Frontline
PCB SOLUTIONS
An Orbotech Mentor Graphics Company

GENESIS 2000

SYSTEM MANAGEMENT

Software Version 10.0

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Table of Contents

Chapter 3   Attribute Management

Chapter 4 Dbutil - Off-line Database Operations

Chapter 5 Interactive Graphic User Interface Utility

Chapter 6 KIT (Keep In Touch)

Chapter 7   Application Programs

Chapter 8   Additional Off-line Utilities

Chapter 9   Hooks

Chapter 1 *Overview*

Introduction

This manual describes how to customize and maintain the Genesis 2000 system. You will learn about the various mechanisms and configuration schemes that allow you to customize the system to your requirements, as well as to perform routine maintenance.

You can use this manual as a reference for the various utility programs installed with the system which manage and monitor the application.

The Genesis 2000 system enables control by a number of methods:

Configuration Parameters

These parameters control many operations performed by the software. They can be set through the configuration popup in the Engineering Toolkit window. You can set values for a specific user or the whole system.

Environment Variables

These are set in the environment in which the software runs. The software checks if they exist and reads their values.

System and User Attributes

The attribute mechanism allows you to define attribute values for specific elements in the database. This differs from configuration parameters which are used to set general behavior characteristics.

There are two types of attributes:

System attributes - built-in attributes defined by the software which can be set by the user to control how the software deals with a specific element.

User attributes - customizable attributes that can be used to attach site-related information to database elements.

Hooks

Hooks are scripts that are executed automatically by the software in order to customize various operations. The hooks receive input from the software and are expected to return information in a predefined format which is read by the software and used in the specific operation.

This manual contains a complete description of all the configuration parameters and environment variables that affect the software, as well as a thorough explanation of the attribute management scheme and all system attributes used by the software. It also contains a global view of the system including inter-process communication concepts.

Intended Readers

This manual is intended mainly for the system administrator, although it is also of interest to the general user

It is assumed that the operator has had minimum training on the Genesis 2000 and does not require elementary instruction. If this is not the case, it is recommended that the operator acquire some knowledge of the Genesis 2000 system by reading the System Overview (Doc. 0101) before performing the tasks described here.

It is also recommended to read the Documentation Basics Guide (Doc. 0103) for conventions and terminology.

Scope

The System Management manual (0203) is a part of the "System Administrator" book set (02). This manual, together with the Scripts manual (0204) and The DFM Programming Environment manual (0205), is used to perform all system administration tasks.

Organization of this Manual

Chapter 1 - Overview - contains a general overview of this manual, including the book scope and structure.

Chapter 2 - Configuration and Environment - describes general configuration issues such as defining users and groups, setting privilege levels for users and a description of all configuration parameters and environment variables.

Chapter 3 - Attributes Management - describes the attribute management concept with a list of all system attributes and description of handling user attributes.

Chapter 4 - Dbutil - Off-line Database Operations - describes use of the dbutil program for database management.

Chapter 5 - Interactive Graphic User Interface Utility - describes the GUI interface utility.

Chapter 6 - KIT - description of the Keep In Touch utility.

Chapter 7 - Application Programs - application programs used within the Genesis 2000 environment.

Chapter 8 - Additional Off-line Utilities - additional utilities activated off-line.

Chapter 9 - Hooks - a list of all the hooks in the system with links to the appropriate sections in the documentation set.

Chapter 10 - Inter-process Communication - a global overview of the Genesis 2000 system in regards to process communication and client-server procedures.

Appendices are common to all manuals and are described in Doc.0103, Documentation Basics

Chapter 2   *Configuration and Environment*

Users and Groups

The Genesis 2000 system can only be accessed with a login and password. This login authentication mechanism is enabled by a users and groups database which can be viewed/edited by privileged users via graphical application screens.

Note that the Genesis 2000 user (we will use the term Application User for short) is implemented on top of the Operating System User (O.S. User). This separation is essential for several reasons:

– Not every user who is allowed access to the workstation (O.S. user) should be allowed to access the application.

– Any application user is assigned a privilege level, a concept which is missing from the O.S. license mechanism.

– Access to changes of the application's users database may be needed by people who have high privileges on the application, but have no system privileges from the O.S. point of view.

