard input is the line width in mils.
 Decimal values and values less than 1 are not allowed.
- o DEFAULT VALUE: 12

COMMAND NAME

SAVE EXECUTE FILE SAME REVISION

PURPOSE

To save the active execute file without specifying a new revision label.

INPUT SEQUENCE

SAV EXEC SAM RV

- o If a new execute file was created without a revision label, the system assigns revision "1" to the file.
- o If an existing execute file was opened, then edited, the system deletes the old file. The edited file is saved with the same revision label assigned to the old file.

SAVE DRW SAME RV & CONTINUE

COMMAND NAME SAVE DRAWING SAME REVISION AND CONTINUE

PURPOSE To intermittently save and continue with the actively
displayed drawing on the graphics screen.

INPUT SEQUENCE SAVE DRW SAME RV & CONTINUE

- o If the drawing was opened with the NEW DRAWING command, the system will store it with the revision label "1".
- o If the drawing was opened with the OLD DRAWING command, the system will store it with its current revision label, deleting the contents of the OLD DRAWING.
- o The drawing remains active for additional editing.

SET TEXT INCREMENT (cont.)

EXAMPLE 2 SET TEXT INCREMENT (INCREMENT) 2 ENTER

UPDATE TEXT 1A ENTER P1 P2 P3 P4

Result: 1A 1C 1E 1G

NOTES

If the rightmost characters of the string are neither numbers or letters, the system searches left until it finds a number or letter to increment.

If the text string does not contain numbers or letters, the system will not increment the text string.

If the increment field is alphabetic, the letters cycle through the normal rules of succession: A->Z, Z->A as the overflow.

EXAMPLE: B3ZZ → B3AAA

The current text increment value is shown in the STATUS display on the function screen.

SCHEMATIC DRAWINGS

COMMAND NAME SCHEMATIC DRAWINGS

PURPOSE To flip to the menu set used for creating new
schematic drawings, or editing existing ones.

INPUT SEQUENCE SCHEMATIC DRAWINGS

SCHEMATIC SYMBOLS

COMMAND NAME SCHEMATIC SYMBOLS

PURPOSE To flip to the menu set used for creating new
_____ schematic symbols, or editing existing ones.

INPUT SEQUENCE SCHEMATIC SYMBOLS

SELF LOAD

COMMAND NAME SELF LOAD

PURPOSE To load the latest revision of Telesis software on
_____ the system.

Refer to the Telesis Loading Instructions provided
with the software media for detailed data on the
SELF LOAD command.

SET TXT PARAM

COMMAND NAME SET TEXT PARAMETERS

PURPOSE To flip to the menu page containing the commands used to set text parameters.

INPUT SEQUENCE |SET TXT PARAM|

- o The following commands are located on the |SET TXT PARAM| menu:

SET CHAR HT	SET TEXT INCREMENT
SET CHAR WIDTH	SET LINE SPACING
SET CHAR SPACE	SET TXT LINE ANG
SET CHAR SLANT	RIGHT JUST TEXT
SET TXT PNT SIZE	CENTER JUST TEXT
	LEFT JUST TEXT
	EXECUTE MENU
	MIRROR OFF
	MIRROR ON
	LIST ELEMENT

SIZE A0

COMMAND NAME SIZE A0

PURPOSE To specify the metric drawing size A0 when opening new
metric schematic and metric schematic symbol drawings.
With metric schematic and symbol drawings, one unit
is equal to .1 millimeters.

The SIZE A0 drawing size is,

XL-5945	XU 5945
YL-4205	YU 4205

INPUT SEQUENCE SIZE A0

SIZE A1

COMMAND NAME SIZE A1

PURPOSE To specify the metric drawing size A1 when opening new
metric schematic and metric schematic symbol drawings.
With metric schematic and symbol drawings, one unit
is equal to .1 millimeters.

The SIZE A1 drawing size is,

XL-4205	XU 4205
YL-2970	YU 2970

INPUT SEQUENCE SIZE A1

SIZE A2

COMMAND NAME SIZE A2

PURPOSE To specify the metric drawing size A2 when opening
new metric schematic, board, and symbol drawings.
With metric schematic or symbol drawings, one unit
is equal to .1 millimeters. With board drawings or
board symbols, one unit is equal to .01 millimeters.

The SIZE A2 drawing size for schematic drawings:

XL-2970	XU 2970
YL-2100	YU 2100

The SIZE A2 drawing size for board drawings:

XL-29700	XU 29700
YL-21000	YU 21000

INPUT SEQUENCE SIZE A2

SIZE A3

COMMAND NAME SIZE A3

PURPOSE To specify the metric drawing size A3 when opening
new metric schematic, board, and symbol drawings.
With metric schematic or symbol drawings, one unit
is equal to .1 millimeters. With board drawings or
board symbols, one unit is equal to .01 millimeters.

The SIZE A3 drawing size for schematic drawings:

XL-2100	XU 2100
YL-1485	YU 1485

The SIZE A3 drawing size for board drawings:

XL-21000	XU 21000
YL-14850	YU 14850

INPUT SEQUENCE SIZE A3

SIZE A4

COMMAND NAME SIZE A4

PURPOSE To specify the metric drawing size A4 when opening
new metric schematic, board and symbol drawings.
With metric schematic or symbol drawings, one unit
is equal to .1 millimeters. With board drawings or
board symbols, one unit is equal to .01 millimeters.

The SIZE A4 drawing size for schematic drawings:

XL-1485	XU 1485
YL-1050	YU 1050

The SIZE A4 drawing size for board drawings:

XL-14850	XU 14850
YL-10500	YU 10500

INPUT SEQUENCE SIZE A4

STATUS MESSAGE FREQUENCY

COMMAND NAME STATUS MESSAGE FREQUENCY

PURPOSE To specify how frequently routing completion status is to be displayed on the function screen message line.

INPUT SEQUENCE |STATUS MESSAGE FREQUENCY| (# ROUTE ATTEMPTS/STATUS MESSAG)

-Keyboard Input |ENTER|

- o The keyboard input specifies the frequency of messages to be displayed on the function screen. A value of 10 indicates that the message is to be written every 10 connection attempts. If the operator specifies a value of 0 for this parameter, no status messages will be written.

FORMAT:

P5-2: COMPLETES=XX FAILS=XX SKIPS=XX REMAINS=XX

- o P5-2 indicates PASS 5 execution 2. The execution number is only shown during PASS 5 since PASS 1 and PASS 2 only have one execution.
- o COMPLETES= - specifies the number of completed connections per pass execution.
- o FAILS= - specifies the number of failed connections per pass execution.
- o SKIPS= - specifies the number of skipped connections.
- o REMAINS= - specifies the number of remaining connections to be attempted in the pass executions.

- o DEFAULT VALUE: 10

EXAMPLE

|STATUS MESSAGE FREQUENCY| (#ROUTE ATTEMPTS/STATUS MESSAG) 5 |ENTER|

SWAP COMPONENTS

COMMAND NAME SWAP COMPONENTS

PURPOSE To interactively swap components on the active board drawing. The SWAP COMPONENTS command is located within the INTERACTIVE PLACEMENT menus. Component swapping allows the operator to improve placement of components to shorten and straighten ratsnest connect-lines for increased auto-routing completion.

INPUT SEQUENCE SWAP COMPONENTS -Tablet - (P1) (P2) ENTER
Menu

- o (P1) - defines and highlights the first component to be swapped.
- o (P2) - defines and highlights the second component to be swapped.
- o When ENTER is picked, the system dehighlights each component, then swaps the components. The system reconstructs ratsnest connect-lines on the drawing, maintaining the correct net information for the swapped components.

Swapped components are placed at the symbol origin locations maintained by each component, prior to swapping. For example, if swapping an IC component with a DISCRETE component, the system places the IC symbol origin at the origin location previously held by the DISCRETE, and the reverse.

EXAMPLE SWAP COMPONENTS -Tablet - (P1) (P2) ENTER
Menu

SWAP COMPONENTS BY REFDES

COMMAND NAME SWAP COMPONENTS BY REFDES

PURPOSE To interactively swap components on the active board drawing by specifying the reference designator of each component to be swapped. Component swapping allows improvement of ratsnest connect-lines for increased completion percentage during automatic routing.

INPUT SEQUENCE SWAP COMPONENTS BY REFDES
 (REFDES OF FIRST COMPONENT) -Keyboard Input- ENTER
 (REFDES OF SECOND COMPONENT) -Keyboard Input- ENTER

- o The first keyboard input is the reference designator of the first component to be swapped.
- o The second keyboard input is the reference designator of the second component to be swapped.
- o When ENTER is picked, the system dehighlights each component, then swaps the components. The system reconstructs ratsnest connect-lines on the drawing, maintaining the correct net information for the swapped components.

Swapped components are placed at the symbol origin locations maintained by each component, prior to swapping. For example, if swapping an IC component with a DISCRETE component, the system places the IC symbol origin at the origin location previously held by the DISCRETE, and the reverse.

EXAMPLE SWAP COMPONENTS BY REFDES
 (REFDES OF FIRST COMPONENT) U1 ENTER
 (REFDES OF SECOND COMPONENT) U7 ENTER

SWAP FUNCTIONS

COMMAND NAME SWAP FUNCTIONS

PURPOSE To interactively swap IC component logic functions on the active board drawing. The function swapping capability allows the operator to selectively swap identical functions within a device, or with other devices containing the same functions (i.e multiple instances of the device 7400). That is, functions may be swapped between components of the same device type. Function swapping allows improvement of ratsnest connect-lines for increased completion during automatic routing.

INPUT SEQUENCE |SWAP FUNCTIONS| -Tablet - (P1) (P2) |ENTER|
Menu

- o (P1) - defines the first function to be swapped. Select one pin on the component to highlight all pins associated with the logic function.

If the pin selected is not associated with a swappable function, the function screen message line displays:

SELECTED POINT IS NOT A SWAPPABLE FUNCTION

- o (P2) - defines the second function to be swapped. Select a pin on the component to highlight the pins contained in that function.

If the pin selected is not associated with a swappable function, the function screen message line displays:

SELECTED FUNCTION NOT SWAPPABLE WITH FIRST FUNCTION

- o Pick |ENTER| to swap the functions selected.
- o During swapping, the system reconstructs ratsnest connect-lines, maintaining the correct net information for each function.

EXAMPLE |SWAP FUNCTIONS| - Tablet - (P1) (P2) |ENTER|
Menu

COMMAND NAME SWAP FUNCTIONS BY REFDES.PIN NUMBER

PURPOSE To interactively swap IC component logic functions on the active board drawing by specifying the component reference designators, and pin numbers associated with the functions to be swapped. The function swapping capability allows the operator to selectively swap identical functions within a device, or with other devices containing the same functions (i.e multiple instances of the device 7400). That is, functions may be swapped between components of the same device type. Function swapping allows improvement of ratsnest connect-lines for increased completion during automatic routing.

INPUT SEQUENCE SWAP FUNCTIONS BY REFDES.PIN #
 (REFDES.PIN # OF FIRST FUNCTION) - Keyboard - ENTER
 Input
 (REFDES.PIN # OF SECOND FUNCTION) -Keyboard - ENTER
 Input

- o The first keyboard input is the reference designator of the component, and one pin number contained in the function to be swapped.
- o The second keyboard input is the reference designator of the component, and one pin number contained in the function to be swapped.
- o When ENTER is picked, the system swaps the functions specified by the reference designators and pin numbers.
- o During swapping, the system reconstructs ratsnest connect-lines, maintaining the correct net information for each function.

EXAMPLE SWAP FUNCTION BY REFDES.PIN #
 (REFDES.PIN# OF FIRST FUNCTION) U1.1 ENTER
 (REFDES.PIN# OF SECOND FUNCTION) U1.8 ENTER

RESULT: The single logic function associated with the component U1, pin 1, is swapped with the function associated with pin 8 on the same component. The system reconstructs ratsnest connect-lines, maintaining the correct net information for each function.

SWAP PINS

COMMAND NAME SWAP PINS

PURPOSE To interactively swap pins within an IC component logic function on the active board drawing. Pin swapping allows improvement of ratsnest connect-lines for increased completion during automatic routing.

INPUT SEQUENCE | SWAP PINS | -Tablet - (P1) (P2) | ENTER |

- o (P1) - defines the first swappable pin within the logic function. The selected pin highlights on the component.
- o (P2) - defines the second swappable pin within the logic function. The selected pin highlights on the component.
- o If the pin selected is not a swappable pin, the function screen message line displays:

SELECTED POINT IS NOT A SWAPPABLE PIN

- o Pick | ENTER | to swap the selected pins. During swapping, the system reconstructs ratsnest connect-lines, maintaining the correct net information for each pin.

EXAMPLE | SWAP PINS | -Tablet - (P1) (P2) | ENTER |

SYMBOL CONVERSION

COMMAND NAME SYMBOL CONVERSION

PURPOSE To flip to the menu set used to open a new, temporary drawing in the current project for board symbol editing, pad graphics conversion, and bundling.

Bundling reduces the number of data base identifiers (DBIDs) in a symbol by combining the pad graphics, connect-points and pin numbers for increased available disk space on the system.

INPUT SEQUENCE |SYMBOL CONVERSION|

- o When |SYMBOL CONVERSION| is picked, the operator must specify the desired drawing size, then the name of the new, temporary drawing. The |CONVERT SYMBOLS| command may then be used to open a new menu set, allowing the operator to add an existing board symbol to the drawing for editing with the |CHANGE PAD GRAPHICS| command.

The |CHANGE PAD GRAPHICS| command presents the following command options:

PAD=CIRCLE	PAD=SQUARE
PAD=RECTANGLE	PAD=OBLONG
PAD=HEXAGON	PAD=OCTAGON
PAD=DIAMOND	PAD=POINT

Refer to the |CHANGE PAD GRAPHICS| command description for additional information on using the command.

- o After changing the pad graphics of the symbol with the above options, a bundled version of the symbol may be created with the |CREATE CONVERTED SYMBOL| command.

SYMBOL CONVERSION (cont.)

When CREATE CONVERTED SYMBOL is complete, the edited symbol shown on the graphics screen will disappear. The operator may then proceed to add and convert additional symbols. Symbols that are created with the CREATE CONVERTED SYMBOL command will appear in the current project directory, with a SYMBOL-LOG file.

- o When finished, the operator must use the CANCEL ACTV DRW command on the active drawing.

NOTES

The command sequence for SYMBOL CONVERSION is as follows:

SYMBOL CONVERSION
A SIZE, B SIZE....
NEW DRAWING NAME
CONVERT SYMBOLS
ADD SYMBOL
CHANGE PAD GRAPHICS
CREATE CONVERTED SYMBOL
CANCEL ACTV DRW

COMMAND NAME TO ELECTRICAL SYSTEM

PURPOSE To change the currently active mechanical design system (MD) to an electrical design system (PC/ES).

INPUT SEQUENCE TO ELECTRICAL SYSTEM

- o This command is located on the OLD PROJECT/NEW PROJECT menu.
- o Electrical Design software (PC/ES) must be loaded on the system prior to using the TO ELECTRICAL SYSTEM command.

COMMAND NAME TO MD SYSTEM

PURPOSE To change the currently active electrical (PC/ES) system to a mechanical design system (MD).

INPUT SEQUENCE |TO MD SYSTEM|

- o This command is located on the OLD PROJECT/NEW PROJECT menu.
- o Mechanical Design software must be loaded on the system prior to using the |TO MD SYSTEM| command.

TOP

COMMAND NAME TOP

PURPOSE To move the graphics screen cursor to the top of a PINORDER section, or to the top of the file when using the EDIT DEVICE FILE text leadthru.

INPUT SEQUENCE |TOP|

- o If the PINORDER section is highlighted with the asterisk (*) display, the cursor moves from its current position to the PINORDER line when |TOP| is picked.
- o If the PINORDER section is not highlighted, |TOP| will position the graphics screen cursor to the first line of the file.

UNBLANK

COMMAND NAME UNBLANK

PURPOSE To re-display all assigned colors and their assigned layers, previously blanked on the active drawing with commands from the DISPLAY menu: BLANK, BLANK RED, BLANK BLUE, BLANK GREEN, BLANK YELLOW, BLANK VIOLET.

INPUT SEQUENCE UNBLANK

- o The UNBLANK command is located on the softkey line of the DISPLAY menu on Telesis 2.1 systems. These systems have the graphics processor for the WORLD, ROAM and DISPLAY softkeys.
- o When the operator picks UNBLANK, the system re-displays all assigned colors and their assigned layers, previously blanked with one of the following commands:

BLANK
BLANK RED
BLANK BLUE
BLANK GREEN
BLANK YELLOW
BLANK VIOLET

UNDELETE

COMMAND NAME UNDELETE

PURPOSE To restore the last deleted line or section from
a device description file when using the
TEXT LEADTHRU capability.

INPUT SEQUENCE UNDELETE

- o The system will restore the last deleted line or section to the line directly below the current cursor position, regardless of the previous line or section location in the file.

UP

COMMAND NAME UP

PURPOSE To move the graphics screen cursor up one line, or
_____ up one section, when using the EDIT DEVICE FILE
text leadthru.

INPUT SEQUENCE UP

- o If the PINORDER section is highlighted with the asterisk (*) display, the cursor can only be moved within the section.
- o Pick DONE to erase the asterisk display prior to moving the cursor up additional lines outside of the PINORDER section.

VIOLET PRIORITY

COMMAND NAME VIOLET PRIORITY

PURPOSE To establish VIOLET color priority on the actively displayed drawing. All drawing layers assigned the color VIOLET will be displayed over other assigned colors (except RED) on the drawing.

This feature allows the operator to selectively control priority display of graphic elements, by color, allowing improved viewing of desired layers on dense drawings.

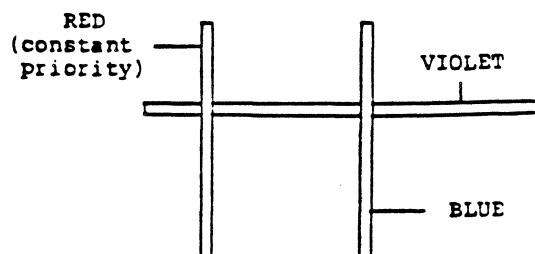
The VIOLET PRIORITY command is located on the DISPLAY menu.

INPUT SEQUENCE VIOLET PRIORITY

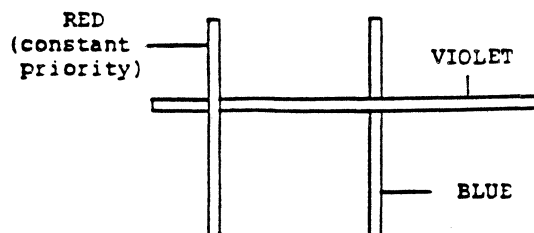
- o When the operator picks VIOLET PRIORITY, the system establishes display priority of the color VIOLET over other displayed colors on the drawing. However, RED is the constant priority color, if assigned and displayed on the drawing.

EXAMPLE VIOLET PRIORITY

Current display of connect-lines:



Result:



The color VIOLET is set to priority over BLUE, with RED remaining constant.

WINDOW=WORLD

COMMAND NAME WINDOW=WORLD

PURPOSE To automatically define a window on the active
drawing equal to the roamspace established by
WINDOW=WORLD command.

WINDOW=WORLD may be used to fit the entire drawing
within the window. This command allows the operator
to create a window large enough so that the entire
drawing may be plotted, if the graphics displayed in
the drawing extend to the roamspace definition.

INPUT SEQUENCE WINDOW=WORLD

YELLOW PRIORITY

COMMAND NAME YELLOW PRIORITY

PURPOSE To establish **YELLOW** color priority on the actively displayed drawing. All drawing layers assigned the color **YELLOW** will be displayed over other assigned colors (except **RED**) on the drawing.

This feature allows the operator to selectively control priority display of graphic elements, by color, allowing improved viewing of desired layers on dense drawings.

