NC Drill Legend Chart Customisation

The NC Drill Legend chart normally contains a list of drill sizes, types and used quantities etc. This is based on a default template file called default-<units>.dlt located in <your_install_dir>\share\pcb\text\nclegend. There are instances where users would like to customise this table to suit their own standards. This app note describes how to modify and then use this as a standard template.

Choose the appropriate template

There are five default templates, default-cm.dlt, default-in.dlt, default-mil.dlt, default-mm.dlt and default-um.dlt. All represent the available units within the Cadence Allegro and OrCAD PCB Editor products. If you always design in mm then choose the default-mm.dlt. It is recommended that a copy is made of the relevant template file and stored in a separate location. The tools can be setup to use 'this' location as a default and this will be described later in the app note.

Editing the template file to reduce text block size

Open the default-<units>.dlt file with a text editor. It is recommended to use either WordPad or Textpad (www.textpad.com) as other text editors such as notepad may not format the file correctly. You will notice the template file is split into sections such as TitleHeight, PlatingOrder and so on. Locate the section you wish to make a change to and carefully make the edit. For example I want to change the text block size used for all the data in the NC drill legend so I would locate this section:-

```
;
;    ?TitleHeight
;    -----------
;
;    Height of the main title line row in units as indicated by ?Units.
;    This height must take into account a title that may in fact be multi-line.
;
 ?TitleHeight           6.5
;
;    Text block id numbers to be used for the actual title text, the column header
;    text, and text appearing in each drill data row, respectively.
;
 ?TitleTextBlock        9
 ?ColumnTitleTextBlock  9
 ?DataTextBlock         9
```

And change the text block size from 9 to 5.

```
;
;    ?TitleHeight
;    -----------
;
;    Height of the main title line row in units as indicated by ?Units.
;    This height must take into account a title that may in fact be multi-line.
;
 ?TitleHeight           6.5
;
;    Text block id numbers to be used for the actual title text, the column header
;    text, and text appearing in each drill data row, respectively.
;
 ?TitleTextBlock        5
 ?ColumnTitleTextBlock  5
 ?DataTextBlock         5
.
```

Editing the template file to support display of both Metric (design units) and Mils

To enable the display of Alternate units there are three sections of the template file that need editing. First enable the Alternate Units option changing:-

```
;
;   ?AlternateUnits|
;   ---------------
;
;   If ?AlternateUnits is specified, and also "Holesize2", or "Tolerance2", or
;   "HoleSizenTol2" in ?ColumnDefinitions, the columns will appear similar to
;   the standard columns, but in the units specified by ?AlternateUnits.
;   The permissable settings are:
;
;      "mils"  "inches"  "microns"  "millimeters"  "centimeters"
;
;   e.g. ?AlternateUnits "millimeters"
;
;   Where the columns appear and the column header text is left up to the user
;   as usual in ?ColumnDefinitions. How the units of the columns are indicated
;   are also left up to the user. Possibly the column header text (e.g. "SIZE (MM)"),
;   or with an appropriate ?DrillNotes/?BackdrillNotes line as below.
;
```

By removing the semi-colon to enable the option for Alternative Units.

```
    ?AlternateUnits "mils"|
;   ---------------
;
;   If ?AlternateUnits is specified, and also "Holesize2", or "Tolerance2", or
;   "HoleSizenTol2" in ?ColumnDefinitions, the columns will appear similar to
;   the standard columns, but in the units specified by ?AlternateUnits.
;   The permissable settings are:
;
;      "mils"  "inches"  "microns"  "millimeters"  "centimeters"
;
;   e.g. ?AlternateUnits "millimeters"
;
;   Where the columns appear and the column header text is left up to the user
;   as usual in ?ColumnDefinitions. How the units of the columns are indicated
;   are also left up to the user. Possibly the column header text (e.g. "SIZE (MM)"),
;   or with an appropriate ?DrillNotes/?BackdrillNotes line as below.
;
```

Next we want to enable the extra columns for SIZE and TOLERANCE in mils changing:-

```
?ColumnDefinitions '(
        ("Figure"      "FIGURE"          7)
        ("Holesize"    "SIZE"           15)|
        ("Tolerance"   "TOLERANCE "     15)
        ("PlateStatus" "PLATED"         10)
        ("NonStandard" "NONSTANDARD"    15)
        ("Quantity"    "QTY"             6)
    )
```

By adding the additional column definitions and adjusting the column name headings.

```
 ?ColumnDefinitions '(
        ("Figure"      "FIGURE"            7)
        ("Holesize"    "SIZE"             15)
          ("Tolerance"    "TOLERANCE"     15)
          ("Holesize2"     "SIZE MILS"      15)
        ("Tolerance2"    "TOLERANCE MILS"   15)
        ("PlateStatus" "PLATED"           10)
        ("NonStandard" "NONSTANDARD"   15)
        ("Quantity"    "QTY"             6)
    )
```

Finally to control the number of decimal places in the drill chart we can adjust the following section:-

```
;   ?Precision
;   ----------
;
;   Precision specifies the number of decimal digits to follow the
;   decimal point in size and tolerance values appearing in the table.
;
;   -1 = as many as are needed ... minimum 1 (DEFAULT)
;    0 = suppress decimal point and decimal digits
;   >0 = always put <n> decimal digits after the decimal point,
;        adding any trailing 0's as necessary
;
 ?Precision            -1
```

Changing -1 (as many as required) to 3 which limit the number of decimal places to 3.

```
;   ?Precision
;   ----------
;
;   Precision specifies the number of decimal digits to follow the
;   decimal point in size and tolerance values appearing in the table.
;
;   -1 = as many as are needed ... minimum 1 (DEFAULT)
;    0 = suppress decimal point and decimal digits
;   >0 = always put <n> decimal digits after the decimal point,
;        adding any trailing 0's as necessary
;
 ?Precision            3
```

These three adjustments result in the following NC Drill Chart.

Controlling the line width of the Template

By default the NC drill table is drawn using a zero (0) line width. There is an option inside the template to specify a default line width. This is required if you want to create a Gerber film of the drill data, by default zero width lines are not processed in Gerber Films. Locate the following section:-

```
;
;   ?LineWidth
;   ----------
;
;   Width of lines used to draw the legend table in the units as indicated by ?Unit
;
 ?LineWidth            0
```

Change the value for LineWidth from zero (0) to a suitable line width, in this example I have used 0.2.

```
;
;   ?LineWidth
;   ----------
;
;   Width of lines used to draw the legend table in the units as indicated by ?Units.
;
 ?LineWidth            0.2
```

This results in the following NC Drill table.

There are many "other" settings for customising the NC Drill Legend table but this app note should give you the basics of what is required to make some changes. Using the same principle you can customise to your requirements.

Setting PCB Editor to use your template

Once you have created your template you can setup PCB Editor to always use this. Go to Setup – User Preferences – Paths – Config – ncdpath and set this value to look at the directory where your filename-unit.dlt file is stored. (The default for Cadence is <your_install_dir>\share\pcb\text\nclegend). Next go to Setup – User Preferences – Manufacturing – Drilling – nclegend_file and set the value to the name of the template file, for example mycompany-mm. You only need to specify the name. Do not specify the location path or the file extension.