Every user of the application receives resources based on both his/her application user name and O.S. user name.

Based on the application user name, he/she is assigned with:

– A privilege level

– A unique ID for concurrency mechanisms (locks, job check in/out, etc.)

– An address for system messaging

– An ID attached to graphical notes

Based on the O.S. user name, the system will look at the directory:

`$HOME/.genesis`

The `$HOME/.genesis` is created automatically the first time a user logs in to the application.

This directory stores specific definitions for user preferences, configuration parameters and setup files. Whenever a certain file is defined in this directory, it takes precedence over the system definition.

The system definitions are located in the directory:

`$GENESIS_DIR/sys`

An example of a user preferences file is the file 'colors'. This file contains specific color preferences for a user, as defined by the Colors Popup in the Graphic Editor. When the application starts, it will read these files in the following files in the following order:

`$HOME/.genesis/colors`
`$GENESIS_DIR/sys/colors`

If both files exist, the system will use the first one for loading the workstation color map. If the first one does not exist, it will default to the second one, or, if missing, to an internally defined table.

Note   During the initial system installation, you are asked to enter a user and group for the system administrator. This is the initial login that you can use to access the application, after which you can define more users.

To view/modify the users and groups select **Options** from the main menu of the Engineering Toolkit.

This then opens the sub-menu where you can choose **Users...** or **Groups...**
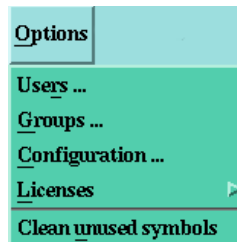
Users

The users database is used by the application in the following mechanisms:

– login authentication

– job access concurrency (check in/out)

– privilege scheme (in conjunction with the groups)

– notes attachment

– message delivery

The users database is maintained in the file:

$GENESIS_DIR/share/users

which contains an entry for each user defined.

A user entry looks like this:

```
OPRS {
    NAME=<user name>
    PASSWD=<password>
    PRIV=<privilege>
    GROUP=<group name>
    REAL_NAME=<real name>
}
```

where:

<user_name>:	the user login name
<password>:	the password of the user (may be encrypted, see note below)
<privilege>:	the privilege of the user (a number from 1 - 100)
<group name>:	the group that the user belongs to (see groups)
<real name>:	the real name of the user

Note   The system also maintains encrypted passwords in the file:
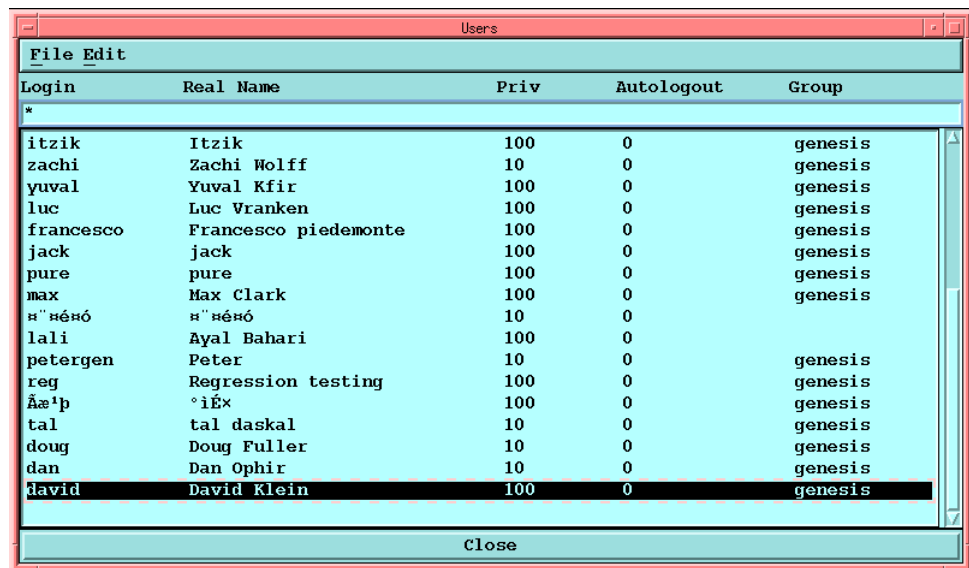
   $GENESIS_DIR/share/users97

See Appendix D for notes about protecting this file.