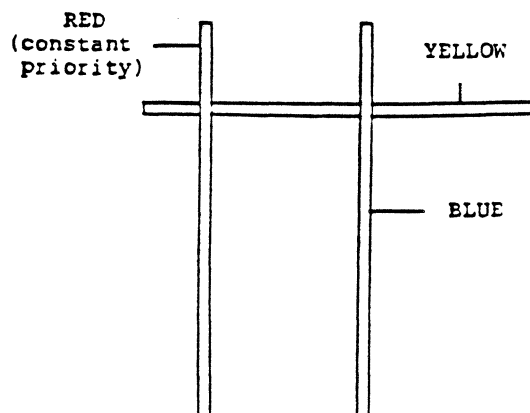
The YELLOW PRIORITY command is located on the **DISPLAY** menu.

INPUT SEQUENCE YELLOW PRIORITY

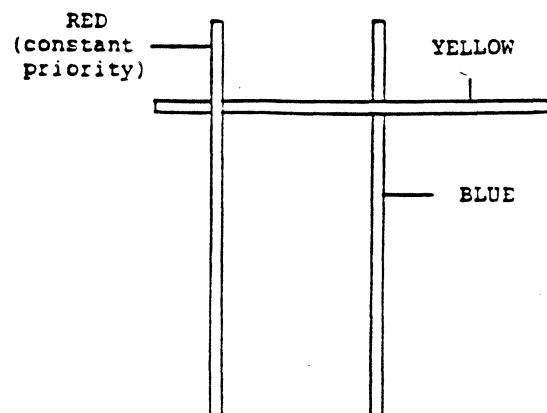
- o When the operator picks YELLOW PRIORITY, the system establishes display priority of the color **YELLOW** over other assigned colors on the drawing. However, **RED** is the constant priority color, if assigned and displayed on the drawing.

EXAMPLE YELLOW PRIORITY

Current display of connect-lines:



Result:



The color **YELLOW** is set to priority over **BLUE**, with **RED** remaining constant.

ZOOM:1

COMMAND NAME ZOOM:1

PURPOSE To refresh the current window display on the active
_____ drawing.

INPUT SEQUENCE |ZOOM:1|

- o The |ZOOM:1| command is located on the softkey line of the |DISPLAY| menu on Telesis 2.1 systems; these systems have the graphics processor for the |WORLD|, |ROAM|, and |DISPLAY| softkeys.

1ST LINE

COMMAND NAME FIRST LINE

PURPOSE To position the graphics screen cursor to the first
_____ line of the device description file when using the
 |EDIT DEVICE FILE| text leadthru.

INPUT SEQUENCE |1ST LINE|

KEYPAD COMMAND: CLEAR FINDS

COMMAND NAME

CLEAR FINDS

PURPOSE

To cancel any FIND commands you have activated during a command.

INPUT SEQUENCE

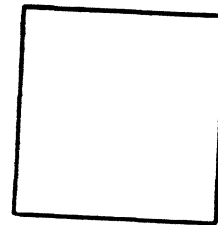
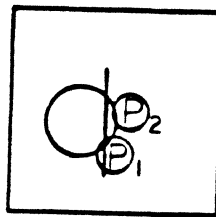
. . . | CLEAR FINDS | . . .

EXAMPLE

| DELETE ELEMENT | | KEYPAD | | FIND LINE | | TABLET | | P₁ | | KEYPAD |
| CLEAR FINDS | | TABLET | | P₂ | | ENTER |

ACTION

RESULT



COMMAND NAME

FIND ARC

PURPOSE

Used with commands that must find elements (e.g., MOVE ELEMENT, COPY, DELETE ELEMENT) to instruct the system to look for an arc when you \textcircled{P} the element you want edited. Use it when you have more than one type of element within the trap area.

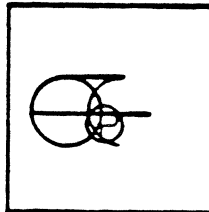
INPUT SEQUENCE. . . FIND ARC . . .

- This command may be used in combination with other FIND commands. For example, if you want to edit arcs and lines only, pick FIND ARC and FIND LINE. A maximum of 4 FIND commands may be activated during one command.
- This command functions for the duration of the command with which you are using it.

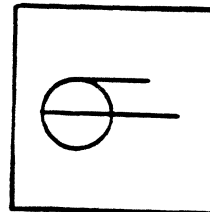
EXAMPLE

DELETE ELEMENT | KEYPAD | FIND ARC | TABLET | \textcircled{P} | ENTER

ACTION



RESULT



COMMAND NAME

FIND CONNECT POINT

PURPOSE

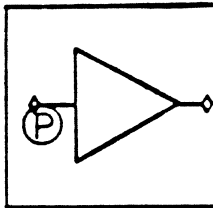
Used with commands that must find elements (e.g., MOVE ELEMENT, COPY, DELETE ELEMENT) to instruct the system to look for a connect point when you (P) the element you want edited. Use it when you have more than one type of element within your trap area.

INPUT SEQUENCE. . . FIND CPOINT . . .

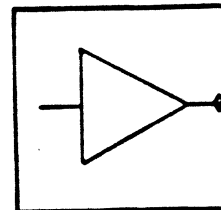
- This command may be used in combination with other FIND commands. For example, if you want to edit connect points and text points only, pick FIND CPOINT and FIND TPOINT. A maximum of 4 FIND commands may be activated during one command.
- This command functions for the duration of the command with which you are using it.

EXAMPLEDELETE ELEMENT KEYPAD FIND CPOINT TABLET (P) ENTER

ACTION



RESULT



COMMAND NAME

FIND LINE/CONNECT LINE

PURPOSE

Used with commands that must find elements (e.g., MOVE ELEMENT, COPY, DELETE ELEMENT) to instruct the system to look for a connect line when you (P) the element you want edited. Use it when you have more than one type of element within your trap area.

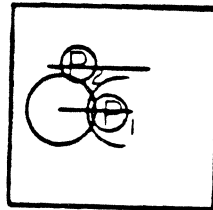
INPUT SEQUENCE. . . FIND LIN/CLINE . . .

- . This command may be used in combination with other FIND commands. For example, if you want to edit lines and arcs only, pick LIN/FIND CLINE and FIND ARC. A maximum of 4 FIND commands may be activated during one command.
- . This command functions for the duration of the command with which you are using it.

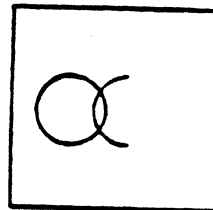
EXAMPLE

DELETE ELEMENT | KEYPAD | FIND LIN/CLINE | TABLET | (P₁)(P₂) | E

ACTION



RESULT



COMMAND NAME

FIND SYMBOL

PURPOSE

Used with commands that must find elements (e.g., MOVE SYMBOL, COPY, DELETE SYMBOL) to instruct the system to look for a symbol when you \textcircled{P} the element you want edited. Use it when you have more than one type of element within your trap area.

INPUT SEQUENCE

. . . FIND SYMBOL . . .

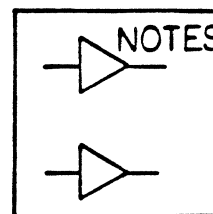
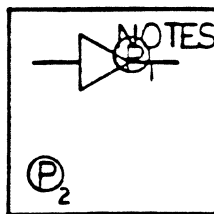
- . This command may be used in combination with other FIND commands. For example, if you want to copy symbols and connect lines only, pick FIND SYMBOL and FIND CLINE. A maximum of 4 FIND commands may be activated during one command.
- . This command functions for the duration of the command with which you are using it.

EXAMPLE

COPY ELEMENT | KEYPAD | FIND SYMBOL | TABLET | \textcircled{P}_1 | \textcircled{P}_2 | ENTER

ACTION

RESULT



COMMAND NAME

FIND TEXT POINT

PURPOSE

Used with commands that must find elements (e.g., MOVE ELEMENT, COPY, DELETE ELEMENT) to instruct the system to look for a text point when you (P) the element you want edited. Use it when you have more than one type of element within your trap area.

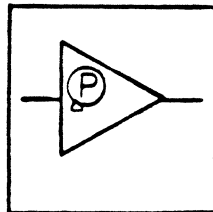
INPUT SEQUENCE. . . FIND TPOINT . . .

- . This command may be used in combination with other FIND commands. For example, if you want to edit text points and connect points only, pick FIND TPOINT and FIND CPOINT. A maximum of 4 FIND commands may be activated during one command.
- . This command functions for the duration of the command with which you are using it.

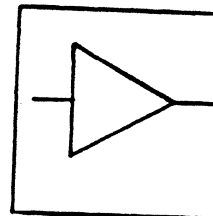
EXAMPLE

DELETE ELEMENT | KEYPAD | FIND TPOINT | TABLET | (P) | ENTER

ACTION



RESULT



COMMAND NAME

HORIZONTAL

PURPOSE

To direct the system to place your next (P) horizontal with your last (P). Used only with other commands. This command only affects the (P) that follows it.

INPUT SEQUENCE

. . . | HORIZONTAL | . . .

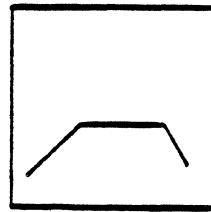
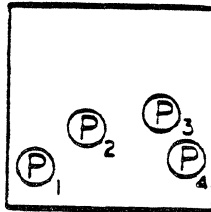
- You may repeat the | HORIZONTAL | command before each (P) that you wish to place horizontal with the last (P).

EXAMPLE

ADD CONNECTION | (P)₁ (P)₂ | KEYPAD | | HORIZONTAL | | TABLET
 (P)₃ (P)₄ | ENTER |

ACTION

RESULT



COMMAND DESCRIPTION

COMMAND NAME

INCREMENT X

PURPOSE

Used when inputting coordinate values from the KEYPAD in order to inform the system that your next input is an incremental change from the last X value rather than an absolute X value. This command only affects the value that follows it.

INPUT SEQUENCE

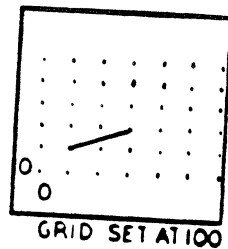
. . . - keypad - INCREMENT X - keypad - . . .
input input

- . You may repeat the INCREMENT X command before each X value that you wish to input incrementally.

EXAMPLE

ADD LINE	X	1	0	0	Y	1	0	0	,	INCREMENT X	2	0	0
					INCREMENT Y	1	0	0		ENTER			

RESULT



COMMAND NAME

INCREMENT Y

PURPOSE

Used when inputting coordinate values from the KEYPAD in order to inform the system that your next input is an incremental change from the last X value rather than an absolute X value. This command only affects the value that follows it.

INPUT SEQUENCE

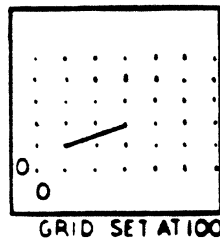
. . . - keypad - INCREMENT Y - keypad - . . .
input input

- . You may repeat the INCREMENT Y command before each Y value that you wish to input incrementally.

EXAMPLE

ADD LINE | X | 1 | 0 | 0 | Y | 1 | 0 | 0 | , | INCREMENT X | 2 | 0 | 0 |
INCREMENT Y | 1 | 0 | 0 | ENTER

RESULT



COMMAND NAME

RELEASE GRID

PURPOSE

To release the snap grid in order to place a (P) on coordinates other than a grid point. Used only with other commands. This command only affects the first (P) that follows it.

INPUT SEQUENCE

... |RELEASE GRID| ...

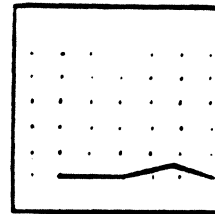
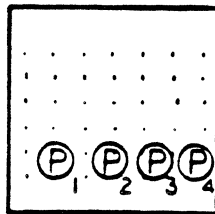
- You may repeat the |RELEASE GRID| command before each (P) that you wish to place on coordinates other than a grid point.

EXAMPLE

|ADD LINE| (P₁)(P₂) |KEYPAD| |RELEASE GRID| |TABLET|
 (P₃)(P₄) |ENTER|

ACTION

RESULT



KEYPAD COMMAND: RELEASE LINEL

COMMAND NAME

RELEASE LINE LOCK

PURPOSE

To release the line lock in order to place a (P) without the line lock restriction. Used only with other commands. This command only affects the first (P) that follows it.

INPUT SEQUENCE

. . . |RELEASE LINEL| . . .

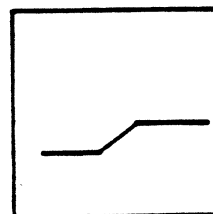
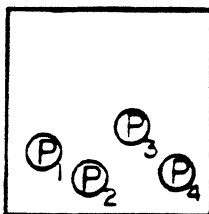
- . You may repeat the |RELEASE LINEL| command before each (P) that you wish to place without the line lock restriction.

EXAMPLE

|ADD CONNECTION| (P)₁(P)₂ |KEYPAD| |RELEASE LINEL| |TABLET|
 (P)₃(P)₄ |ENTER|

ACTION

RESULT



NOTES

The line lock restriction is set with the |LINE LOCK 90/ON| or |LINE LOCK 45/ON| command. The |RELEASE LINEL| command releases the line lock for one (P). Use the |LINE LOCK OFF| command if you wish to remove the line lock restriction for all subsequent (P)s.

COMMAND NAME

VERTICAL

PURPOSE

To direct the system to place your next (P) vertical with your last (P). Used only with other commands. This command only affects the first (P) that follows it.

INPUT SEQUENCE

... |VERTICAL| ...

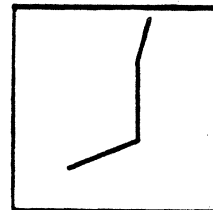
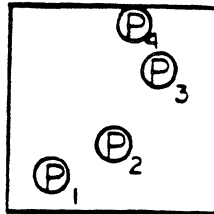
You may repeat the |VERTICAL| command before each (P) that you wish to place vertical with the last (P).

EXAMPLE

|ADD LINE| (P₁) (P₂) |KEYPAD| |VERTICAL| |TABLET| (P₃) (P₄) |END|

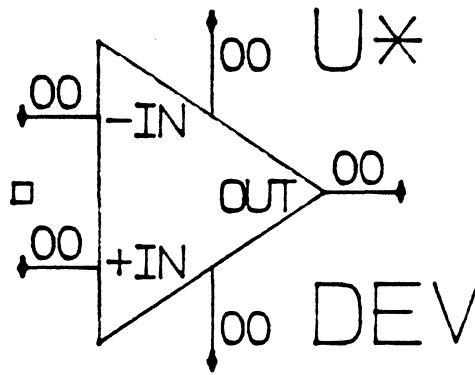
ACTION

RESULT



TELESIS LOGIC SYMBOLS

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: U* HGT: 156
 LAYER: 54 WTD: 117
 ROTATE: 0 SPC: 39

PIN NUMBERS

TEXT: 00 HGT: 80
 LAYER: 53 WTD: 60
 ROTATE: 0 SPC: 10

LOGICAL PIN NAMES

TEXT: AS SHOWN HGT: 80
 LAYER: 85 WTD: 60
 ROTATE: 0 SPC: 10

CONNECT POINT

SIZE: 50
 LAYER: 0

GRAPHIC IMAGE

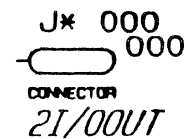
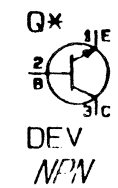
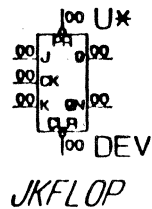
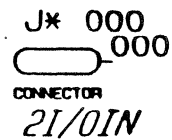
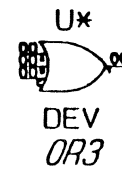
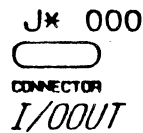
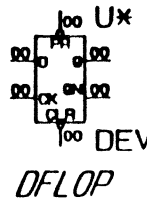
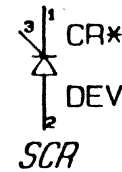
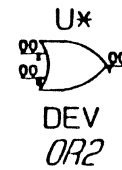
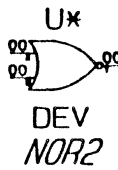
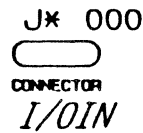
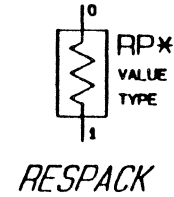
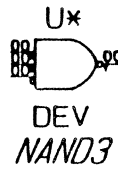
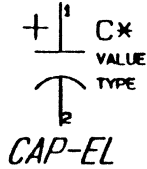
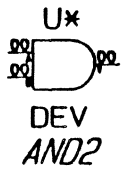
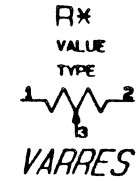
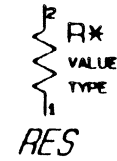
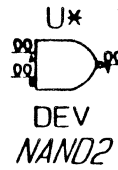
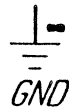
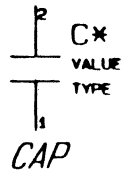
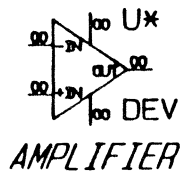
LAYER: 52

DEVICE TYPE

TEXT: DEV HGT: 156
 LAYER: 55 WTD: 117
 ROTATE: 0 SPC: 39

[SCHEMATIC/LOGIC SYMBOLS]

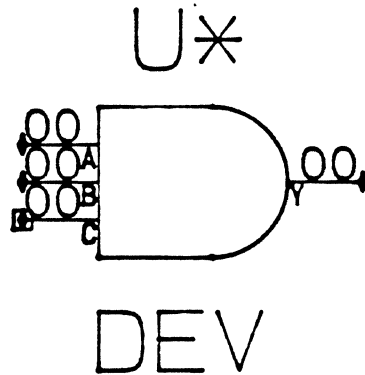
LIBRARY SCALE FULL	EXTENTS LX= -100	<u>SYMBOL NAME</u> AMPLIFIER
DRAWN BY: J. FLETCHER	LY= -700 UX= 1300	<u>DRAWING NAME</u> AMPLIFIER
DATE: 12/15/82	UY= 700	REV 3



TELESIS SYSTEM-LIBRARY

SCHMATIC/LOGIC SYMBOLS

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: U*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 00	HGT: 80
LAYER: 53	WTD: 60
ROTATE: 0	SPC: 20

LOGICAL PIN NAMES

TEXT: ABCY	HGT: 50
LAYER: 85	WTD: 30
ROTATE: 0	SPC: 10

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: DEV	HGT: 156
LAYER: 55	WTD: 117
ROTATE: 0	SPC: 38

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE	EXTENTS
FULL	LX= -100
DRAWN BY:	LY= -400
J. FLETCHER	UX= 1000
DATE: 12/15/82	UY= 600

SYMBOL NAME

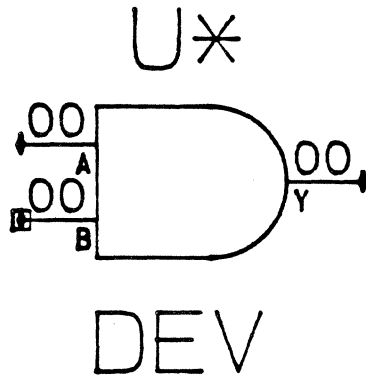
AND3

REV 3

DRAWING NAME

AND3

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: U*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 00	HGT: 80
LAYER: 53	WTD: 60
ROTATE: 0	SPC: 20

LOGICAL PIN NAMES

TEXT: ABY	HGT: 50
LAYER: 85	WTD: 30
ROTATE: 0	SPC: 10

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: DEV	HGT: 156
LAYER: 55	WTD: 117
ROTATE: 0	SPC: 39

□ = X0-Y0

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE
FULL

EXTENTS
LX= -100

SYMBOL NAME

AND2

REV 3

DRAWN BY:
J. FLETCHER

LY= -400
UX= 1000

DRAWING NAME

AND2

DATE: 12/15/82

UY= 600

TELESIS LIBRARY SYMBOL



GRAPHIC IMAGE

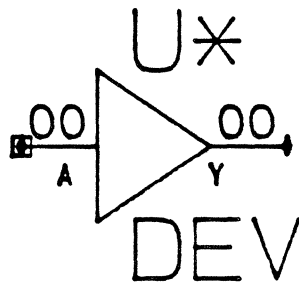
LAYER: 52

□ = X0-Y0

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -400	<u>SYMBOL NAME</u> BULLET
DRAWN BY: J. FLETCHER	LY= -100 UX= 400	REV 3
DATE: 12/16/82	UY= 700	<u>DRAWING NAME</u> BULLET