If you do not want the application to maintain the non-encrypted users file, you can simply delete the file **$GENESIS_DIR/share/users.**

You can manage the user database through the *users window* which can be opened from **Options -> Users** menu in the toolkit screen.

When **Users** is chosen you receive the listing of current users of the system:

The window provides the following details on the users:

Login	Genesis 2000 login name
Real Name	the users real name
Priv	privilege level assigned to the user
Autologout	currently not in use
Group	the group to which the user is assigned

Choosing **File** from the User List menu brings up the sub-menu:
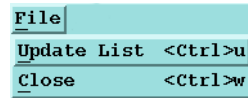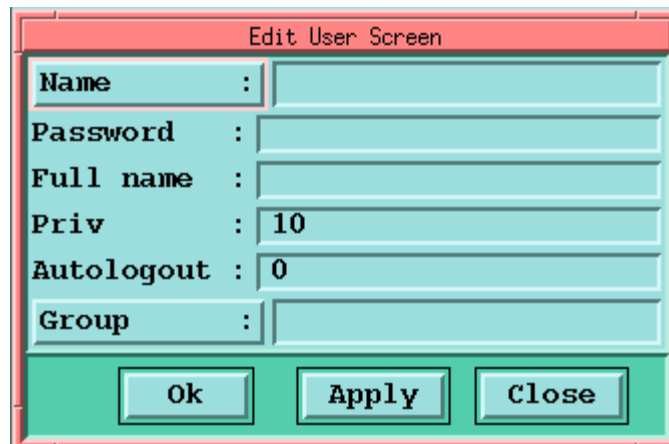
```
File
Update List  <Ctrl>u
Close        <Ctrl>w
```

The current list can be updated (after changes) or closed.

Choosing **Edit** brings up the Edit sub-menu:

```
Edit
Add ...
Delete
Change ...
Undo
```
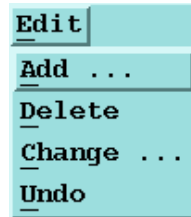
Selecting **Add** brings up a blank Edit User Screen which allows a user to be added, including Genesis 2000 password, full name, privilege level (default is set by group), autologout (currently not in use) and group selection. The window can be closed with **OK** (to save changes) or **Close** (without saving changes).

```
                 Edit User Screen
  Name       : |                          |
  Password   : |                          |
  Full name  : |                          |
  Priv       : | 10                       |
  Autologout : | 0                        |
  Group      : |                          |

         [  Ok  ]   [ Apply ]   [ Close ]
```

To change a present user's details, the **Name** button is to be clicked and then a user is chosen from the users list popup, then click on **OK** to return to the Edit User Screen.
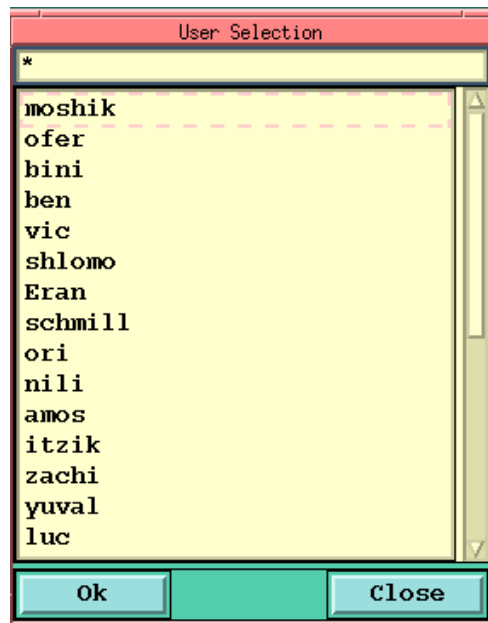
The present details of the user are shown in the Edit User Screen. To edit, one needs a privilege level of >=90. The password does not appear, the user's old password is used when there are no changes to it.
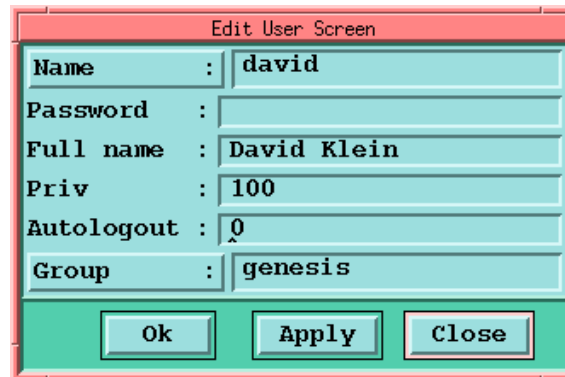
Groups

The groups database is used by the application in the privilege scheme.