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: U* HGT: 156
 LAYER: 54 WTD: 117
 ROTATE: 0 SPC: 39

PIN NUMBERS

TEXT: 00 HGT: 80
 LAYER: 53 WTD: 60
 ROTATE: 0 SPC: 20

LOGICAL PIN NAMES

TEXT: AY HGT: 50
 LAYER: 85 WTD: 30
 ROTATE: 0 SPC: 10

CONNECT POINT

SIZE: 50
 LAYER: 0

GRAPHIC IMAGE

LAYER: 52

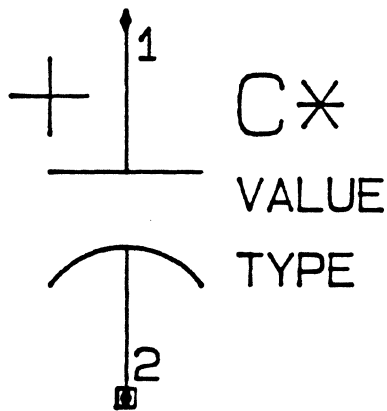
DEVICE TYPE

TEXT: DEV HGT: 156
 LAYER: 55 WTD: 117
 ROTATE: 0 SPC: 39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -100 LY= -400 UX= 800 UY= 500	<u>SYMBOL NAME</u> BUFFER
DRAWN BY: J. FLETCHER		REV 3
DATE: 12/15/82		<u>DRAWING NAME</u> BUFFER

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: C*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 1, 2	HGT: 80
LAYER: 83	WTD: 60
ROTATE: 0	SPC: 20

VALUE

TEXT: VALUE	HGT: 80
LAYER: 152	WTD: 60
ROTATE: 0	SPC: 20

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

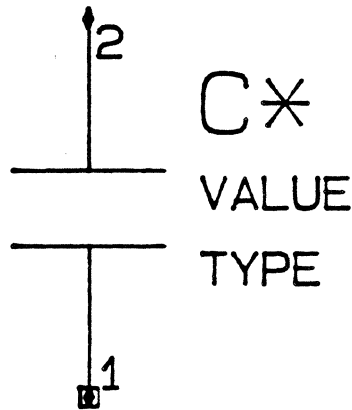
DEVICE TYPE

TEXT: TYPE	HGT: 156
LAYER: 87	WTD: 117
ROTATE: 0	SPC: 39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -400 LY= -100 UX= 700 UY= 1100	<u>SYMBOL NAME</u> CAP-EL
DRAWN BY: J. FLETCHER		REV 3
DATE: 12/15/82		<u>DRAWING NAME</u> CAP-EL

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: C*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 1, 2	HGT: 80
LAYER: 93	WTD: 60
ROTATE: 0	SPC: 20

VALUE

TEXT: VALUE	HGT: 80
LAYER: 152	WTD: 60
ROTATE: 0	SPC: 20

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

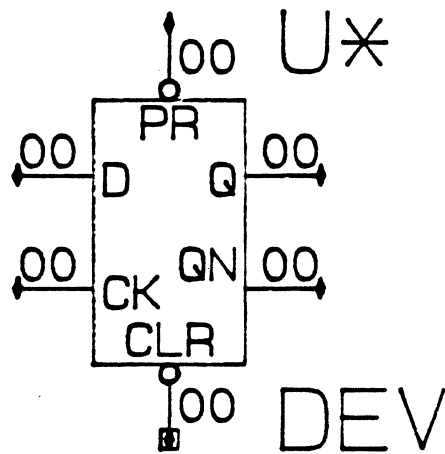
DEVICE TYPE

TEXT: TYPE	HGT: 80
LAYER: 87	WTD: 60
ROTATE: 0	SPC: 20

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -400 LY= -100 UX= 700 UY= 1100	<u>SYMBOL NAME</u> CAP
DRAWN BY: J. FLETCHER		REV 3
DATE: 12/15/82		<u>DRAWING NAME</u> CAP

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: U*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 00	HGT: 80
LAYER: 53	WTD: 60
ROTATE: 0	SPC: 20

LOGICAL PIN NAMES

TEXT: AS SHOWN	HGT: 80
LAYER: 151	WTD: 60
ROTATE: 0	SPC: 20

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: DEV	HGT: 156
LAYER: 55	WTD: 117
ROTATE: 0	SPC: 39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -100

LY= -500

UX= 1200

UY= 800

DRAWN BY:

J. FLETCHER

DATE: 12/15/82

SYMBOL NAME

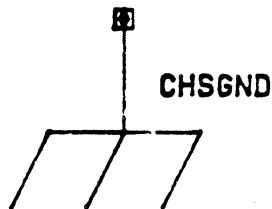
DFLOP

REV 3

DRAWING NAME

DFLOP

TELESIS LIBRARY SYMBOL



SIGNAL NAME

TEXT: CHSGND	HGT: 50
LAYER: 88	WTD: 30
ROTATE: 0	SPC: 20

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

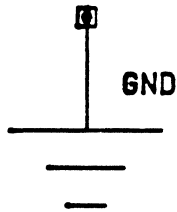
LAYER: 52

□ = X0-Y0

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE	EXTENTS	<u>SYMBOL NAME</u>
FULL	LX= -400	CHSGND
DRAWN BY:	LY= -600	REV 3
J. FLETCHER	UX= 500	<u>DRAWING NAME</u>
DATE: 12/15/82	UY= 100	CHSGND

TELESIS LIBRARY SYMBOL



□ = X0-Y0

SIGNAL NAME

TEXT:	GND	HGT:	50
LAYER:	86	WTD:	30
ROTATE:	0	SPC:	20

CONNECT POINT

SIZE:	50
LAYER:	0

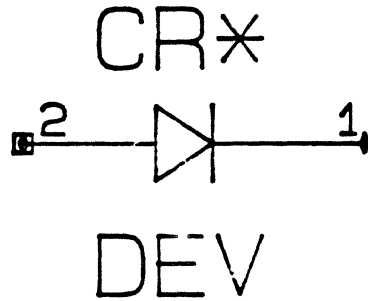
GRAPHIC IMAGE

LAYER:	52
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[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -300 LY= -600 UX= 400 UY= 100	<u>SYMBOL NAME</u> GND	REV 3
DRAWN BY: J. FLETCHER DATE: 12/15/82		<u>DRAWING NAME</u> GND	

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: CR*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 1, 2	HGT: 80
LAYER: 83	WTD: 60
ROTATE: 0	SPC: 20

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: DEV	HGT: 156
LAYER: 55	WTD: 117
ROTATE: 0	SPC: 39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE
FULL

EXTENTS
LX= -100

SYMBOL NAME

DIODE

REV 3

DRAWN BY:
J. FLETCHER

LY= -400
UX= 1000

DRAWING NAME

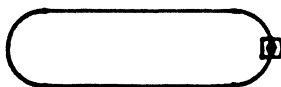
DIODE

DATE: 12/15/82

UY= 400

TELESIS LIBRARY SYMBOL

J* 000



CONNECTOR

□ = X0-Y0

REFERENCE DESIGNATION

TEXT: J*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 000	HGT: 156
LAYER: 53	WTD: 117
ROTATE: 0	SPC: 39

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: CONNECTOR	HGT: 80
LAYER: 87	WTD: 60
ROTATE: 0	SPC: 20

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -800

LY= -300

UX= 500

UY= 500

DRAWN BY:

J. FLETCHER

DATE: 12/16/82

SYMBOL NAME

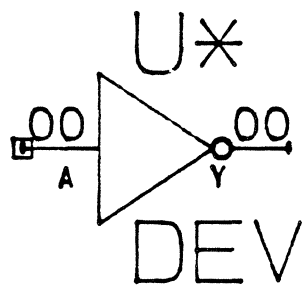
I/OIN

REV 3

DRAWING NAME

I/OIN

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: U*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 00	HGT: 80
LAYER: 53	WTD: 80
ROTATE: 0	SPC: 20

LOGICAL PIN NAMES

TEXT: AY	HGT: 50
LAYER: 85	WTD: 30
ROTATE: 0	SPC: 10

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

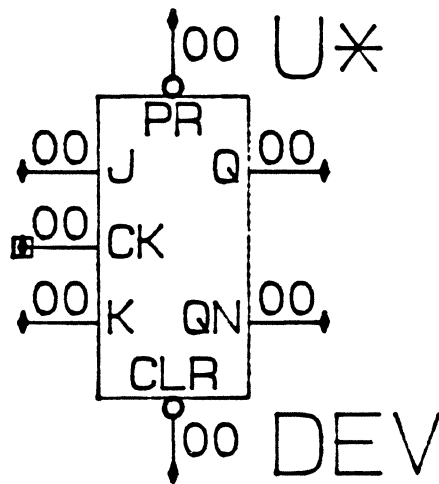
DEVICE TYPE

TEXT: DEV	HGT: 156
LAYER: 55	WTD: 117
ROTATE: 0	SPC: 39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -100	<u>SYMBOL NAME</u> INV
DRAWN BY: J. FLETCHER	LY= -500	REV 3
DATE: 12/15/82	UX= 800	<u>DRAWING NAME</u> INV
	UY= 500	

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: U*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 00	HGT: 80
LAYER: 53	WTD: 60
ROTATE: 0	SPC: 20

LOGICAL PIN NAMES

TEXT: AS SHOWN	HGT: 80
LAYER: 151	WTD: 60
ROTATE: 0	SPC: 20

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: DEV	HGT: 156
LAYER: 55	WTD: 117
ROTATE: 0	SPC: 39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE	EXTENTS
FULL	LX= -100

DRAWN BY:	LY= -500
J. FLETCHER	UX= 1100
DATE: 12/16/82	UY= 1000

SYMBOL NAME

JKFLOP

REV 3

DRAWING NAME

JKFLOP

TELESIS LIBRARY SYMBOL

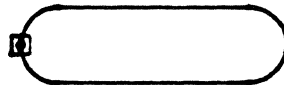
REFERENCE DESIGNATION

TEXT: J*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 000	HGT: 156
LAYER: 53	WTD: 117
ROTATE: 0	SPC: 39

J* 000



CONNECTOR

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

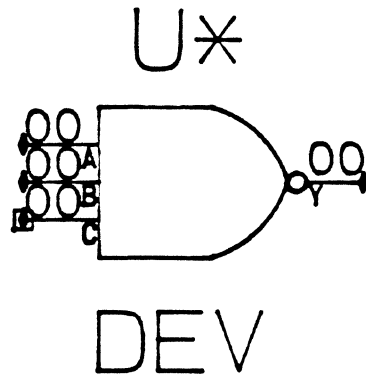
TEXT: CONNECTOR	HGT: 80
LAYER: 87	WTD: 60
ROTATE: 0	SPC: 20

□ = X0-Y0

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -100 LY= -300 UX= 1200 UY= 500	<u>SYMBOL NAME</u> I/OOUT	REV 3
DRAWN BY: J. FLETCHER		<u>DRAWING NAME</u> I/OOUT	
DATE: 12/16/82			

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: U*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 00	HGT: 80
LAYER: 53	WTD: 60
ROTATE: 0	SPC: 20

LOGICAL PIN NAMES

TEXT: ABCY	HGT: 50
LAYER: 85	WTD: 30
ROTATE: 0	SPC: 10

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: DEV	HGT: 156
LAYER: 55	WTD: 117
ROTATE: 0	SPC: 39

□ = X0-Y0

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -100 LY= -400 UX= 1000 UY= 600
DRAWN BY: J. FLETCHER DATE: 12/16/82	

SYMBOL NAME

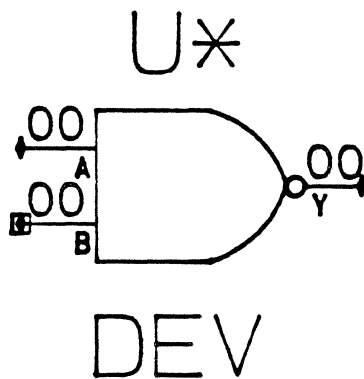
NAND3

REV 3

DRAWING NAME

NAND3

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT:	U*	HGT:	156
LAYER:	54	WTD:	117
ROTATE:	0	SPC:	39

PIN NUMBERS

TEXT:	00	HGT:	80
LAYER:	53	WTD:	80
ROTATE:	0	SPC:	20

LOGICAL PIN NAMES

TEXT:	ABY	HGT:	50
LAYER:	85	WTD:	30
ROTATE:	0	SPC:	10

CONNECT POINT

SIZE:	50
LAYER:	0

GRAPHIC IMAGE

LAYER:	52
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DEVICE TYPE

TEXT:	DEV	HGT:	156
LAYER:	55	WTD:	117
ROTATE:	0	SPC:	39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE	EXTENTS
FULL	LX= -100
DRAWN BY:	LY= -400
J. FLETCHER	UX= 1000
DATE: 12/16/82	UY= 600

SYMBOL NAME

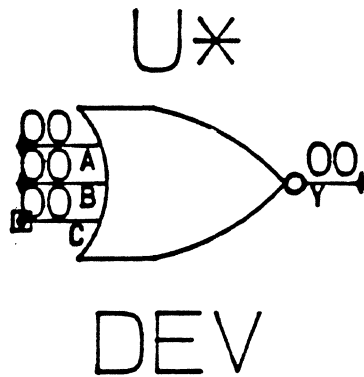
NAND2

REV 3

DRAWING NAME

NAND2

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT:	U*	HGT:	156
LAYER:	54	WTD:	117
ROTATE:	0	SPC:	39

PIN NUMBERS

TEXT:	00	HGT:	80
LAYER:	53	WTD:	60
ROTATE:	0	SPC:	20

LOGICAL PIN NAMES

TEXT:	ABCY	HGT:	50
LAYER:	85	WTD:	30
ROTATE:	0	SPC:	10

CONNECT POINT

SIZE:	50
LAYER:	0

GRAPHIC IMAGE

LAYER:	52
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DEVICE TYPE

TEXT:	DEV	HGT:	156
LAYER:	55	WTD:	117
ROTATE:	0	SPC:	39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -100

LY= -400

UX= 1000

UY= 600

DRAWN BY:

J. FLETCHER

DATE: 12/16/82

SYMBOL NAME

NOR3

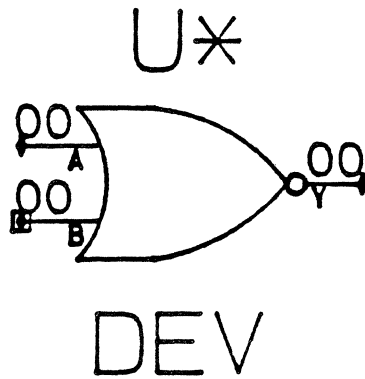
DRAWING NAME

NOR3

REV. 3

AM

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: U*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 00	HGT: 80
LAYER: 53	WTD: 60
ROTATE: 0	SPC: 20

LOGICAL PIN NAMES

TEXT: ABY	HGT: 50
LAYER: 85	WTD: 30
ROTATE: 0	SPC: 10

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: DEV	HGT: 156
LAYER: 55	WTD: 117
ROTATE: 0	SPC: 39

□ = X0-Y0

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -100 LY= -400 UX= 1000 UY= 600	<u>SYMBOL NAME</u> NOR2	REV 3
DRAWN BY: J. FLETCHER		<u>DRAWING NAME</u> NOR2	
DATE: 12/16/82			

TELESIS LIBRARY SYMBOL



□ = X0-Y0

SIGNAL NAME

TEXT: ***	HGT: 156
LAYER: 64	WTD: 117
ROTATE: 0	SPC: 39

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -400

LY= -100

UX= 400

UY= 700

DRAWN BY:

J. FLETCHER

DATE: 12/16/82

SYMBOL NAME

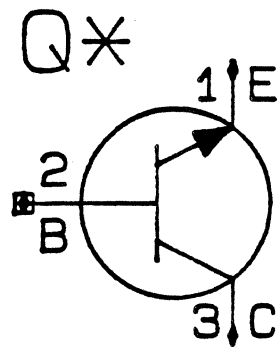
ONPAGEIN

REV 3

DRAWING NAME

ONPAGEIN

TELESIS LIBRARY SYMBOL



DEV

□ = X0-Y0

REFERENCE DESIGNATION

TEXT: Q* HGT: 156

LAYER: 54 WTD: 117

ROTATE: 0 SPC: 39

PIN NUMBERS

TEXT: 1, 2, 3 HGT: 80

LAYER: 83 WTD: 60

ROTATE: 0 SPC: 20

LOGICAL PIN NAMES

TEXT: EBC HGT: 80

LAYER: 151 WTD: 60

ROTATE: 0 SPC: 10

CONNECT POINT

SIZE: 50

LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: DEV HGT: 156

LAYER: 55 WTD: 117

ROTATE: 0 SPC: 39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -100

LY= -600

UX= 800

UY= 600

DRAWN BY:

J. FLETCHER

DATE: 12/16/82

SYMBOL NAME

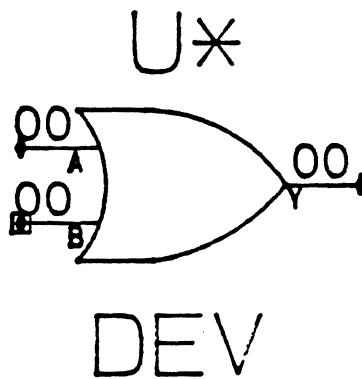
NPN

REV 3

DRAWING NAME

NPN

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT:	U*	HGT:	156
LAYER:	54	WTD:	117
ROTATE:	0	SPC:	39

PIN NUMBERS

TEXT:	00	HGT:	80
LAYER:	53	WTD:	80
ROTATE:	0	SPC:	20

LOGICAL PIN NAMES

TEXT:	ABY	HGT:	50
LAYER:	85	WTD:	30
ROTATE:	0	SPC:	10

CONNECT POINT

SIZE:	50
LAYER:	0

GRAPHIC IMAGE

LAYER:	52
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DEVICE TYPE

TEXT:	DEV	HGT:	156
LAYER:	55	WTD:	117
ROTATE:	0	SPC:	39

□ = X0-Y0

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE	EXTENTS
FULL	LX= -100
DRAWN BY:	LY= -400
J. FLETCHER	UX= 1000
DATE: 12/16/82	UY= 600

SYMBOL NAME

OR2

REV 3

DRAWING NAME

OR2

TELESIS LIBRARY SYMBOL



□ = X0-Y0

SIGNAL NAME

TEXT: *** HGT: 156
LAYER: 84 WTD: 117
ROTATE: 0 SPC: 38

CONNECT POINT

SIZE: 50
LAYER: 0

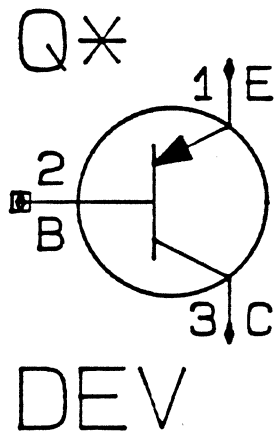
GRAPHIC IMAGE

LAYER: 52

[SCHEMATIC/LOGIC SYMBOLS]

<p>LIBRARY SCALE FULL</p>	<p>EXTENTS LX= -400</p>	<p><u>SYMBOL NAME</u> ONPAGEOUT REV 3</p>
<p>DRAWN BY: J. FLETCHER</p>	<p>LY= -100 UX= 400</p>	<p><u>DRAWING NAME</u> ONPAGEOUT</p>
<p>DATE: 12/16/82</p>	<p>UY= 600</p>	

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: Q* HGT: 156
 LAYER: 54 WTD: 117
 ROTATE: 0 SPC: 39

PIN NUMBERS

TEXT: 1, 2, 3 HGT: 80
 LAYER: 93 WTD: 60
 ROTATE: 0 SPC: 20

LOGICAL PIN NAMES

TEXT: EBC HGT: 80
 LAYER: 151 WTD: 60
 ROTATE: 0 SPC: 10

CONNECT POINT

SIZE: 50
 LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: DEV HGT: 156
 LAYER: 55 WTD: 117
 ROTATE: 0 SPC: 39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -100

LY= -600

UX= 800

UY= 600

DRAWN BY:

J. FLETCHER

DATE: 12/16/82

SYMBOL NAME

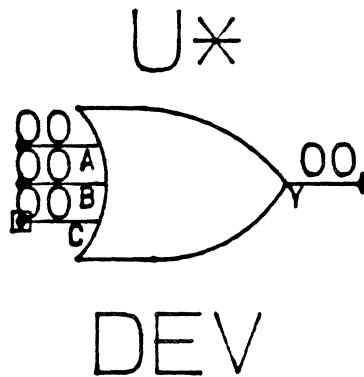
PNP

REV 3

DRAWING NAME

PNP

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: U*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 00	HGT: 80
LAYER: 53	WTD: 60
ROTATE: 0	SPC: 20

LOGICAL PIN NAMES

TEXT: ABCY	HGT: 50
LAYER: 85	WTD: 30
ROTATE: 0	SPC: 10

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: DEV	HGT: 156
LAYER: 55	WTD: 117
ROTATE: 0	SPC: 39

□ = X0-Y0

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -100

LY= -400

UX= 1000

UY= 600

DRAWN BY:

J. FLETCHER

DATE: 12/16/82

SYMBOL NAME

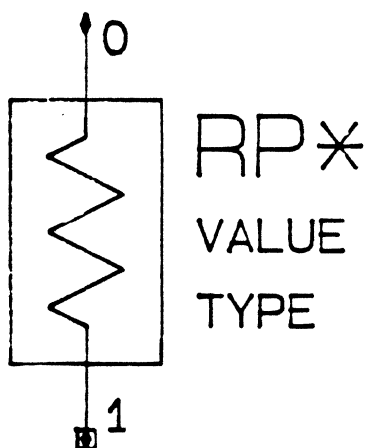
OR3

REV 3

DRAWING NAME

OR3

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT:	RP*	HGT:	156
LAYER:	54	WTD:	117
ROTATE:	0	SPC:	39

PIN NUMBERS

TEXT:	0, 1	HGT:	80
LAYER:	83	WTD:	60
ROTATE:	0	SPC:	20

VALUE

TEXT:	VALUE	HGT:	80
LAYER:	152	WTD:	60
ROTATE:	0	SPC:	20

CONNECT POINT

SIZE:	50
LAYER:	0

GRAPHIC IMAGE

LAYER:	52
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DEVICE TYPE

TEXT:	TYPE	HGT:	80
LAYER:	87	WTD:	60
ROTATE:	0	SPC:	20

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE
FULL

EXTENTS
LX= -300

SYMBOL NAME

RESPACK

REV 3

DRAWN BY:
J. FLETCHER

LY= -300
UX= 800

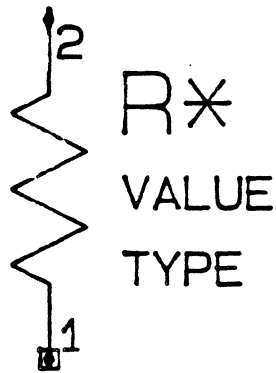
DRAWING NAME

RESPACK

DATE: 12/16/82

UY= 1200

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: R*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 1, 2	HGT: 80
LAYER: 83	WTD: 80
ROTATE: 0	SPC: 20

VALUE

TEXT: VALUE	HGT: 80
LAYER: 152	WTD: 80
ROTATE: 0	SPC: 20

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: TYPE	HGT: 80
LAYER: 87	WTD: 80
ROTATE: 0	SPC: 20

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -200

LY= -100

UX= 700

UY= 1000

DRAWN BY:

J. FLETCHER

DATE: 12/16/82

SYMBOL NAME

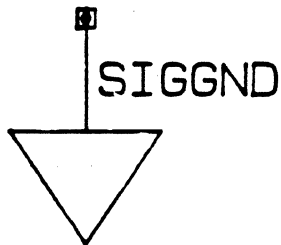
RES

REV 3

DRAWING NAME

RES

TELESIS LIBRARY SYMBOL



□ = X0-Y0

SIGNAL NAME

TEXT: SIGGND	HGT: 80
LAYER: 86	WTD: 60
ROTATE: 0	SPC: 20

CONNECT POINT

SIZE: 50
LAYER: 0

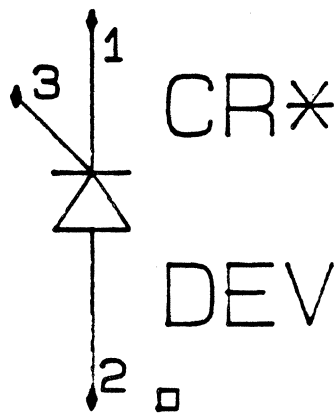
GRAPHIC IMAGE

LAYER: 52

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -300 LY= -600 UX= 500 UY= 100	<u>SYMBOL NAME</u> SIGGND	REV 3
DRAWN BY: J. FLETCHER		<u>DRAWING NAME</u> SIGGND	
DATE: 12/16/82			

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT:	CR*	HGT:	156
LAYER:	54	WTD:	117
ROTATE:	0	SPC:	39

PIN NUMBERS

TEXT:	1, 2, 3	HGT:	80
LAYER:	83	WTD:	80
ROTATE:	0	SPC:	20

CONNECT POINT

SIZE:	50
LAYER:	0

GRAPHIC IMAGE

LAYER:	52
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DEVICE TYPE

TEXT:	DEV	HGT:	158
LAYER:	55	WTD:	117
ROTATE:	0	SPC:	39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -600

LY= -100

UX= 600

UY= 1100

SYMBOL NAME

SCR

REV 3

DRAWING NAME

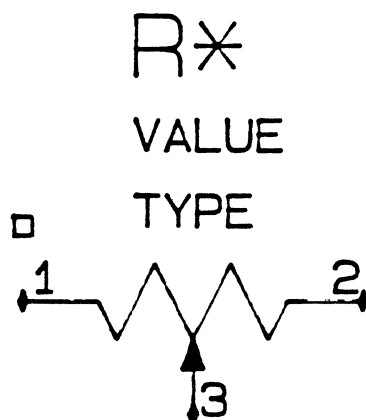
SCR

DRAWN BY:

J. FLETCHER

DATE: 12/17/82

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: R*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 1, 2, 3	HGT: 80
LAYER: 83	WTD: 60
ROTATE: 0	SPC: 20

VALUE

TEXT: VALUE	HGT: 80
LAYER: 152	WTD: 60
ROTATE: 0	SPC: 20

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

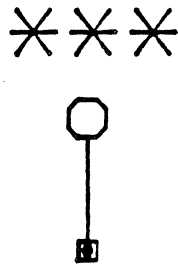
DEVICE TYPE

TEXT: TYPE	HGT: 80
LAYER: 87	WTD: 60
ROTATE: 0	SPC: 20

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -100 LY= -600 UX= 1000 UY= 600	<u>SYMBOL NAME</u> VARRES	REV 3
DRAWN BY: J. FLETCHER		<u>DRAWING NAME</u> VARRES	
DATE: 12/16/82			

TELESIS LIBRARY SYMBOL



□ = X0-Y0

SIGNAL NAME

<u>TEXT:</u> ***	<u>HGT:</u> 156
<u>LAYER:</u> 64	<u>WTD:</u> 117
<u>ROTATE:</u> 0	<u>SPC:</u> 39

CONNECT POINT

<u>SIZE:</u> 50
<u>LAYER:</u> 0

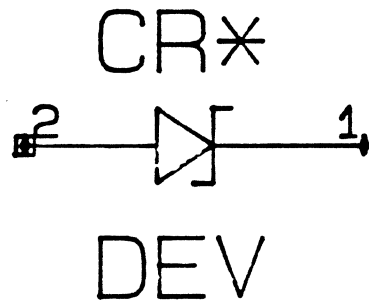
GRAPHIC IMAGE

<u>LAYER:</u> 52

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -400	<u>SYMBOL NAME</u> TESTPOINT
DRAWN BY: J. FLETCHER	LY= -100 UX= 400	REV 3
DATE: 12/16/82	UY= 700	<u>DRAWING NAME</u> TESTPOINT

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: CR*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 1, 2	HGT: 80
LAYER: 93	WTD: 60
ROTATE: 0	SPC: 20

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

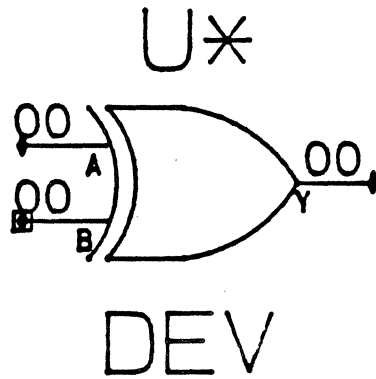
TEXT: DEV	HGT: 156
LAYER: 55	WTD: 117
ROTATE: 0	SPC: 39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -100 LY= -400 UX= 1000 UY= 400	<u>SYMBOL NAME</u> ZDIODE
DRAWN BY: J. FLETCHER DATE: 12/17/82		<u>DRAWING NAME</u> ZDIODE

REV 3

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: U* HGT: 156

LAYER: 54 WTD: 117

ROTATE: 0 SPC: 39

PIN NUMBERS

TEXT: 00 HGT: 80

LAYER: 53 WTD: 60

ROTATE: 0 SPC: 20

LOGICAL PIN NAMES

TEXT: ABY HGT: 50

LAYER: 85 WTD: 30

ROTATE: 0 SPC: 10

CONNECT POINT

SIZE: 50

LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: DEV HGT: 156

LAYER: 55 WTD: 117

ROTATE: 0 SPC: 39

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -100

LY= -400

UX= 1000

UY= 600

SYMBOL NAME

XOR2

REV 3

DRAWING NAME

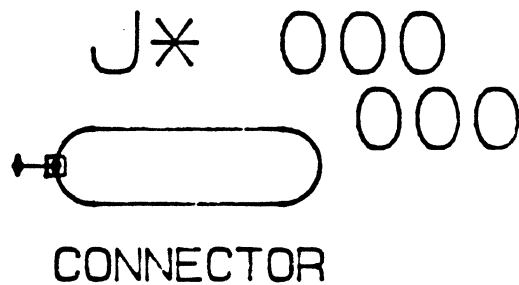
XOR2

DRAWN BY:

J. FLETCHER

DATE: 12/16/82

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: J*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 000	HGT: 156
LAYER: 53	WTD: 117
ROTATE: 0	SPC: 39

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

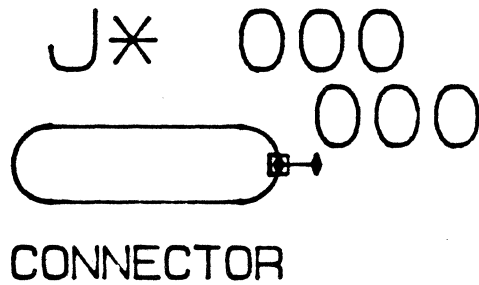
DEVICE TYPE

TEXT: CONNECTOR	HGT: 80
LAYER: 87	WTD: 80
ROTATE: 0	SPC: 20

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -200 LY= -300 UX= 1300 UY= 500	<u>SYMBOL NAME</u> 2I/00UT	REV 3
DRAWN BY: J. FLETCHER DATE: 12/16/82		<u>DRAWING NAME</u> 2I/00UT	

TELESIS LIBRARY SYMBOL



□ = X0-Y0

REFERENCE DESIGNATION

TEXT: J*	HGT: 156
LAYER: 54	WTD: 117
ROTATE: 0	SPC: 39

PIN NUMBERS

TEXT: 000	HGT: 156
LAYER: 53	WTD: 117
ROTATE: 0	SPC: 39

CONNECT POINT

SIZE: 50
LAYER: 0

GRAPHIC IMAGE

LAYER: 52

DEVICE TYPE

TEXT: CONNECTOR	HGT: 80
LAYER: 87	WTD: 60
ROTATE: 0	SPC: 20

[SCHEMATIC/LOGIC SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -800	<u>SYMBOL NAME</u> 2I/OIN
DRAWN BY: J. FLETCHER	LY= -300 UX= 700	REV 3
DATE: 12/16/82	UY= 500	<u>DRAWING NAME</u> 2I/OIN

TELESIS DEVICE DESCRIPTION FILES

TELESIS DEVICE DESCRIPTION FILES

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74LS00	2	74S40	19
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74L02	2	74H73	19
74LS02	3	74L73	20
74S02	3	74LS73A	20
74H04	3	7474	20
7404	4	74H74	21
74L04	4	74L74	21
74LS04	4	74LS74	21
74S04	5	74S74	22
7407	5	7476	22
7408	5	74H76	22
74LS08	6	74LS76A	23
74S08	6	74L78	23
7410	6	74H78	23
74H10	7	74LS78A	24
74L10	7	7486	24
74LS10	7	74LS86	24
74S10	8	74S86	25
74H11	8	74125	25
74LS11	8	74LS125A	25
74S11	9	74126	26
7413	9	74LS126A	26
74LS13	9	4000A	26
7414	10	4000B	27
74LS14	10	4000UB	27
7420	10	4001A	27
74H20	11	4001B	28
74L20	11	4001UB	28
74LS20	11	4002A	28
74S20	12	4002B	29
74H21	12	4002UB	29
74LS21	12	4009A	29
7427	13	4009UB	30
74LS27	13	4010A	30
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74LS28	14	4011A	31
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7432	16	4015A	33
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4030A	35
4068B	36
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4071B	37
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4075B	38
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4078B	38
4081B	39
4082B	39
4085B	39
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40174B	40
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(SAMPLE DEVICE FILE FOR A DISCRETE) -40

(DEVICE DESCRIPTION FILE: 7400)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7400 A B Y
PINUSE 7400 IN IN OUT
PINSWAP 7400 A B
FUNCTION G1 7400 1 2 3
FUNCTION G2 7400 4 5 6
FUNCTION G3 7400 9 10 8
FUNCTION G4 7400 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74H00)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74H00 A B Y
PINUSE 74H00 IN IN OUT
PINSWAP 74H00 A B
FUNCTION G1 74H00 1 2 3
FUNCTION G2 74H00 4 5 6
FUNCTION G3 74H00 9 10 8
FUNCTION G4 74H00 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74L00)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74L00 A B Y
PINUSE 74L00 IN IN OUT
PINSWAP 74L00 A B
FUNCTION G1 74L00 1 2 3
FUNCTION G2 74L00 4 5 6
FUNCTION G3 74L00 9 10 8
FUNCTION G4 74L00 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS00)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS00 A B Y
PINUSE 74LS00 IN IN OUT
PINSWAP 74LS00 A B
FUNCTION G1 74LS00 1 2 3
FUNCTION G2 74LS00 4 5 6
FUNCTION G3 74LS00 9 10 8
FUNCTION G4 74LS00 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 7402)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7402 A B Y
PINUSE 7402 IN IN OUT
PINSWAP 7402 A B
FUNCTION G1 7402 2 3 1
FUNCTION G2 7402 5 6 4
FUNCTION G3 7402 8 9 10
FUNCTION G4 7402 11 12 13
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74L02)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74L02 A B Y
PINUSE 74L02 IN IN OUT
PINSWAP 74L02 A B
FUNCTION G1 74L02 2 3 1
FUNCTION G2 74L02 5 6 4
FUNCTION G3 74L02 8 9 10
FUNCTION G4 74L02 11 12 13
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS02)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS02 A B Y
PINUSE 74LS02 IN IN OUT
PINSWAP 74LS02 A B
FUNCTION G1 74LS02 2 3 1
FUNCTION G2 74LS02 5 6 4
FUNCTION G3 74LS02 8 9 10
FUNCTION G4 74LS02 11 12 13
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74S02)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74S02 A B Y
PINUSE 74S02 IN IN OUT
PINSWAP 74S02 A B
FUNCTION G1 74S02 2 3 1
FUNCTION G2 74S02 5 6 4
FUNCTION G3 74S02 8 9 10
FUNCTION G4 74S02 11 12 13
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74H04)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74H04 A Y
PINUSE 74H04 IN OUT
FUNCTION G1 74H04 1 2
FUNCTION G2 74H04 3 4
FUNCTION G3 74H04 5 6
FUNCTION G4 74H04 9 8
FUNCTION G5 74H04 11 10
FUNCTION G6 74H04 13 12
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 7404)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7404 A Y
PINUSE 7404 IN OUT
FUNCTION G1 7404 1 2
FUNCTION G2 7404 3 4
FUNCTION G3 7404 5 6
FUNCTION G4 7404 9 8
FUNCTION G5 7404 11 10
FUNCTION G6 7404 13 12
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74L04)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74L04 A Y
PINUSE 74L04 IN OUT
FUNCTION G1 74L04 1 2
FUNCTION G2 74L04 3 4
FUNCTION G3 74L04 5 6
FUNCTION G4 74L04 9 8
FUNCTION G5 74L04 11 10
FUNCTION G6 74L04 13 12
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS04)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS04 A Y
PINUSE 74LS04 IN OUT
FUNCTION G1 74LS04 1 2
FUNCTION G2 74LS04 3 4
FUNCTION G3 74LS04 5 6
FUNCTION G4 74LS04 9 8
FUNCTION G5 74LS04 11 10
FUNCTION G6 74LS04 13 12
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74S04)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74S04 A Y
PINUSE 74S04 IN OUT
FUNCTION G1 74S04 1 2
FUNCTION G2 74S04 3 4
FUNCTION G3 74S04 5 6
FUNCTION G4 74S04 9 8
FUNCTION G5 74S04 11 10
FUNCTION G6 74S04 13 12
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 7407)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7407 A Y
PINUSE 7407 IN OUT
FUNCTION G1 7407 1 2
FUNCTION G2 7407 3 4
FUNCTION G3 7407 5 6
FUNCTION G4 7407 9 8
FUNCTION G5 7407 11 10
FUNCTION G6 7407 13 12
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 7408)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7408 A B Y
PINUSE 7408 IN IN OUT
PINSWAP 7408 A B
FUNCTION G1 7408 1 2 3
FUNCTION G2 7408 4 5 6
FUNCTION G3 7408 9 10 8
FUNCTION G4 7408 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS08)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS08 A B Y
PINUSE 74LS08 IN IN OUT
PINSWAP 74LS08 A B
FUNCTION G1 74LS08 1 2 3
FUNCTION G2 74LS08 4 5 6
FUNCTION G3 74LS08 9 10 8
FUNCTION G4 74LS08 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74S08)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74S08 A B Y
PINUSE 74S08 IN IN OUT
PINSWAP 74S08 A B
FUNCTION G1 74S08 1 2 3
FUNCTION G2 74S08 4 5 6
FUNCTION G3 74S08 9 10 8
FUNCTION G4 74S08 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 7410)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7410 A B C Y
PINUSE 7410 IN IN IN OUT
PINSWAP 7410 A B C
FUNCTION G1 7410 1 2 13 12
FUNCTION G2 7410 3 4 5 6
FUNCTION G3 7410 9 10 11 8
POWER +5V; 14
GROUND GND; 7
END

```
(DEVICE DESCRIPTION FILE: 74H10)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74H10 A B C Y
PINUSE 74H10 IN IN IN OUT
PINSWAP 74H10 A B C
FUNCTION G1 74H10 1 2 13 12
FUNCTION G2 74H10 3 4 5 6
FUNCTION G3 74H10 9 10 11 8
POWER +5V; 14
GROUND GND; 7
END
```

```
(DEVICE DESCRIPTION FILE: 74L10)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74L10 A B C Y
PINUSE 74L10 IN IN IN OUT
PINSWAP 74L10 A B C
FUNCTION G1 74L10 1 2 13 12
FUNCTION G2 74L10 3 4 5 6
FUNCTION G3 74L10 9 10 11 8
POWER +5V; 14
GROUND GND; 7
END
```

```
(DEVICE DESCRIPTION FILE: 74LS10)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS10 A B C Y
PINUSE 74LS10 IN IN IN OUT
PINSWAP 74LS10 A B C
FUNCTION G1 74LS10 1 2 13 12
FUNCTION G2 74LS10 3 4 5 6
FUNCTION G3 74LS10 9 10 11 8
POWER +5V; 14
GROUND GND; 7
END
```