The groups database is maintained in the file:

    $GENESIS_DIR/share/groups

which contains an entry for each user defined. A group entry looks like this:

```
GRPS {
    NAME=<group_name>
    PRIV=<privilege>
    DESC=<description>
}
```

where:

`<group_name>:`	the group name
`<privilege>:`	the privilege of the group (a number from 1 - 100)
`<description>:`	a textual description of the group

You can manage the group database through the groups window which can be opened from **Options -> Groups** menu in the toolkit screen.

When Group is chosen from the Engineering Toolkit menu the following window appears, listing the groups that exist on the system:

```
┌─────────────────────── Groups ───────────────────────┐
│  File Edit                                            │
├──────────────────────────────────────────────────────┤
│ Group          Description            Priv    Autologout│
│ *                                                     │
├──────────────────────────────────────────────────────┤
│ genesis        Genesis users          100     0       │
│ star           star users             5       2       │
│ mngmnt         Valor Management       10      0       │
│ fareast        Far East Rep           2       0       │
│ tech           Technical writers      40      0       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                    Close                              │
└──────────────────────────────────────────────────────┘
```
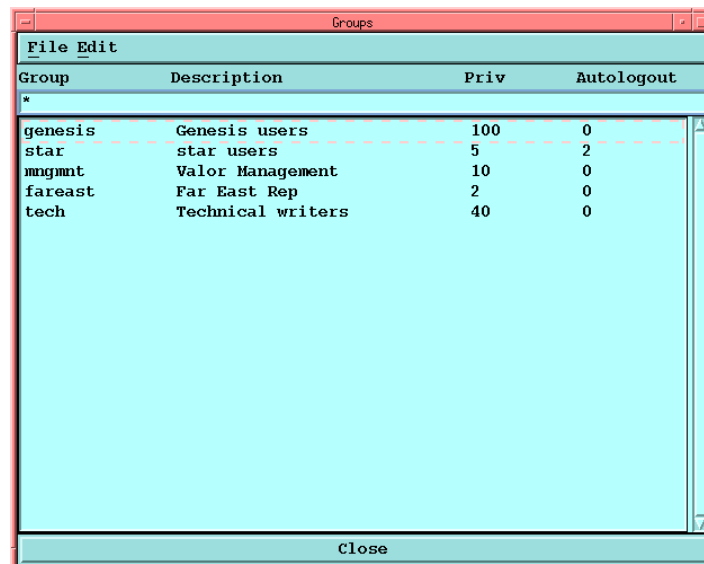
The window provides the following details on the groups:

Description	user definable description of the group
Priv	privilege level assigned to the group
Autologout	currently not in use

Choosing **File** from the Group List menu brings up the sub-menu:

```
File
─────────────────────
Update List  <Ctrl>u
Close        <Ctrl>w
```

The current list can be updated (after changes) or closed.

Choosing **Edit** brings up the Edit sub-menu:

```
Edit
─────────
Add ...
Delete
Change ...
Undo
```
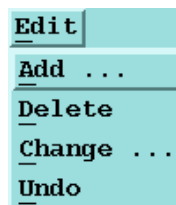
Selecting `Add ...` brings up a blank Edit Group Screen which allows a group to be added, including a description of the group, privilege level and autologout (currently not in use). The window can be closed with `Ok` (to save changes), `Apply` to implement or `Close` (without saving changes).

```
                    Edit Group Screen
   Name        :  genesis
   Description :  Genesis users
   Priv        :  100
   Autologout  :  0

          Ok          Apply        Close
```
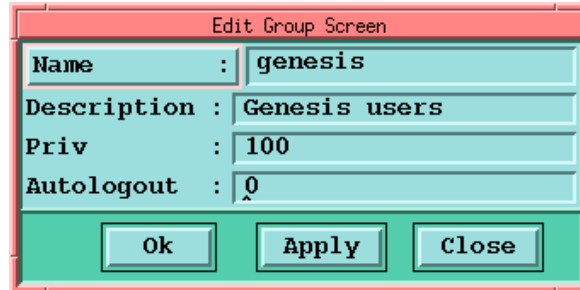
Selecting **Delete** after selecting a group in the group list removes the group.

Selecting **Change..**, after selecting a group in the group list, brings up the Edit Group Screen with the selected group and its details.

Selecting **Undo** cancels the changes that have been made (up to 5 levels).

Privilege Scheme

Genesis 2000 allows a user to be assigned a user privilege level from 0 to 100. The privilege level determines for what actions a user has rights. These actions can include logging in, adding users, or the ability to change system attributes. Genesis 2000 makes a differentiation between users with a user level below 90 and those 90 and above (those with rights to make system changes).

The system administrator can fine tune the system to enable/disable certain line mode commands according to the privilege level of the user or according to their application user name. This is done by creating a file with the name:

`$GENESIS_DIR/share/privs`

The file contains groups of commands which are allowed to...

- users at a specified or higher level of privilege

- users specified by user name.

An example of a portion of the file is shown in the text below:

```
group get1 {          --------->   The group of commands
  global_priv 20   --------->   Privilege below which the
                                 command is disabled

  users {
     john             --------->   Users for which the command is
                                 always enabled
     <Add more users here>
  }
  commands {
     create_entity---------> The command itself
     <Add more commands here>
  }
  }
}
group get2{             ---------> The second group of commands
global_priv 1{
users   {
    mary
   <Add more users here>
}
commands{
open_entity
   <Add more commands here>
   }
   }
}
```

In this example, any user with a privilege less than 20, except john, will not be allowed to execute the **create_entity** command.

Note   Different privilege levels (levels of **global_priv**) cannot be nested within a single group. A group can contain only one privilege level. To define multiple privilege levels, define more than one group.

Tailoring the **privs** file requires intimate knowledge of the system line mode commands. Please refer to the Line Mode Commands book (Doc.0206) for a complete list of commands.

Concurrent Job Access

When there are multiple users working on the system around the network, there is a need to manage concurrent access to system resources.
This is done on two levels:

Basic Resource Locking

Basic resource locking manages the system resources such as files that can be read/ written by many users at the same time and makes sure one process does not read a file while the other is writing to it. This mechanism uses the Read-Many-Write-One system, which means you can have multiple readers of a resource, but only one writer. This mechanism is used throughout the application to manage

concurrent access of all system resources and makes use of the **gnd** daemon process as a lock server.

Job Access Management

When there are many users working on the same job, there is a need to define only one user that can make changes and save the job. If a user opens a job with the intention of changing it, he/she must perform a "check out" operation. This will let all the other users know that he/she is now the owner of the job and they will not be able to make any changes to it until that operator performs a "check in" operation when he/she finishes all changes. The Check In/Out mechanism does not involve the **gnd** lock server and is maintained by the processes through the file:

$GENESIS/share/rcs

 If a user that has "checked out" a job and quits the application without "checking in" the job, he/she is still the owner of that job even if all the hosts on the network are rebooted.

A user with a high privilege level (>= 90) can perform a "check in" of a job that is owned by another user.

The Locking Mechanism is accessed through the main menu in the following manner:

1. Open the File Menu, and click on the **Locks** Option (<ALT><f>, <l>).

    A sub-menu will be opened, displaying all the Locks Menu Options:
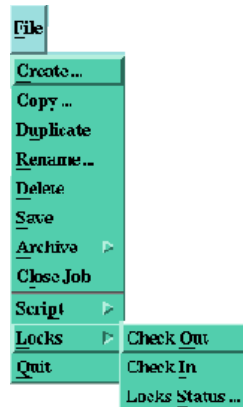
Check Out - Performs the check out operation.

Check In - Performs the check in operation.

Locks Status - Displays the locking status of the system jobs.

File
Create...
Copy ...
Duplicate
Rename...
Delete
Save
Archive ▷
Close Job
Script ▷
Locks ▷
Quit

Check Out
Check In
Locks Status ...