(DEVICE DESCRIPTION FILE: 74S10)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74S10 A B C Y
PINUSE 74S10 IN IN IN OUT
PINSWAP 74S10 A B C
FUNCTION G1 74S10 1 2 13 12
FUNCTION G2 74S10 3 4 5 6
FUNCTION G3 74S10 9 10 11 8
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74H11)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74H11 A B C Y
PINUSE 74H11 IN IN IN OUT
PINSWAP 74H11 A B C
FUNCTION G1 74H11 1 2 13 12
FUNCTION G2 74H11 3 4 5 6
FUNCTION G3 74H11 9 10 11 8
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS11)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS11 A B C Y
PINUSE 74LS11 IN IN IN OUT
PINSWAP 74LS11 A B C
FUNCTION G1 74LS11 1 2 13 12
FUNCTION G2 74LS11 3 4 5 6
FUNCTION G3 74LS11 9 10 11 8
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74S11)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74S11 A B C Y
PINUSE 74S11 IN IN IN OUT
PINSWAP 74S11 A B C
FUNCTION G1 74S11 1 2 13 12
FUNCTION G2 74S11 3 4 5 6
FUNCTION G3 74S11 9 10 11 8
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 7413)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7413 A B C D Y
PINUSE 7413 IN IN IN IN OUT
PINSWAP 7413 A B C D
FUNCTION G1 7413 1 2 4 5 6
FUNCTION G2 7413 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 74LS13)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS13 A B C D Y
PINUSE 74LS13 IN IN IN IN OUT
PINSWAP 74LS13 A B C D
FUNCTION G1 74LS13 1 2 4 5 6
FUNCTION G2 74LS13 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 7414)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7414 A Y
PINUSE 7414 IN OUT
FUNCTION G1 7414 1 2
FUNCTION G2 7414 3 4
FUNCTION G3 7414 5 6
FUNCTION G4 7414 9 8
FUNCTION G5 7414 11 10
FUNCTION G6 7414 13 12
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS14)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS14 A Y
PINUSE 74LS14 IN OUT
FUNCTION G1 74LS14 1 2
FUNCTION G2 74LS14 3 4
FUNCTION G3 74LS14 5 6
FUNCTION G4 74LS14 9 8
FUNCTION G5 74LS14 11 10
FUNCTION G6 74LS14 13 12
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 7420)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7420 A B C D Y
PINUSE 7420 IN IN IN IN OUT
PINSWAP 7420 A B C D
FUNCTION G1 7420 1 2 4 5 6
FUNCTION G2 7420 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 74H20)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74H20 A B C D Y
PINUSE 74H20 IN IN IN IN OUT
PINSWAP 74H20 A B C D
FUNCTION G1 74H20 1 2 4 5 6
FUNCTION G2 74H20 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 74L20)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74L20 A B C D Y
PINUSE 74L20 IN IN IN IN OUT
PINSWAP 74L20 A B C D
FUNCTION G1 74L20 1 2 4 5 6
FUNCTION G2 74L20 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 74LS20)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS20 A B C D Y
PINUSE 74LS20 IN IN IN IN OUT
PINSWAP 74LS20 A B C D
FUNCTION G1 74LS20 1 2 4 5 6
FUNCTION G2 74LS20 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 74S20)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74S20 A B C D Y
PINUSE 74S20 IN IN IN IN OUT
PINSWAP 74S20 A B C D
FUNCTION G1 74S20 1 2 4 5 6
FUNCTION G2 74S20 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 74H21)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74H21 A B C D Y
PINUSE 74H21 IN IN IN IN OUT
PINSWAP 74H21 A B C D
FUNCTION G1 74H21 1 2 4 5 6
FUNCTION G2 74H21 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 74LS21)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS21 A B C D Y
PINUSE 74LS21 IN IN IN IN OUT
PINSWAP 74LS21 A B C D
FUNCTION G1 74LS21 1 2 4 5 6
FUNCTION G2 74LS21 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 7427)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7427 A B C Y
PINUSE 7427 IN IN IN OUT
PINSWAP 7427 A B C
FUNCTION G1 7427 1 2 13 12
FUNCTION G2 7427 3 4 5 6
FUNCTION G3 7427 9 10 11 8
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS27)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS27 A B C Y
PINUSE 74LS27 IN IN IN OUT
PINSWAP 74LS27 A B C
FUNCTION G1 74LS27 1 2 13 12
FUNCTION G2 74LS27 3 4 5 6
FUNCTION G3 74LS27 9 10 11 8
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 7428)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7428 A B Y
PINUSE 7428 IN IN OUT
PINSWAP 7428 A B
FUNCTION G1 7428 2 3 1
FUNCTION G2 7428 5 6 4
FUNCTION G3 7428 8 9 10
FUNCTION G4 7428 11 12 13
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS28)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS28 A B Y
PINUSE 74LS28 IN IN OUT
PINSWAP 74LS28 A B
FUNCTION G1 74LS28 2 3 1
FUNCTION G2 74LS28 5 6 4
FUNCTION G3 74LS28 8 9 10
FUNCTION G4 74LS28 11 12 13
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 7430)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7430 A B C D E F G H Y
PINUSE 7430 IN IN IN IN IN IN IN IN OUT
PINSWAP 7430 A B C D E F G H
FUNCTION G1 7430 1 2 3 4 5 6 11 12 8
POWER +5V; 14
GROUND GND; 7
NC 9 10 13
END

(DEVICE DESCRIPTION FILE: 74H30)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74H30 A B C D E F G H Y
PINUSE 74H30 IN IN IN IN IN IN IN IN OUT
PINSWAP 74H30 A B C D E F G H
FUNCTION G1 74H30 1 2 3 4 5 6 11 12 8
POWER +5V; 14
GROUND GND; 7
NC 9 10 13
END

(DEVICE DESCRIPTION FILE: 74L30)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74L30 A B C D E F G H Y
PINUSE 74L30 IN IN IN IN IN IN IN IN OUT
PINSWAP 74L30 A B C D E F G H
FUNCTION G1 74L30 1 2 3 4 5 6 11 12 8
POWER +5V; 14
GROUND GND; 7
NC 9 10 13
END

(DEVICE DESCRIPTION FILE: 74LS30)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS30 A B C D E F G H Y
PINUSE 74LS30 IN IN IN IN IN IN IN IN OUT
PINSWAP 74LS30 A B C D E F G H
FUNCTION G1 74LS30 1 2 3 4 5 6 11 12 8
POWER +5V; 14
GROUND GND; 7
NC 9 10 13
END

(DEVICE DESCRIPTION FILE: 74S30)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74S30 A B C D E F G H Y
PINUSE 74S30 IN IN IN IN IN IN IN IN OUT
PINSWAP 74S30 A B C D E F G H
FUNCTION G1 74S30 1 2 3 4 5 6 11 12 8
POWER +5V; 14
GROUND GND; 7
NC 9 10 13
END

(DEVICE DESCRIPTION FILE: 7432)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7432 A B Y
PINUSE 7432 IN IN OUT
PINSWAP 7432 A B
FUNCTION G1 7432 1 2 3
FUNCTION G2 7432 4 5 6
FUNCTION G3 7432 9 10 8
FUNCTION G4 7432 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS32)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS32 A B Y
PINUSE 74LS32 IN IN OUT
PINSWAP 74LS32 A B
FUNCTION G1 74LS32 1 2 3
FUNCTION G2 74LS32 4 5 6
FUNCTION G3 74LS32 9 10 8
FUNCTION G4 74LS32 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74S32)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74S32 A B Y
PINUSE 74S32 IN IN OUT
PINSWAP 74S32 A B
FUNCTION G1 74S32 1 2 3
FUNCTION G2 74S32 4 5 6
FUNCTION G3 74S32 9 10 8
FUNCTION G4 74S32 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 7438)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7438 A B Y
PINUSE 7438 IN IN OUT
PINSWAP 7438 A B
FUNCTION G1 7438 1 2 3
FUNCTION G2 7438 4 5 6
FUNCTION G3 7438 9 10 8
FUNCTION G4 7438 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS38)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS38 A B Y
PINUSE 74LS38 IN IN OUT
PINSWAP 74LS38 A B
FUNCTION G1 74LS38 1 2 3
FUNCTION G2 74LS38 4 5 6
FUNCTION G3 74LS38 9 10 8
FUNCTION G4 74LS38 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74S38)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74S38 A B Y
PINUSE 74S38 IN IN OUT
PINSWAP 74S38 A B
FUNCTION G1 74S38 1 2 3
FUNCTION G2 74S38 4 5 6
FUNCTION G3 74S38 9 10 8
FUNCTION G4 74S38 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 7440)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7440 A B C D Y
PINUSE 7440 IN IN IN IN OUT
PINSWAP 7440 A B C D
FUNCTION G1 7440 1 2 4 5 6
FUNCTION G2 7440 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 74H40)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74H40 A B C D Y
PINUSE 74H40 IN IN IN IN OUT
PINSWAP 74H40 A B C D
FUNCTION G1 74H40 1 2 4 5 6
FUNCTION G2 74H40 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 74LS40)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS40 A B C D Y
PINUSE 74LS40 IN IN IN IN OUT
PINSWAP 74LS40 A B C D
FUNCTION G1 74LS40 1 2 4 5 6
FUNCTION G2 74LS40 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 74S40)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74S40 A B C D Y
PINUSE 74S40 IN IN IN IN OUT
PINSWAP 74S40 A B C D
FUNCTION G1 74S40 1 2 4 5 6
FUNCTION G2 74S40 9 10 12 13 8
POWER +5V; 14
GROUND GND; 7
NC 3 11
END

(DEVICE DESCRIPTION FILE: 7473)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7473 J CK K CLR QN Q
PINUSE 7473 IN IN IN IN OUT OUT
FUNCTION G1 7473 14 1 3 2 13 12
FUNCTION G2 7473 7 5 10 6 8 9
POWER +5V; 4
GROUND GND; 11
END

(DEVICE DESCRIPTION FILE: 74H73)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74H73 J CK K CLR QN Q
PINUSE 74H73 IN IN IN IN OUT OUT
FUNCTION G1 74H73 14 1 3 2 13 12
FUNCTION G2 74H73 7 5 10 6 8 9
POWER +5V; 4
GROUND GND; 11
END

(DEVICE DESCRIPTION FILE: 74L73)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74L73 J CK K CLR QN Q
PINUSE 74L73 IN IN IN IN OUT OUT
FUNCTION G1 74L73 14 1 3 2 13 12
FUNCTION G2 74L73 7 5 10 6 8 9
POWER +5V; 4
GROUND GND; 11
END

(DEVICE DESCRIPTION FILE: 74LS73A)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS73A J CK K CLR QN Q
PINUSE 74LS73A IN IN IN IN OUT OUT
FUNCTION G1 74LS73A 14 1 3 2 13 12
FUNCTION G2 74LS73A 7 5 10 6 8 9
POWER +5V; 4
GROUND GND; 11
END

(DEVICE DESCRIPTION FILE: 7474)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7474 CLR CK D PR Q QN
PINUSE 7474 IN IN IN IN OUT OUT
FUNCTION G1 7474 1 3 2 4 5 6
FUNCTION G2 7474 13 11 12 10 9 8
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74H74)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74H74 CLR CK D PR Q QN
PINUSE 74H74 IN IN IN IN OUT OUT
FUNCTION G1 74H74 1 3 2 4 5 6
FUNCTION G2 74H74 13 11 12 10 9 8
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74L74)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74L74 CLR CK D PR Q QN
PINUSE 74L74 IN IN IN IN OUT OUT
FUNCTION G1 74L74 1 3 2 4 5 6
FUNCTION G2 74L74 13 11 12 10 9 8
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS74)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS74 CLR CK D PR Q QN
PINUSE 74LS74 IN IN IN IN OUT OUT
FUNCTION G1 74LS74 1 3 2 4 5 6
FUNCTION G2 74LS74 13 11 12 10 9 8
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74S74)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74S74 CLR CK D PR Q QN
PINUSE 74S74 IN IN IN IN OUT OUT
FUNCTION G1 74S74 1 3 2 4 5 6
FUNCTION G2 74S74 13 11 12 10 9 8
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 7476)
PACKAGE DIP16
CLASS IC
PINCOUNT 16
PINORDER 7476 CLR K CK J PR Q QN
PINUSE 7476 IN IN IN IN IN OUT OUT
FUNCTION G1 7476 3 16 1 4 2 15 14
FUNCTION G2 7476 8 12 6 9 7 11 10
POWER +5V; 5
GROUND GND; 13
END

(DEVICE DESCRIPTION FILE: 74H76)
PACKAGE DIP16
CLASS IC
PINCOUNT 16
PINORDER 74H76 CLR K CK J PR Q QN
PINUSE 74H76 IN IN IN IN IN OUT OUT
FUNCTION G1 74H76 3 16 1 4 2 15 14
FUNCTION G2 74H76 8 12 6 9 7 11 10
POWER +5V; 5
GROUND GND; 13
END

(DEVICE DESCRIPTION FILE: 74LS76A)
PACKAGE DIP16
CLASS IC
PINCOUNT 16
PINORDER 74LS76A CLR K CK J PR Q QN
PINUSE 74LS76A IN IN IN IN IN OUT OUT
FUNCTION G1 74LS76A 3 16 1 4 2 15 14
FUNCTION G2 74LS76A 8 12 6 9 7 11 10
POWER +5V; 5
GROUND GND; 13
END

(DEVICE DESCRIPTION FILE: 74L78)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74L78 PR J CK K CLR Q QN
PINUSE 74L78 IN IN IN IN IN OUT OUT
FUNCTION G1 74L78 2 3 1 14 5 13 12
FUNCTION G2 74L78 6 10 1 7 5 8 9
POWER +5V; 4
GROUND GND; 11
END

(DEVICE DESCRIPTION FILE: 74H78)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74H78 PR J CK K CLR Q QN
PINUSE 74H78 IN IN IN IN IN OUT OUT
FUNCTION G1 74H78 13 4 9 1 12 2 3
FUNCTION G2 74H78 10 11 9 8 12 6 5
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS78A)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS78A PR J CK K CLR Q QN
PINUSE 74LS78A IN IN IN IN IN OUT OUT
FUNCTION G1 74LS78A 2 3 1 14 5 13 12
FUNCTION G2 74LS78A 6 10 1 7 5 8 9
POWER +5V; 4
GROUND GND; 11
END

(DEVICE DESCRIPTION FILE: 7486)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 7486 A B Y
PINUSE 7486 IN IN OUT
PINSWAP 7486 A B
FUNCTION G1 7486 1 2 3
FUNCTION G2 7486 4 5 6
FUNCTION G3 7486 9 10 11
FUNCTION G4 7486 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS86)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS86 A B Y
PINUSE 74LS86 IN IN OUT
PINSWAP 74LS86 A B
FUNCTION G1 74LS86 1 2 3
FUNCTION G2 74LS86 4 5 6
FUNCTION G3 74LS86 9 10 11
FUNCTION G4 74LS86 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74S86)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74S86 A B Y
PINUSE 74S86 IN IN OUT
PINSWAP 74S86 A B
FUNCTION G1 74S86 1 2 3
FUNCTION G2 74S86 4 5 6
FUNCTION G3 74S86 9 10 11
FUNCTION G4 74S86 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74125)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74125 A C Y
PINUSE 74125 IN TRI OUT
FUNCTION G1 74125 2 1 3
FUNCTION G2 74125 5 4 6
FUNCTION G3 74125 9 10 8
FUNCTION G4 74125 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS125A)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS125A A C Y
PINUSE 74LS125A IN TRI OUT
FUNCTION G1 74LS125A 2 1 3
FUNCTION G2 74LS125A 5 4 6
FUNCTION G3 74LS125A 9 10 8
FUNCTION G4 74LS125A 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74126)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74126 A C Y
PINUSE 74126 IN TRI OUT
FUNCTION G1 74126 2 1 3
FUNCTION G2 74126 5 4 6
FUNCTION G3 74126 9 10 8
FUNCTION G4 74126 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 74LS126A)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 74LS126A A C Y
PINUSE 74LS126A IN TRI OUT
FUNCTION G1 74LS126A 2 1 3
FUNCTION G2 74LS126A 5 4 6
FUNCTION G3 74LS126A 9 10 8
FUNCTION G4 74LS126A 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4000A)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER NOR3 A B C Y
PINUSE NOR3 IN IN IN OUT
PINSWAP NOR3 A B C
FUNCTION G1 NOR3 3 4 5 6
FUNCTION G3 NOR3 11 12 13 10
PINORDER INV A Y
PINUSE INV IN OUT
FUNCTION G2 INV 8 9
POWER +5V; 14
GROUND GND; 7
NC 1 2
END

(DEVICE DESCRIPTION FILE: 4000B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER NOR3 A B C Y
PINUSE NOR3 IN IN IN OUT
PINSWAP NOR3 A B C
FUNCTION G1 NOR3 3 4 5 6
FUNCTION G3 NOR3 11 12 13 10
PINORDER INV A Y
PINUSE INV IN OUT
FUNCTION G2 INV 8 9
POWER +5V; 14
GROUND GND; 7
NC 1 2
END

(DEVICE DESCRIPTION FILE: 4000UB)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER NOR3 A B C Y
PINUSE NOR3 IN IN IN OUT
PINSWAP NOR3 A B C
FUNCTION G1 NOR3 3 4 5 6
FUNCTION G3 NOR3 11 12 13 10
PINORDER INV A Y
PINUSE INV IN OUT
FUNCTION G2 INV 8 9
POWER +5V; 14
GROUND GND; 7
NC 1 2
END

(DEVICE DESCRIPTION FILE: 4001A)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4001A A B Y
PINUSE 4001A IN IN OUT
PINSWAP 4001A A B
FUNCTION G1 4001A 1 2 3
FUNCTION G2 4001A 5 6 4
FUNCTION G3 4001A 8 9 10
FUNCTION G4 4001A 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4001B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4001B A B Y
PINUSE 4001B IN IN OUT
PINSWAP 4001B A B
FUNCTION G1 4001B 1 2 3
FUNCTION G2 4001B 5 6 4
FUNCTION G3 4001B 8 9 10
FUNCTION G4 4001B 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4001UB)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4001UB A B Y
PINUSE 4001UB IN IN OUT
PINSWAP 4001UB A B
FUNCTION G1 4001UB 1 2 3
FUNCTION G2 4001UB 5 6 4
FUNCTION G3 4001UB 8 9 10
FUNCTION G4 4001UB 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4002A)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4002A A B C D Y
PINUSE 4002A IN IN IN IN OUT
PINSWAP 4002A A B C D
FUNCTION G1 4002A 2 3 4 5 1
FUNCTION G2 4002A 9 10 11 12 13
POWER +5V; 14
GROUND GND: 7
NC 6 8
END

(DEVICE DESCRIPTION FILE: 4002B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4002B A B C D Y
PINUSE 4002B IN IN IN IN OUT
PINSWAP 4002B A B C D
FUNCTION G1 4002B 2 3 4 5 1
FUNCTION G2 4002B 9 10 11 12 13
POWER +5V; 14
GROUND GND: 7
NC 6 8
END

(DEVICE DESCRIPTION FILE: 4002UB)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4002UB A B C D Y
PINUSE 4002UB IN IN IN IN OUT
PINSWAP 4002UB A B C D
FUNCTION G1 4002UB 2 3 4 5 1
FUNCTION G2 4002UB 9 10 11 12 13
POWER +5V; 14
GROUND GND: 7
NC 6 8
END

(DEVICE DESCRIPTION FILE: 4009A)
PACKAGE DIP16
CLASS IC
PINCOUNT 16
PINORDER 4009A A Y
PINUSE 4009A IN OUT
FUNCTION G1 4009A 3 2
FUNCTION G2 4009A 5 4
FUNCTION G3 4009A 7 6
FUNCTION G4 4009A 9 10
FUNCTION G5 4009A 11 12
FUNCTION G6 4009A 14 15
POWER +5V; 1 16
GROUND GND; 8
NC 13
END

(DEVICE DESCRIPTION FILE: 4009UB)
PACKAGE DIP16
CLASS IC
PINCOUNT 16
PINORDER 4009UB A Y
PINUSE 4009UB IN OUT
FUNCTION G1 4009UB 3 2
FUNCTION G2 4009UB 5 4
FUNCTION G3 4009UB 7 6
FUNCTION G4 4009UB 9 10
FUNCTION G5 4009UB 11 12
FUNCTION G6 4009UB 14 15
POWER +5V; 1 16
GROUND GND; 8
NC 13
END