2. Select the Locks Status (<s>), which opens up the Check Out List.

    In the Check Out List popup you can see a list of all the jobs that are presently checked out.

```
                         Check Out list
 *
 USER            CHECKED OUT
 ----            -----------
 amos            Job: aci.star1
 amos            Job: amos.notes
 amos            Job: amos.star
 amos            Job: atg.1
 amos            Job: bsl.1
 amos            Job: con.badtext
 amos            Job: dxf.con
 amos            Job: dxf.toyo.001
 amos            Job: dxf.toyo.kit
 amos            Job: isl.26313
 ben             Job: ben
 ben             Job: ben.inp
 ben             Job: cuplex.group.bug+2
                        Close
```

dblist file

This file resides in the **$GENESIS_DIR/sys** directory and contains a list of the databases known to the system.

Each entry in this file looks like this:

```
DBS {
      NAME=<database name>
      PATH=<full path to the database>
      ACCESS=<for future use>
}
```

The name of the database defines a logical name and does not correspond to the path.

The path of the database should be a full path to a directory that has a subdirectory named 'jobs' and, if it includes the Library Job (see below), a subdirectory named **lib**.

This file is read by the application in order to determine the path to the jobs defined in the joblist.

To add/change databases you need to manually edit this file, e.g. to add a database called **db1** that is in the directory **/disk/fw** do the following:

```
Create the directories
> mkdir /disk/fw/jobs
```

Step 3.   **Add the following lines to the end of the dblist file:**

```
DBS {
      NAME=db1
      PATH=/disk/fw
      ACCESS=
    }
```

Configuration
Options

- You can define a host-specific dblist file by creating the file **$GENESIS_DIR/hosts/<hostname>/dblist** which allows you to define different paths to the same database from different hosts. Make sure all **dblists** have the same databases defined.

- You can define a user-specific dblist file by creating the file **~/.genesis/ dblist** which allows you to work on your private database. If you do not have the system databases defined in this file, you will not be able to access their jobs.

Configuration Parameters

Various operations of the application depend on the values of configuration parameters which are defined in the system. These parameters can be viewed/ edited through the Configuration Parameters window in the Engineering Toolkit menu.
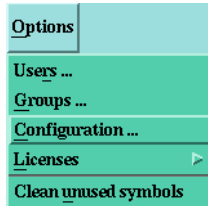
Choosing **Options > Configuration** brings up the Configuration Parameters window, which lists the configurable parameters with the current settings and a brief description of each parameter.

To make a change in a parameter, it must first be selected by clicking once with M1. The selected parameter will then be marked by a black background.

Options
Users ...
Groups ...
Configuration ...
Licenses ▶
Clean unused symbols

Configuration Parameters

File Edit

Parameter	Current	Description
*		
camtek_out_path	/home/camtek/job	CAMTEK output def
default_process		Default process f
eda_default_source	Mentor	Default EDA sourc
eda_thermal_model		Default EDA therm
eda_vrml_viewer	vrweb -remote	Default VRML view
edt_affect_confirm	no	Confirmation popu
edt_fill_min_brush	4.0	Editor minimal br
edt_home_limits	1	Zoom limits : 1-1
edt_hs_script	csh	Hole size script
edt_max_undo	2	Maximal number of
edt_online_error_behavio	1	On online error:
edt_resize_rect_rc	1	Round/Cut rect sy

Close

Note   Obsolete or obscure Genesis configuration parameters are hidden. The hidden configuration parameters still work correctly but are invisible. You can view or edit these hidden variables. Set the shell environment variable **genesis_cfg_show_all** to **yes** before starting Genesis. All configuration variables will be displayed.

From the Configuration Parameters menu choose **Edit > Modify** to open the Edit Configuration parameter window.

Selection of parameter level

Location and Pickup Sequence

Configuration parameters can be stored in three locations. The search by the system for configuration parameters is according to the sequence laid out below. If the configuration parameter is not defined in the first level (User Level), for example, the system will search in the second level, and so on to the third level. In addition, if the system does not find a configuration value in any of the locations, it will apply the default value which is hard-coded in the source code:

1. User level - defines configuration parameters specific to each user.

   `$HOME/.genesis/config`

2. Host level - specific to the host, useful in multi-platform environments.

   `$GENESIS_DIR/hosts/<name-of-host>/config`

3. System level - global location for all users.

   `$GENESIS_DIR/sys/config`

As a last resort, if a configuration parameter has not been defined in any of the three levels, then the system uses the default internal value (which is hard-coded and cannot be changed). Each parameter has a scope attached to it defining which of the levels can be set.