(DEVICE DESCRIPTION FILE: 4010A)
PACKAGE DIP16
CLASS IC
PINCOUNT 16
PINORDER 4010A A Y
PINUSE 4010A IN OUT
FUNCTION G1 4010A 3 2
FUNCTION G2 4010A 5 4
FUNCTION G3 4010A 7 6
FUNCTION G4 4010A 9 10
FUNCTION G5 4010A 11 12
FUNCTION G6 4010A 14 15
POWER +5V; 1 16
GROUND GND; 8
NC 13
END

(DEVICE DESCRIPTION FILE: 4010B)
PACKAGE DIP16
CLASS IC
PINCOUNT 16
PINORDER 4010B A Y
PINUSE 4010B IN OUT
FUNCTION G1 4010B 3 2
FUNCTION G2 4010B 5 4
FUNCTION G3 4010B 7 6
FUNCTION G4 4010B 9 10
FUNCTION G5 4010B 11 12
FUNCTION G6 4010B 14 15
POWER +5V; 1 16
GROUND GND; 8
NC 13
END

(DEVICE DESCRIPTION FILE: 4011A)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4011A A B Y
PINUSE 4011A IN IN OUT
PINSWAP 4011A A B
FUNCTION G1 4011A 1 2 3
FUNCTION G2 4011A 5 6 4
FUNCTION G3 4011A 8 9 10
FUNCTION G4 4011A 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4011B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4011B A B Y
PINUSE 4011B IN IN OUT
PINSWAP 4011B A B
FUNCTION G1 4011B 1 2 3
FUNCTION G2 4011B 5 6 4
FUNCTION G3 4011B 8 9 10
FUNCTION G4 4011B 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4011UB)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4011UB A B Y
PINUSE 4011UB IN IN OUT
PINSWAP 4011UB A B
FUNCTION G1 4011UB 1 2 3
FUNCTION G2 4011UB 5 6 4
FUNCTION G3 4011UB 8 9 10
FUNCTION G4 4011UB 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4012A)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4012A A B C D Y
PINUSE 4012A IN IN IN IN OUT
PINSWAP 4012A A B C D
FUNCTION G1 4012A 2 3 4 5 1
FUNCTION G2 4012A 9 10 11 12 13
POWER +5V; 14
GROUND GND; 7
NC 6 8
END

(DEVICE DESCRIPTION FILE: 4012B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4012B A B C D Y
PINUSE 4012B IN IN IN IN OUT
PINSWAP 4012B A B C D
FUNCTION G1 4012B 2 3 4 5 1
FUNCTION G2 4012B 9 10 11 12 13
POWER +5V; 14
GROUND GND; 7
NC 6 8
END

(DEVICE DESCRIPTION FILE: 4012UB)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4012UB A B C D Y
PINUSE 4012UB IN IN IN IN OUT
PINSWAP 4012UB A B C D
FUNCTION G1 4012UB 2 3 4 5 1
FUNCTION G2 4012UB 9 10 11 12 13
POWER +5V; 14
GROUND GND; 7
NC 6 8
END

(DEVICE DESCRIPTION FILE: 4015A)
PACKAGE DIP16
CLASS IC
PINCOUNT 16
PINORDER 4015A D CLK RESET Q1 Q2 Q3 Q4
PINUSE 4015A IN IN IN OUT OUT OUT OUT
FUNCTION G1 4015A 7 9 6 5 4 3 10
FUNCTION G2 4015A 15 1 14 13 12 11 2
POWER +5V; 16
GROUND GND; 8
END

(DEVICE DESCRIPTION FILE: 4015B)
PACKAGE DIP16
CLASS IC
PINCOUNT 16
PINORDER 4015B D CLK RESET Q1 Q2 Q3 Q4
PINUSE 4015B IN IN IN OUT OUT OUT OUT
FUNCTION G1 4015B 7 9 6 5 4 3 10
FUNCTION G2 4015B 15 1 14 13 12 11 2
POWER +5V; 16
GROUND GND; 8
END

(DEVICE DESCRIPTION FILE: 4023A)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4023A A B C Y
PINUSE 4023A IN IN IN OUT
PINSWAP 4023A A B C
FUNCTION G1 4023A 1 2 8 9
FUNCTION G2 4023A 3 4 5 6
FUNCTION G3 4023A 13 12 11 10
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4023B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4023B A B C Y
PINUSE 4023B IN IN IN OUT
PINSWAP 4023B A B C
FUNCTION G1 4023B 1 2 8 9
FUNCTION G2 4023B 3 4 5 6
FUNCTION G3 4023B 13 12 11 10
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4023UB)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4023UB A B C Y
PINUSE 4023UB IN IN IN OUT
PINSWAP 4023UB A B C
FUNCTION G1 4023UB 1 2 8 9
FUNCTION G2 4023UB 3 4 5 6
FUNCTION G3 4023UB 13 12 11 10
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4025A)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4025A A B C Y
PINUSE 4025A IN IN IN OUT
PINSWAP 4025A A B C
FUNCTION G1 4025A 1 2 8 9
FUNCTION G2 4025A 3 4 5 6
FUNCTION G3 4025A 13 12 11 10
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4025B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4025B A B C Y
PINUSE 4025B IN IN IN OUT
PINSWAP 4025B A B C
FUNCTION G1 4025B 1 2 8 9
FUNCTION G2 4025B 3 4 5 6
FUNCTION G3 4025B 13 12 11 10
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4025UB)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4025UB A B C Y
PINUSE 4025UB IN IN IN OUT
PINSWAP 4025UB A B C
FUNCTION G1 4025UB 1 2 8 9
FUNCTION G2 4025UB 3 4 5 6
FUNCTION G3 4025UB 13 12 11 10
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4030A)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4030A A B Y
PINUSE 4030A IN IN OUT
PINSWAP 4030A A B
FUNCTION G1 4030A 2 1 3
FUNCTION G2 4030A 5 6 4
FUNCTION G3 4030A 8 9 10
FUNCTION G4 4030A 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4068B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4068B A B C D E F G H K Y
PINUSE 4068B IN IN IN IN IN IN IN IN OUT OUT
PINSWAP 4068B A B C D E F G H
FUNCTION G1 4068B 2 3 4 5 9 10 11 12 1 13
POWER +5V; 14
GROUND GND; 7
NC 1 6 8
END

(DEVICE DESCRIPTION FILE: 4069UB)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4069UB A Y
PINUSE 4069UB IN OUT
FUNCTION G1 4069UB 1 2
FUNCTION G2 4069UB 3 4
FUNCTION G3 4069UB 5 6
FUNCTION G4 4069UB 9 8
FUNCTION G5 4069UB 11 10
FUNCTION G6 4069UB 13 12
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4070B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4070B A B Y
PINUSE 4070B IN IN OUT
PINSWAP 4070B A B
FUNCTION G1 4070B 1 2 3
FUNCTION G2 4070B 5 6 4
FUNCTION G3 4070B 8 9 10
FUNCTION G4 4070B 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4071B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4071B A B Y
PINUSE 4071B IN IN OUT
PINSWAP 4071B A B
FUNCTION G1 4071B 2 1 3
FUNCTION G2 4071B 6 5 4
FUNCTION G3 4071B 9 8 10
FUNCTION G4 4071B 13 12 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4072B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4072B A B C D Y
PINUSE 4072B IN IN IN IN OUT
PINSWAP 4072B A B C D
FUNCTION G1 4072B 2 3 4 5 1
FUNCTION G2 4072B 9 10 11 12 13
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4073B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4073B A B C Y
PINUSE 4073B IN IN IN OUT
PINSWAP 4073B A B C
FUNCTION G1 4073B 1 2 8 9
FUNCTION G2 4073B 3 4 5 6
FUNCTION G3 4073B 11 12 13 10
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4075B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4075B A B C Y
PINUSE 4075B IN IN IN OUT
PINSWAP 4075B A B C
FUNCTION G1 4075B 8 2 1 9
FUNCTION G2 4075B 5 4 3 6
FUNCTION G3 4075B 13 12 11 10
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4077B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4077B A B Y
PINUSE 4077B IN IN OUT
PINSWAP 4077B A B
FUNCTION G1 4077B 1 2 3
FUNCTION G2 4077B 5 6 4
FUNCTION G3 4077B 8 9 10
FUNCTION G4 4077B 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4078B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4078B A B C D E F G H K Y
PINUSE 4078B IN IN IN IN IN IN IN IN OUT OUT
PINSWAP 4078B A B C D E F G H
FUNCTION G1 4078B 2 3 4 5 9 10 11 12 1 13
POWER +5V; 14
GROUND GND; 7
NC 6 8
END

(DEVICE DESCRIPTION FILE: 4081B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4081B A B Y
PINUSE 4081B IN IN OUT
PINSWAP 4081B A B
FUNCTION G1 4081B 1 2 3
FUNCTION G2 4081B 5 6 4
FUNCTION G3 4081B 8 9 10
FUNCTION G4 4081B 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4082B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4082B IN IN IN IN OUT
PINSWAP 4082B A B C D
FUNCTION G1 4082B 5 4 3 2 1
FUNCTION G2 4082B 9 10 11 12 13
POWER +5V; 14
GROUND GND; 7
NC 6 8
END

(DEVICE DESCRIPTION FILE: 4085B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4085B INH A B C D Y
PINUSE 4085B IN IN IN IN IN OUT
PINSWAP 4085B A B C D
FUNCTION G1 4085B 10 1 2 12 13 3
FUNCTION G2 4085B 11 5 6 8 9 4
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 4093B)
PACKAGE DIP14
CLASS IC
PINCOUNT 14
PINORDER 4093B A B Y
PINUSE 4093B IN IN OUT
PINSWAP 4093B A B
FUNCTION G1 4093B 1 2 3
FUNCTION G2 4093B 5 6 4
FUNCTION G3 4093B 8 9 10
FUNCTION G4 4093B 12 13 11
POWER +5V; 14
GROUND GND; 7
END

(DEVICE DESCRIPTION FILE: 40174B)
PACKAGE DIP16
CLASS IC
PINCOUNT 16
PINORDER 40174B IN IN IN OUT
FUNCTION G1 40174B 3 9 1 2
FUNCTION G2 40174B 4 9 1 5
FUNCTION G3 40174B 6 9 1 7
FUNCTION G4 40174B 11 9 1 10
FUNCTION G5 40174B 13 9 1 12
FUNCTION G6 40174B 14 9 1 15
POWER +5V; 16
GROUND GND; 8
END

(DEVICE DESCRIPTION FILE: LM471)
PACKAGE DIP8
CLASS IC
PINCOUNT 8
PINORDER LM471 -IN +IN OUT
PINUSE LM471 IN IN OUT
FUNCTION G1 LM471 2 3 6
POWER +V; 7
GROUND -V; 4
NC 8
END

(SAMPLE DEVICE FILE FOR A DISCRETE)
(PACKAGE OPTIONAL)
CLASS DISCRETE
(PINCOUNT MUST MATCH PIN #S)
PINCOUNT 2
END

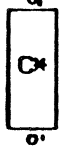
TELESIS LAYERSTD FILE

(TYPICAL LAYER STANDARD FILE FOR 6 LAYER BOARD)
(FILE NAME: LAYERSTD)
(TELESIS STANDARD LIBRARY)
(PHYSICAL LAYER COMPONENT SIDE)
DBLAYER 1 COMPONENT-SIDE
(PHYSICAL LAYER SOLDER SIDE)
DBLAYER 2 SOLDER-SIDE
(PHYSICAL LAYER INTERNAL SIGNAL)
DBLAYER 3 INTERNAL-SIGNAL
(PHYSICAL LAYER INTERNAL SIGNAL)
DBLAYER 4 INTERNAL-SIGNAL
(PHYSICAL LAYER IMBEDDED VOLTAGE -V)
DBLAYER 5 IMBEDDED-PLANE -V
(PHYSICAL LAYER IMBEDDED VOLTAGE +V)
DBLAYER 6 IMBEDDED-PLANE +V
DBLAYER 15 COMPONENT-SOLDER-MASK
DBLAYER 16 SOLDER-SOLDER-MASK
DBLAYER 33 CARD-OUTLINE
DBLAYER 34 PLATING-BAR
DBLAYER 36 DRAWING-FORMAT
DBLAYER 51 COMPONENT-OUTLINE
DBLAYER 54 REFERENCE-DESIGNATOR
DBLAYER 88 BOARD-DIMENSIONS
DBLAYER 89 SILKSCREEN
DBLAYER 90 TOOLING-CORNERS
DBLAYER 99 DRILL-CODE
END

TELESIS COMPONENT SYMBOLS
AND PIN FILES



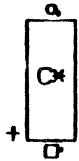
CAPAX750



CAPAX1150



CAPEL 750



CAPEL 1150

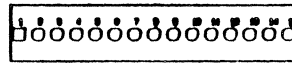


CAPRAD250



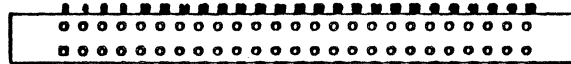
CAPRAD300

CON15S/156



J*

CON50D/156



J*

ECON24/156



J*



RES400



RES800



DIO350



DIO400



DIP8



DIP14



DIP16



SIP8



T039



T092



T0126



TP-1

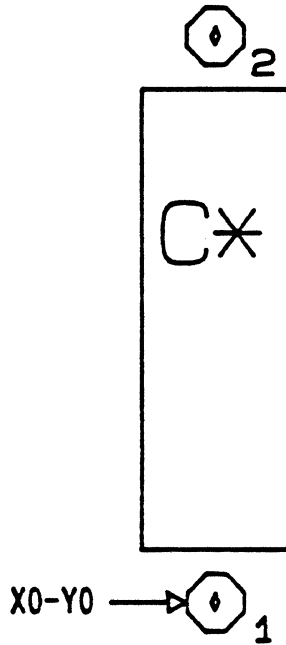


VIA

TELESIS SYSTEM-LIBRARY

PACKAGE SYMBOLS

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: C* HGT: 80

LAYER: 54 WTD: 60

ROTATE: 0 SPC: 9

PIN NUMBERS

TEXT: 1, 2 HGT: 32

LAYER: 53 WTD: 28

ROTATE: 0 SPC: 4

CONNECT POINT

SIZE: 50

LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT: HGT:

LAYER: WTD:

ROTATE: SPC:

[PACKAGE SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -250

LY= -250

UX= 250

UY= 1000

SYMBOL NAME

CAPAX750

REV 3

DRAWING NAME

CAPAX750

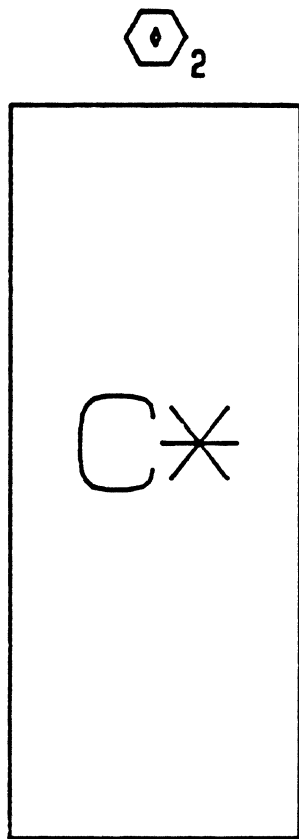
DRAWN BY:

J. FLETCHER

DATE: 12/17/82

(PIN FILE FOR PACKAGE SYMBOL CAPAX750)
(NAME OF FILE CAPAX750-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .049-P
PAD CIRCLE=.075 COMPONENT-SIDE
PAD CIRCLE=.075 SOLDER-SIDE
PAD CIRCLE=.065 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE
PAD CIRCLE=.095 COMPONENT-SOLDER-MASK
PAD CIRCLE=.095 SOLDER-SOLDER-MASK
PIN 1-2 A
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

<u>TEXT:</u>	<u>C*</u>	<u>HGT:</u>	<u>125</u>
<u>LAYER:</u>	<u>54</u>	<u>WTD:</u>	<u>100</u>
<u>ROTATE:</u>	<u>0</u>	<u>SPC:</u>	<u>10</u>

PIN NUMBERS

<u>TEXT:</u>	<u>1, 2</u>	<u>HGT:</u>	<u>32</u>
<u>LAYER:</u>	<u>53</u>	<u>WTD:</u>	<u>14</u>
<u>ROTATE:</u>	<u>0</u>	<u>SPC:</u>	<u>2</u>

CONNECT POINT

<u>SIZE:</u>	<u>50</u>
<u>LAYER:</u>	<u>0</u>

COMPONENT OUTLINE

<u>LAYER:</u>	<u>51</u>
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COMPONENT GRAPHIC PADS

<u>LAYER:</u>	<u>52</u>
---------------	-----------

DEVICE TYPE

<u>TEXT:</u>	<u></u>	<u>HGT:</u>	<u></u>
<u>LAYER:</u>	<u></u>	<u>WTD:</u>	<u></u>
<u>ROTATE:</u>	<u></u>	<u>SPC:</u>	<u></u>

[PACKAGE SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -600

LY= -200

UX= 400

UY= 1400

SYMBOL NAME

CAPAX1150

REV 3

DRAWING NAME

CAPAX1150

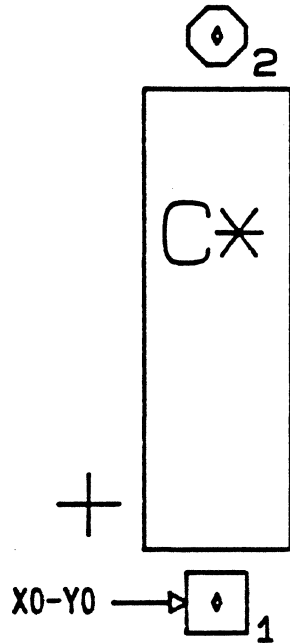
DRAWN BY:

J. FLETCHER

DATE: 12/17/82

(PIN FILE FOR PACKAGE SYMBOL CAPAX1150)
(NAME OF FILE CAPAX1150-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .049-P
PAD CIRCLE=.075 COMPONENT-SIDE
PAD CIRCLE=.075 SOLDER-SIDE
PAD CIRCLE=.065 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE
PAD CIRCLE=.095 COMPONENT-SOLDER-MASK
PAD CIRCLE=.095 SOLDER-SOLDER-MASK
PIN 1-2 A
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: C*	HGT: 80
LAYER: 54	WTD: 60
ROTATE: 0	SPC: 9

PIN NUMBERS

TEXT: 1, 2	HGT: 32
LAYER: 53	WTD: 28
ROTATE: 0	SPC: 4

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT:	HGT:
LAYER:	WTD:
ROTATE:	SPC:

[PACKAGE SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -250 LY= -250 UX= 250 UY= 1000
DRAWN BY: J. FLETCHER DATE: 12/17/82	

SYMBOL NAME

CAPEL750

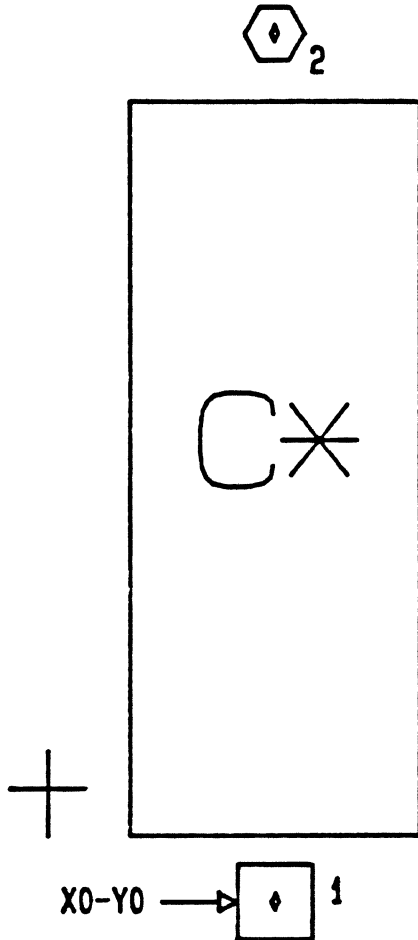
REV 3

DRAWING NAME

CAPEL750

(PIN FILE FOR PACKAGE SYMBOL CAPEL750)
(NAME OF FILE CAPEL750-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .049-P
PAD SQUARE=.075 COMPONENT-SIDE
PAD SQUARE=.075 SOLDER-SIDE
PAD CIRCLE=.065 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE
PAD CIRCLE=.095 COMPONENT-SOLDER-MASK
PAD CIRCLE=.095 SOLDER-SOLDER-MASK
PINTYPE B
DRILL .049-P
PAD CIRCLE=.075 COMPONENT-SIDE
PAD CIRCLE=.075 SOLDER-SIDE
PAD CIRCLE=.065 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE
PAD CIRCLE=.095 COMPONENT-SOLDER-MASK
PAD CIRCLE=.095 SOLDER-SOLDER-MASK
PIN 1 A
PIN 2 B
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: C*	HGT: 125
LAYER: 54	WTD: 100
ROTATE: 0	SPC: 10

PIN NUMBERS

TEXT: 1, 2	HGT: 32
LAYER: 53	WTD: 14
ROTATE: 0	SPC: 2

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT:	HGT:
LAYER:	WTD:
ROTATE:	SPC:

[PACKAGE SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -600

LY= -200

UX= 400

UY= 1400

SYMBOL NAME

CAPEL1150

REV 3

DRAWING NAME

CAPEL1150

DRAWN BY:

J. FLETCHER

DATE: 12/17/82

(PIN FILE FOR PACKAGE SYMBOL CAPEL1150)

(NAME OF FILE CAPEL1150-PIN)

(TELESIS STANDARD PACKAGE LIBRARY)

PINTYPE A

DRILL .049-P

PAD SQUARE=.075 COMPONENT-SIDE

PAD SQUARE=.075 SOLDER-SIDE

PAD CIRCLE=.065 INTERNAL-SIGNAL

THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE

ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE

PAD CIRCLE=.095 COMPONENT-SOLDER-MASK

PAD CIRCLE=.095 SOLDER-SOLDER-MASK

PINTYPE B

DRILL .049-P

PAD CIRCLE=.075 COMPONENT-SIDE

PAD CIRCLE=.075 SOLDER-SIDE

PAD CIRCLE=.065 INTERNAL-SIGNAL

THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE

ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE

PAD CIRCLE=.095 COMPONENT-SOLDER-MASK

PAD CIRCLE=.095 SOLDER-SOLDER-MASK

PIN 1 A

PIN 2 B

END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: C**	HGT: 62
LAYER: 54	WTD: 35
ROTATE: 0	SPC: 18

PIN NUMBERS

TEXT: 1, 2	HGT: 20
LAYER: 53	WTD: 15
ROTATE: 0	SPC: 3

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT:	HGT:
LAYER:	WTD:
ROTATE:	SPC:

[PACKAGE SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -200

LY= -200

UX= 200

UY= 400

SYMBOL NAME

CAPRAD250

REV 3

DRAWING NAME

CAPRAD250

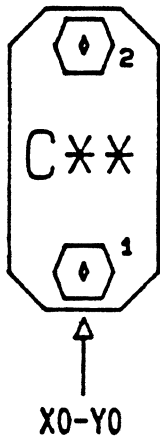
DRAWN BY:

J. FLETCHER

DATE: 12/17/82

(PIN FILE FOR PACKAGE SYMBOL CAPRAD250)
(NAME OF FILE CAPRAD250-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .049-P
PAD CIRCLE=.075 COMPONENT-SIDE
PAD CIRCLE=.075 SOLDER-SIDE
PAD CIRCLE=.065 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE
PAD CIRCLE=.095 COMPONENT-SOLDER-MASK
PAD CIRCLE=.095 SOLDER-SOLDER-MASK
FIN 1-2 A
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: C**	HGT: 62
LAYER: 54	WTD: 35
ROTATE: 0	SPC: 18

PIN NUMBERS

TEXT: 1, 2	HGT: 20
LAYER: 53	WTD: 15
ROTATE: 0	SPC: 3

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT:	HGT:
LAYER:	WTD:
ROTATE:	SPC:

[PACKAGE SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -200

LY= -200

UX= 200

UY= 400

SYMBOL NAME

CAPRAD300

REV 3

DRAWING NAME

CAPRAD300

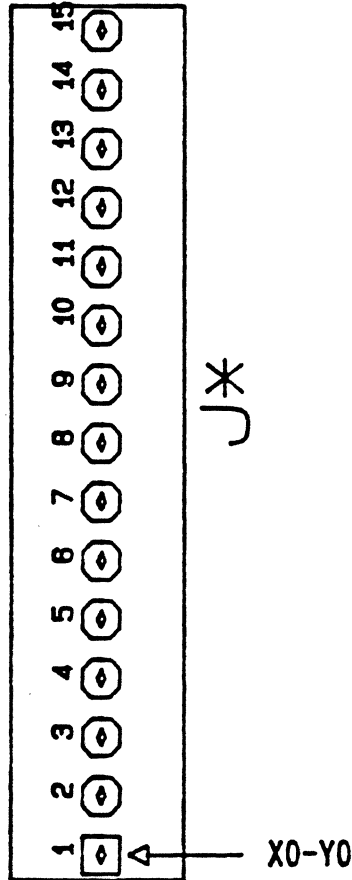
DRAWN BY:

J. FLETCHER

DATE: 12/17/82

(PIN FILE FOR PACKAGE SYMBOL CAPRAD300)
(NAME OF FILE CAPRAD300-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .049-P
PAD CIRCLE=.075 COMPONENT-SIDE
PAD CIRCLE=.075 SOLDER-SIDE
PAD CIRCLE=.065 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE
PAD CIRCLE=.095 COMPONENT-SOLDER-MASK
PAD CIRCLE=.095 SOLDER-SOLDER-MASK
PIN 1-2 A
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: J*	HGT: 125
LAYER: 54	WTD: 110
ROTATE: 0	SPC: 40

PIN NUMBERS

TEXT: 1-15	HGT: 50
LAYER: 53	WTD: 30
ROTATE: 0	SPC: 10

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT:	HGT:
LAYER:	WTD:
ROTATE:	SPC:

SYMBOL ROTATED 90°

[PACKAGE SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -200

LY= -400

UX= 2500

UY= 440

SYMBOL NAME

CON15S/156

REV 3

DRAWING NAME

CON15S/156

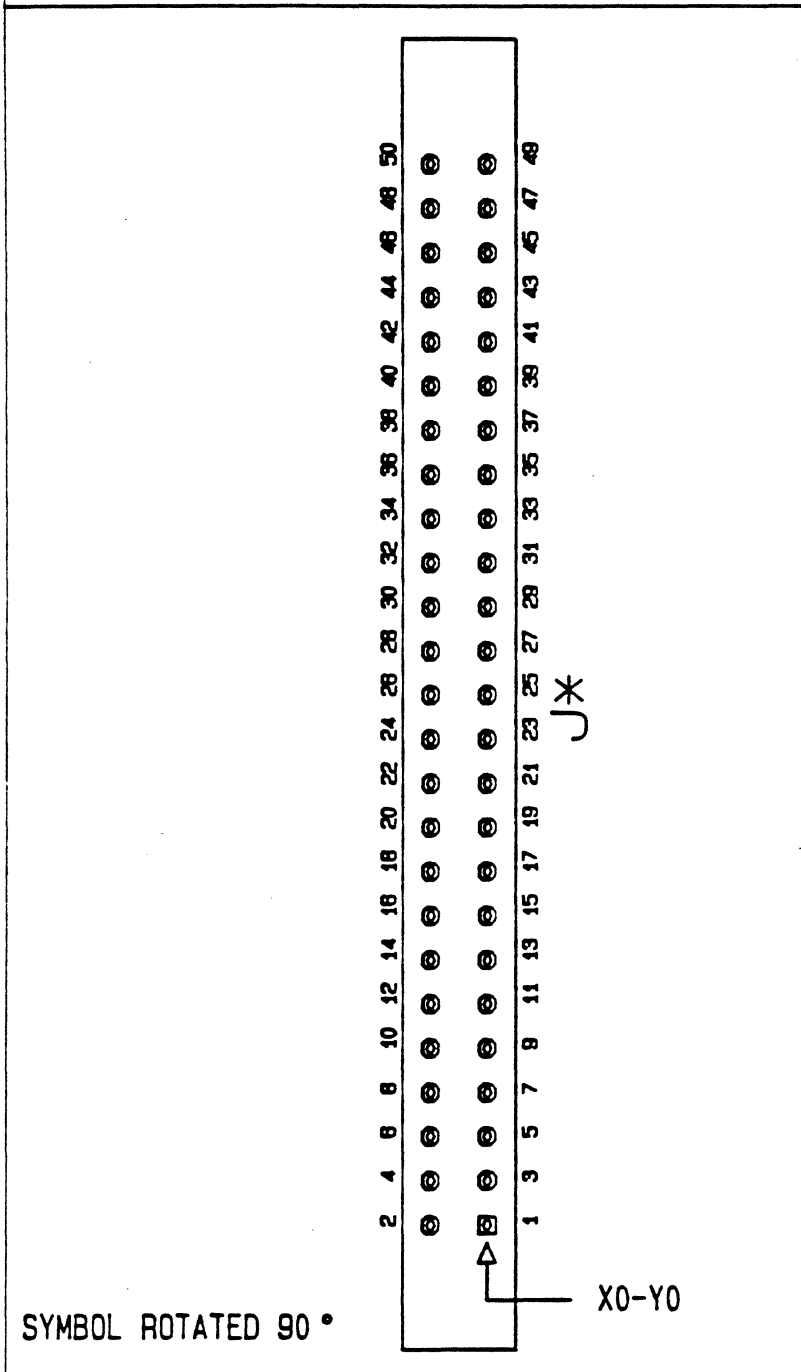
DRAWN BY:

J. FLETCHER

DATE: 12/17/82

(PIN FILE FOR PACKAGE SYMBOL CON15S/156)
(NAME OF FILE CON15S/156-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .069-P
PAD SQUARE=.100 COMPONENT-SIDE
PAD SQUARE=.100 SOLDER-SIDE
PAD CIRCLE=.085 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB03 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.100 IMBEDDED-PLANE
PAD SQUARE=.120 COMPONENT-SOLDER-MASK
PAD SQUARE=.120 SOLDER-SOLDER-MASK
PINTYPE B
DRILL .069-P
PAD CIRCLE=.100 COMPONENT-SIDE
PAD CIRCLE=.100 SOLDER-SIDE
PAD CIRCLE=.085 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB03 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.100 IMBEDDED-PLANE
PAD CIRCLE=.120 COMPONENT-SOLDER-MASK
PAD CIRCLE=.120 SOLDER-SOLDER-MASK
PIN 1 A
PIN 2-15 B
END

TELESIS LIBRARY SYMBOL



SYMBOL ROTATED 90°

X0-Y0

[PACKAGE SYMBOLS]

REFERENCE DESIGNATION

TEXT: J* HGT: 125
 LAYER: 54 WTD: 94
 ROTATE: 0 SPC: 31

PIN NUMBERS

TEXT: 1-50 HGT: 50
 LAYER: 53 WTD: 30
 ROTATE: 0 SPC: 10

CONNECT POINT

SIZE: 50
 LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT: HGT:
 LAYER: WTD:
 ROTATE: SPC:

LIBRARY SCALE
 FULL

EXTENTS
 LX= -600

SYMBOL NAME

CONN50D/156

REV 3

DRAWN BY:
 J. FLETCHER

LY= -400
 UX= 4400

DRAWING NAME

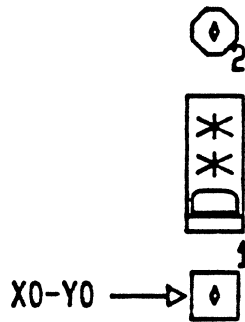
DATE: 12/17/82

UY= 500

CONN50D/156

(PIN FILE FOR PACKAGE SYMBOL CON50D/156)
(NAME OF FILE CON50D/156-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .039-P
PAD SQUARE=.062 COMPONENT-SIDE
PAD SQUARE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD SQUARE=.080 COMPONENT-SOLDER-MASK
PAD SQUARE=.080 SOLDER-SOLDER-MASK
PINTYPE B
DRILL .039-P
PAD CIRCLE=.062 COMPONENT-SIDE
PAD CIRCLE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD CIRCLE=.080 COMPONENT-SOLDER-MASK
PAD CIRCLE=.080 SOLDER-SOLDER-MASK
PIN 1 A
PIN 2-50 B
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: D**	HGT: 60
LAYER: 54	WTD: 30
ROTATE: 90	SPC: 20

PIN NUMBERS

TEXT: 1, 2	HGT: 31
LAYER: 53	WTD: 13
ROTATE: 0	SPC: 1

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT:	HGT:
LAYER:	WTD:
ROTATE:	SPC:

[PACKAGE SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -200 LY= -200 UX= 200 UY= 400	<u>SYMBOL NAME</u> DI0350
DRAWN BY: J. FLETCHER DATE: 12/20/82		REV 3 <u>DRAWING NAME</u> DI0350

(PIN FILE FOR PACKAGE SYMBOL DIO350)
(NAME OF FILE DIO350-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .039-P
PAD SQUARE=.062 COMPONENT-SIDE
PAD SQUARE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD SQUARE=.080 COMPONENT-SOLDER-MASK
PAD SQUARE=.080 SOLDER-SOLDER-MASK
PINTYPE B
DRILL .039-P
PAD CIRCLE=.062 COMPONENT-SIDE
PAD CIRCLE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD CIRCLE=.080 COMPONENT-SOLDER-MASK
PAD CIRCLE=.080 SOLDER-SOLDER-MASK
PIN 1 A
PIN 2 B
END

TELESIS LIBRARY SYMBOL

REFERENCE DESIGNATION

TEXT: D**	HGT: 62
LAYER: 54	WTD: 40
ROTATE: 90	SPC: 20

PIN NUMBERS

TEXT: 1, 2	HGT: 32
LAYER: 53	WTD: 14
ROTATE: 0	SPC: 2

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT OUTLINE

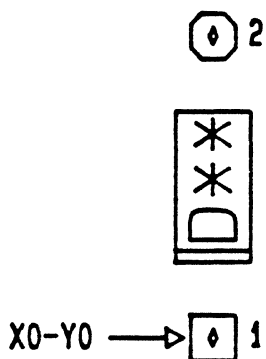
LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT:	HGT:
LAYER:	WTD:
ROTATE:	SPC:

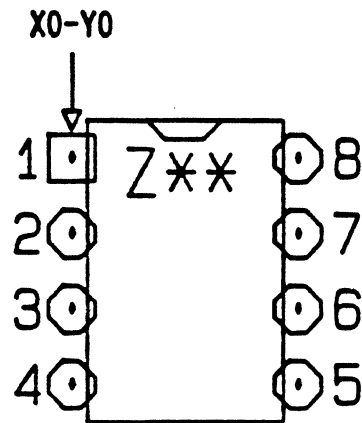


[PACKAGE SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -200 LY= -200 UX= 200 UY= 600	<u>SYMBOL NAME</u> DIO400
DRAWN BY: J. FLETCHER DATE: 12/20/82		REV 3
		<u>DRAWING NAME</u> DIO400

(PIN FILE FOR PACKAGE SYMBOL DIO400)
(NAME OF FILE DIO400-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .049-P
PAD SQUARE=.075 COMPONENT-SIDE
PAD SQUARE=.075 SOLDER-SIDE
PAD CIRCLE=.065 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE
PAD SQUARE=.095 COMPONENT-SOLDER-MASK
PAD SQUARE=.095 SOLDER-SOLDER-MASK
PINTYPE B
DRILL .049-P
PAD CIRCLE=.075 COMPONENT-SIDE
PAD CIRCLE=.075 SOLDER-SIDE
PAD CIRCLE=.065 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE
PAD CIRCLE=.095 COMPONENT-SOLDER-MASK
PAD CIRCLE=.095 SOLDER-SOLDER-MASK
PIN 1 A
PIN 2 B
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: Z**	HGT: 62
LAYER: 54	WTD: 35
ROTATE: 0	SPC: 18

PIN NUMBERS

TEXT: 1-8	HGT: 50
LAYER: 53	WTD: 30
ROTATE: 0	SPC: 10

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

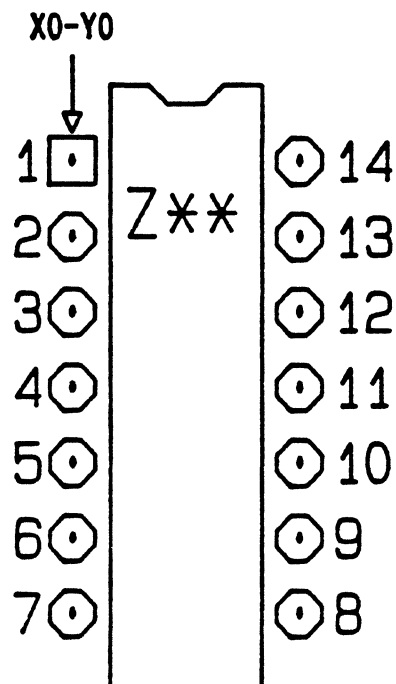
TEXT:	HGT:
LAYER:	WTD:
ROTATE:	SPC:

[PACKAGE SYMBOLS]

<p><u>LIBRARY SCALE</u></p> <p style="text-align: center;">FULL</p>	<p><u>EXTENTS</u></p> <p>LX= -200</p> <p>LY= -450</p> <p>UX= 450</p> <p>UY= 200</p>	<p><u>SYMBOL NAME</u></p> <p style="text-align: center;">DIP8</p> <p style="text-align: right; border: 1px solid black;">REV 3</p>
<p>DRAWN BY:</p> <p style="text-align: center;">J. FLETCHER</p> <p>DATE: 12/20/82</p>		<p><u>DRAWING NAME</u></p> <p style="text-align: center;">DIP8</p>

(PIN FILE FOR PACKAGE SYMBOL DIP8)
(NAME OF FILE DIP8-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .039-P
PAD SQUARE=.062 COMPONENT-SIDE
PAD SQUARE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD SQUARE=.080 COMPONENT-SOLDER-MASK
PAD SQUARE=.080 SOLDER-SOLDER-MASK
PINTYPE B
DRILL .039-P
PAD CIRCLE=.062 COMPONENT-SIDE
PAD CIRCLE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD CIRCLE=.080 COMPONENT-SOLDER-MASK
PAD CIRCLE=.080 SOLDER-SOLDER-MASK
PIN 1 A
PIN 2-8 B
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: Z** HGT: 62

LAYER: 54 WTD: 35

ROTATE: 0 SPC: 18

PIN NUMBERS

TEXT: 1-14 HGT: 50

LAYER: 53 WTD: 30

ROTATE: 0 SPC: 10

CONNECT POINT

SIZE: 50

LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT: HGT: 127

LAYER: 55 WTD: 111

ROTATE: 0 SPC: 15

[PACKAGE SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -200

LY= -900

UX= 500

UY= 300

SYMBOL NAME

DIP14

REV 3

DRAWING NAME

DIP14

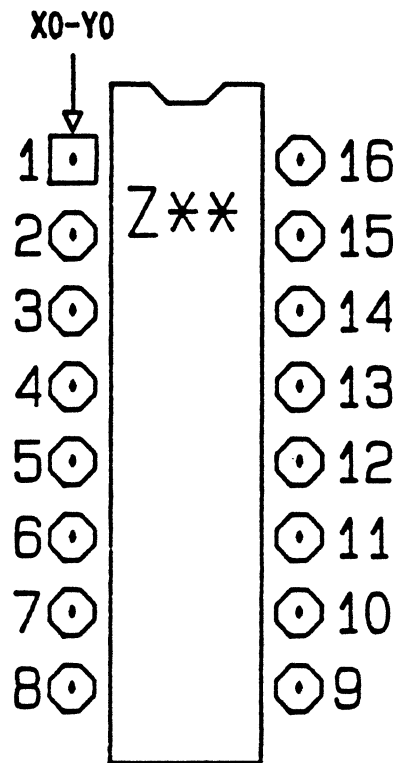
DRAWN BY:

J. FLETCHER

DATE: 12/20/82

(PIN FILE FOR PACKAGE SYMBOL DIP14)
(NAME OF FILE DIP14-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .039-P
PAD SQUARE=.062 COMPONENT-SIDE
PAD SQUARE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD SQUARE=.080 COMPONENT-SOLDER-MASK
PAD SQUARE=.080 SOLDER-SOLDER-MASK
PINTYPE B
DRILL .039-P
PAD CIRCLE=.062 COMPONENT-SIDE
PAD CIRCLE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD CIRCLE=.080 COMPONENT-SOLDER-MASK
PAD CIRCLE=.080 SOLDER-SOLDER-MASK
PIN 1 A
PIN 2-14 B
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: Z**	HGT: 62
LAYER: 54	WTD: 35
ROTATE: 0	SPC: 18

PIN NUMBERS

TEXT: 1-16	HGT: 50
LAYER: 53	WTD: 30
ROTATE: 0	SPC: 10

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT:	HGT: 117
LAYER: 55	WTD: 111
ROTATE: 0	SPC: 15

[PACKAGE SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -200

LY= -900

UX= 500

UY= 300

DRAWN BY:

J. FLETCHER

DATE: 12/20/82

SYMBOL NAME

DIP16

REV 3

DRAWING NAME

DIP16

```
(PIN FILE FOR PACKAGE SYMBOL DIP16)
(NAME OF FILE DIP16-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .039-P
PAD SQUARE=.062 COMPONENT-SIDE
PAD SQUARE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD SQUARE=.080 COMPONENT-SOLDER-MASK
PAD SQUARE=.080 SOLDER-SOLDER-MASK
PINTYPE B
DRILL .039-P
PAD CIRCLE=.062 COMPONENT-SIDE
PAD CIRCLE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD CIRCLE=.080 COMPONENT-SOLDER-MASK
PAD CIRCLE=.080 SOLDER-SOLDER-MASK
PIN 1 A
PIN 2-16 B
END
```


TELESIS LIBRARY SYMBOL

REFERENCE DESIGNATION

TEXT: J*	HGT: 125
LAYER: 54	WTD: 110
ROTATE: 0	SPC: 40

PIN NUMBERS

TEXT: 1-24	HGT: 32
LAYER: 53	WTD: 16
ROTATE: 0	SPC: 4

CONNECT POINT

SIZE: 50
LAYER: 1, 2

COMPONENT OUTLINE

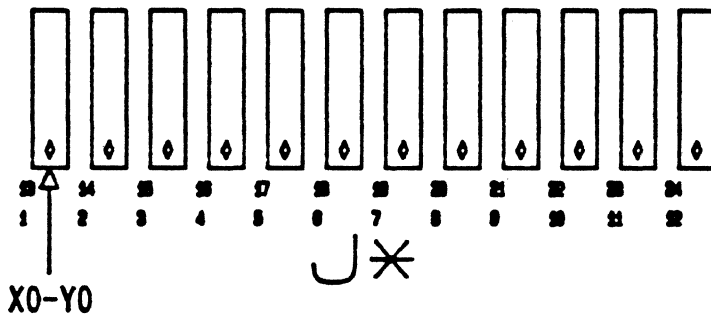
LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT:	HGT:
LAYER:	WTD:
ROTATE:	SPC:



[PACKAGE SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -400

LY= -400

UX= 2000

UY= 400

DRAWN BY:

J. FLETCHER

DATE: 12/20/82

SYMBOL NAME

ECON24/156

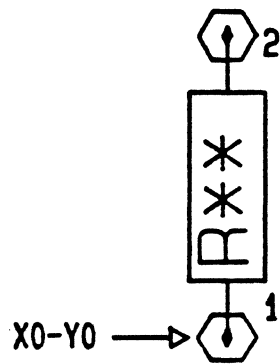
REV 3

DRAWING NAME

ECON24/156

(PIN FILE FOR PACKAGE SYMBOL ECON24/156)
(NAME OF FILE ECON24/156-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
PIN 1-24 A
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT:	R**	HGT:	62
LAYER:	54	WTD:	42
ROTATE:	90	SPC:	20

PIN NUMBERS

TEXT:	1, 2	HGT:	32
LAYER:	53	WTD:	16
ROTATE:	0	SPC:	2

CONNECT POINT

SIZE:	50
LAYER:	0

COMPONENT OUTLINE

LAYER:	51
--------	----

COMPONENT GRAPHIC PADS

LAYER:	52
--------	----

DEVICE TYPE

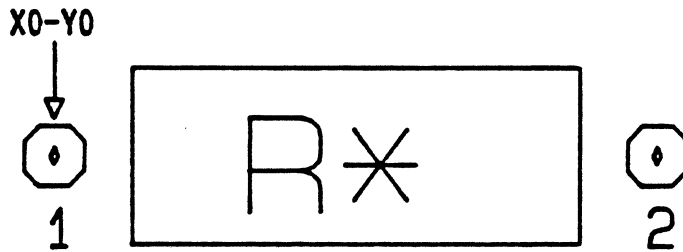
TEXT:		HGT:	
LAYER:		WTD:	
ROTATE:		SPC:	

[PACKAGE SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -200 LY= -200 UX= 200 UY= 600	<u>SYMBOL NAME</u> RES400
DRAWN BY: J. FLETCHER DATE: 12/20/82		REV 3
		<u>DRAWING NAME</u> RES400

(PIN FILE FOR PACKAGE SYMBOL RES400)
(NAME OF FILE RES400-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .039-P
PAD CIRCLE=.062 COMPONENT-SIDE
PAD CIRCLE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD CIRCLE=.080 COMPONENT-SOLDER-MASK
PAD CIRCLE=.080 SOLDER-SOLDER-MASK
PIN 1-2 A
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT:	R**	HGT:	125
LAYER:	54	WTD:	94
ROTATE:	0	SPC:	31

PIN NUMBERS

TEXT:	1, 2	HGT:	50
LAYER:	53	WTD:	30
ROTATE:	0	SPC:	10

CONNECT POINT

SIZE:	50
LAYER:	0

COMPONENT OUTLINE

LAYER:	51
--------	----

COMPONENT GRAPHIC PADS

LAYER:	52
--------	----

DEVICE TYPE

TEXT:		HGT:	
LAYER:		WTD:	
ROTATE:		SPC:	

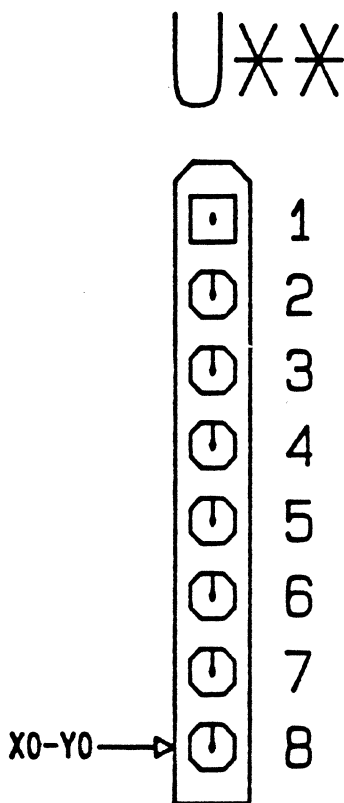
[PACKAGE SYMBOLS]

<p>LIBRARY SCALE FULL</p>	<p>EXTENTS LX= -300 LY= -400 UX= 1100 UY= 400</p>	<p><u>SYMBOL NAME</u> RES800</p>
<p>DRAWN BY: J. FLETCHER</p> <p>DATE: 12/20/82</p>		<p><u>DRAWING NAME</u> RES800</p>

REV 3

(PIN FILE FOR PACKAGE SYMBOL RES800)
(NAME OF FILE RES800-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .049-P
PAD CIRCLE=.075 COMPONENT-SIDE
PAD CIRCLE=.075 SOLDER-SIDE
PAD CIRCLE=.065 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE
PAD CIRCLE=.095 COMPONENT-SOLDER-MASK
PAD CIRCLE=.095 SOLDER-SOLDER-MASK
PIN 1-2 A
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: U** HGT: 125
 LAYER: 54 WTD: 94
 ROTATE: 0 SPC: 31

PIN NUMBERS

TEXT: 1-8 HGT: 50
 LAYER: 53 WTD: 30
 ROTATE: 0 SPC: 10

CONNECT POINT

SIZE: 50
 LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

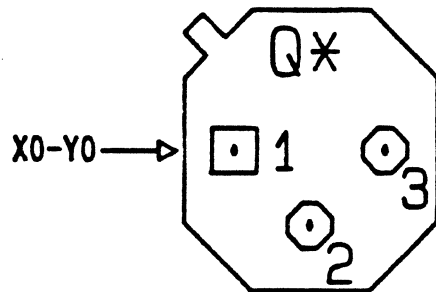
TEXT: HGT:
 LAYER: WTD:
 ROTATE: SPC:

[PACKAGE SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -300 LY= -1000	<u>SYMBOL NAME</u> SIP8
DRAWN BY: J. FLETCHER	UX= 300	REV 3
DATE: 12/21/82	UY= 300	<u>DRAWING NAME</u> SIP8

(PIN FILE FOR PACKAGE SYMBOL SIP8)
(NAME OF FILE SIP8-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .039-P
PAD SQUARE=.062 COMPONENT-SIDE
PAD SQUARE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD SQUARE=.080 COMPONENT-SOLDER-MASK
PAD SQUARE=.080 SOLDER-SOLDER-MASK
PINTYPE B
DRILL .039-P
PAD CIRCLE=.062 COMPONENT-SIDE
PAD CIRCLE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD CIRCLE=.080 COMPONENT-SOLDER-MASK
PAD CIRCLE=.080 SOLDER-SOLDER-MASK
PIN 1 A
PIN 2-8 B
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: Q*	HGT: 62
LAYER: 54	WTD: 35
ROTATE: 0	SPC: 18

PIN NUMBERS

TEXT: 1-3	HGT: 50
LAYER: 53	WTD: 30
ROTATE: 0	SPC: 10

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

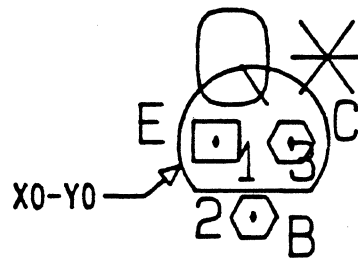
TEXT:	HGT:
LAYER:	WTD:
ROTATE:	SPC:

[PACKAGE SYMBOLS]

LIBRARY SCALE	EXTENTS	<u>SYMBOL NAME</u>
FULL	LX= -300	T039
DRAWN BY: J. FLETCHER	LY= -500	REV 3
	UX= 600	<u>DRAWING NAME</u>
DATE: 12/21/82	UY= 500	T039

(PIN FILE FOR PACKAGE SYMBOL TO39)
(NAME OF FILE TO39-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .039-P
PAD SQUARE=.062 COMPONENT-SIDE
PAD SQUARE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD SQUARE=.080 COMPONENT-SOLDER-MASK
PAD SQUARE=.080 SOLDER-SOLDER-MASK
PINTYPE B
DRILL .039-P
PAD CIRCLE=.062 COMPONENT-SIDE
PAD CIRCLE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD CIRCLE=.080 COMPONENT-SOLDER-MASK
PAD CIRCLE=.080 SOLDER-SOLDER-MASK
PIN 1 A
PIN 2-3 B
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: Q* HGT: 125
LAYER: 54 WTD: 94
ROTATE: 0 SPC: 31

PIN NUMBERS

TEXT: 1-3 HGT: 50
LAYER: 53 WTD: 30
ROTATE: 0 SPC: 10

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT: HGT:
LAYER: WTD:
ROTATE: SPC:

LOGICAL PIN NAMES

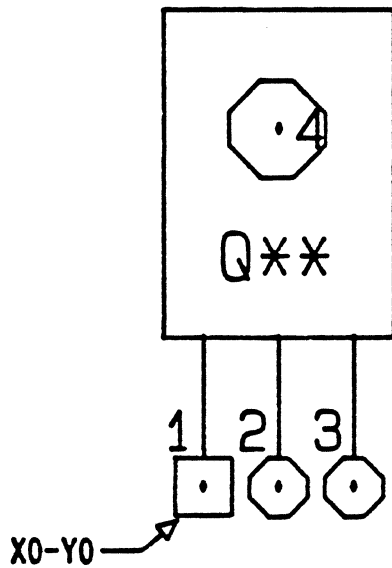
TEXT: EBC HGT: 50
LAYER: 151 WTD: 30
ROTATE: 0 SPC: 20

[PACKAGE SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -200 LY= -200 UX= 400 UY= 200	<u>SYMBOL NAME</u> T092
DRAWN BY: J. FLETCHER DATE: 12/21/82		<u>DRAWING NAME</u> T092
		[REV 3]

(PIN FILE FOR PACKAGE SYMBOL TO92)
(NAME OF FILE TO92-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .039-P
PAD SQUARE=.062 COMPONENT-SIDE
PAD SQUARE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD SQUARE=.080 COMPONENT-SOLDER-MASK
PAD SQUARE=.080 SOLDER-SOLDER-MASK
PINTYPE B
DRILL .039-P
PAD CIRCLE=.062 COMPONENT-SIDE
PAD CIRCLE=.062 SOLDER-SIDE
PAD CIRCLE=.050 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB00 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.062 IMBEDDED-PLANE
PAD CIRCLE=.080 COMPONENT-SOLDER-MASK
PAD CIRCLE=.080 SOLDER-SOLDER-MASK
PIN 1 A
PIN 2-3 B
END

TELESIS LIBRARY SYMBOL



REFERENCE DESIGNATION

TEXT: Q**	HGT: 62
LAYER: 54	WTD: 35
ROTATE: 0	SPC: 18

PIN NUMBERS

TEXT: 1-3	HGT: 50
LAYER: 53	WTD: 30
ROTATE: 0	SPC: 10

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT OUTLINE

LAYER: 51

COMPONENT GRAPHIC PADS

LAYER: 52

DEVICE TYPE

TEXT:	HGT:
LAYER:	WTD:
ROTATE:	SPC:

[PACKAGE SYMBOLS]

LIBRARY SCALE

FULL

EXTENTS

LX= -200

LY= -150

UX= 400

UY= 750

SYMBOL NAME

T0126

REV 3

DRAWING NAME

T0126

DRAWN BY:

J. FLETCHER

DATE: 12/21/82

(PIN FILE FOR PACKAGE SYMBOL TO126)
(NAME OF FILE TO126-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .049-P
PAD SQUARE=.075 COMPONENT-SIDE
PAD SQUARE=.075 SOLDER-SIDE
PAD CIRCLE=.065 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE
PAD SQUARE=.095 COMPONENT-SOLDER-MASK
PAD SQUARE=.095 SOLDER-SOLDER-MASK
PINTYPE B
DRILL .049-P
PAD CIRCLE=.075 COMPONENT-SIDE
PAD CIRCLE=.075 SOLDER-SIDE
PAD CIRCLE=.065 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB01 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.075 IMBEDDED-PLANE
PAD CIRCLE=.095 COMPONENT-SOLDER-MASK
PAD CIRCLE=.095 SOLDER-SOLDER-MASK
PINTYPE C
DRILL .125-N
PAD CIRCLE=.095 COMPONENT-SIDE
PAD CIRCLE=.095 SOLDER-SIDE
PAD CIRCLE=.095 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB04 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.150 IMBEDDED-PLANE
PAD CIRCLE=.150 COMPONENT-SOLDER-MASK
PAD CIRCLE=.150 SOLDER-SOLDER-MASK
PIN 1 A
PIN 2-3 B
PIN 4 C
END

TELESIS LIBRARY SYMBOL

REFERENCE DESIGNATION

TEXT: TP*	HGT: 32
LAYER: 54	WTD: 16
ROTATE: 0	SPC: 3

PIN NUMBERS

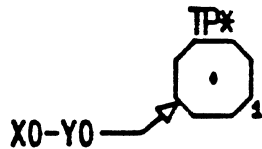
TEXT: 1	HGT: 20
LAYER: 53	WTD: 15
ROTATE: 0	SPC: 3

CONNECT POINT

SIZE: 50
LAYER: 0

COMPONENT GRAPHIC PADS

LAYER: 52



[PACKAGE SYMBOLS]

LIBRARY SCALE FULL	EXTENTS LX= -100 LY= -100 UX= 100 UY= 100	<u>SYMBOL NAME</u> TP-1
DRAWN BY: J. FLETCHER DATE: 12/21/82		<u>DRAWING NAME</u> TP-1
		[REV 3]

1000

(PIN FILE FOR PACKAGE SYMBOL TP-1)
(NAME OF FILE TP-1-PIN)
(TELESIS STANDARD PACKAGE LIBRARY)
PINTYPE A
DRILL .072-P
PAD CIRCLE=.125 COMPONENT-SIDE
PAD CIRCLE=.125 SOLDER-SIDE
PAD CIRCLE=.090 INTERNAL-SIGNAL
THERMAL-RELIEF FLASH=AB04 IMBEDDED-PLANE
ANTI-PAD CIRCLE=.125 IMBEDDED-PLANE
PAD CIRCLE=.145 COMPONENT-SOLDER-MASK
PAD CIRCLE=.145 SOLDER-SOLDER-MASK
PIN 1 A
END

[2000]

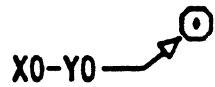
3/17/81

3/17/81

3/17/81

3/17/81

TELESIS LIBRARY SYMBOL



CONNECT POINT

SIZE: 50

LAYER: 0

COMPONENT GRAPHIC PADS

LAYER: 52

[PACKAGE SYMBOLS]

LIBRARY SCALE
FULL

EXTENTS

LX= -35

LY= -35

UX= 35

UY= 35

SYMBOL NAME

VIA

REV 3

DRAWING NAME

VIA

DRAWN BY:
J. FLETCHER

DATE: 12/21/82

REV 872

CLASSID

REVISED 11/80

(PIN FILE FOR PACKAGE SYMBOL VIA)
 (NAME OF FILE VIA-PIN)
 (TELESIS STANDARD PACKAGE LIBRARY)
 PINTYPE
 DRILL .028
 PAD CIRCLE=.055 COMPONENT-SIDE
 PAD CIRCLE=.055 SOLDER-SIDE
 PAD CIRCLE=.075 COMPONENT-SOLDER-MASK
 PAD CIRCLE=.075 SOLDER-SOLDER-MASK
 PAD CIRCLE=.045 INTERNAL-SIGNAL
 ANTI-PAD CIRCLE=.055 IMBEDDED-PLANE
 THERMAL-RELIEF FLASH=AB02 IMBEDDED-PLANE
 END

Project Name

Rev. Date

Revision Fixed:

Alpha Test By:

Revision Tested:

SYSTEM PERFORMANCE REPORT

ESIS SYSTEMS CORPORATION
 Alpha Road
 Mansfield, MA 01824 (617) 256-2300

Event No: _____ SPR No: _____
 Dup: _____ Class: _____ / _____

CUSTOMER LOCATION S/W Rev: _____
 Company Name: _____ S/N _____
 Reported By: _____
 Telephone: _____

CALL OPENED

Date: _____ / _____ / _____
 Time: _____ a.m. p.m.

TYPE OF CALL

Operational H/W S/W Enhancement Other

DESCRIPTION OF PROBLEM

Please describe with as much detail as possible the process in which the problem occurred. If all possible, please furnish data disk and hard copy.

Draw Symbol <input type="checkbox"/>	Draw Sch <input type="checkbox"/>	Design Bd <input type="checkbox"/>	Other <input type="checkbox"/>	_____ Hardcopy	Project Name _____
Reproducible? _____ Yes _____ No _____ Info Only				_____ Floppy	Drw/Sym Name _____
				_____ Tape	_____

MENU BOX

Rec'd _____	Date Assigned: _____	Programmer: _____
Monitor Disposition:	Tested By: _____	Revision Fixed: _____
Date Completed: _____	Time: _____	
Alpha Test Disposition:	<u>Fixed</u>	<u>Not Fixed</u>
Completed:	Alpha Test By: _____	Revision Tested: _____

CUSTOMER SUPPORT USE ONLY

STATUS

AS/FE DISPATCHED

DATE: ___/___/___

TIME:

AM
PM

COMMENTS:

PROBLEM RESOLUTION

WORKAROUND GIVEN TO CUSTOMER _____

COMMENTS:

CALL CLOSED

DATE: ___/___/___

TIME:

AM
PM