Examples - Configuration Parameter Priority

Parameter	System Default	System File	Host File	User File
Param X =	0	12	3	22

System picks up value of Param X =22

Parameter	System Default	System File	Host File	User File
Param X =	0	no_value	8	no_value

System picks up value of Param X = 8

Configuration Parameter List

The following is a list of all the configuration parameters with a full description of where and how they are used.

adm_edge2edge_slot_length

Type	Boolean
Default	No
Description	**Yes** - calculates the total length of a slot from edge to edge. **No** (default) - calculates total length of a slot **Note:** After using Auto Drill Manager for the first time, changing this parameter will not affect ADM: the value that will be considered is the value prior to the first use of ADM. Genesis must be restarted for changes in this parameter to be noted by ATM.
See Also	Auto Drill Manager (Doc. 0703)

adm_first_subr_at_zero

Type	Boolean
Default	No
Description	This parameter affects output through the Auto Drill Manager. For Hitachi output: **Yes** = place first subroutine call at (0,0). **No** = place first subroutine call at current location. For all other ADM output: **Yes** = place first subroutine call at (0,0). **No** = place first subroutine call at current location.
See Also	Output Formats (Doc. 0702)

adm_keep_pcb

Type	Boolean
Default	No
Description	This parameter affects output through the Auto Drill Manager. For Hitachi output: **Yes** = the PCB step is kept, and the ARRAY step is flattened into the PANEL step. **No** = the PCB is flattened into the ARRAY, as in previous versions. This configuration parameter is checked only when selecting an NCset.
See Also	Output Formats (Doc. 0702)

adm_no_modal_after_tool_change

Type	Boolean
Default	No
Description	This configuration parameter affects Excellon II output through the Auto Drill Manager. **Yes** - a full XY coordinate will be output after tool change, even if modal coordinates were requested. **X02Y-022475** **T02** **X02Y029** **No** - if one of the coordinates does not change after a tool change, then it is not specified. **X02Y-022475** **T02** **Y029**
See Also	Output Formats (Doc. 0702)

adm_npth_no_touch_copper

Type	Boolean
Default	No
Description	**No** (default) -the value of no_touch_copper as defined in the NC set will not be changed. **Yes** - The NC Set that is currently open will change the value of no_touch_copper to Yes, meaning no check will be made. **Additional Notes** - In ADM, an NPTH touching copper check is performed if a machine file contains "no_touch_copper" = No, or if there is no such parameter in the file. - If "no_touch_copper" = Yes, *no* NPTH touching copper check is performed. - The configuration parameter adm_npth_no_touch_copper relates only to existing (saved) NC sets. Performing a real-time check for NPTH touching copper will slow down considerably the running time of the Auto Drill Manager. It could take several minutes to perform what would otherwise take just seconds. To avoid having the NPTH touching copper check performed, set parameter **no_touch_copper = Yes** in the relevant machine files. This will enable you to open quickly existing NC sets that were saved after recording the results of their NPTH touching copper checks, and avoid having an unnecessary and slow copper check performed.
See Also	Auto Drill Manager (Doc. 0703)

adm_report_order_table

Type	Integer
Default	2
Description	If set to **1**, the drill table report will be the same as before, with the first table sorted by drill size . If set to **2** (default), the report created by ADM will contain tables for each stage sorted by order.
See Also	Drill Tool Manager (Doc. 0703)

adm_strict_start_end

Type	Boolean
Default	Yes
Description	Enables user to control placement of drill holes when the start/end areas specified by the line mode commands **ncd_start_end** or **ncd_end** are too small. - **Yes** (default) - Creation of drill holes is not permitted if the start or end coupon is not large enough to contain all drill holes. - **No** - If the start/end area specified by the **ncd_start_end** or **ncd_end** line mode commands are too small, start/end holes are placed outside the designated start/end area, and a warning message displayed in the text console. **Note:** This represents a change in Genesis default behavior. Prior to version 9.9, when the start/end areas specified were too small to contain the drill holes, creating the drill holes was permitted outside the designated start/end areas. As of version 9.9, creating drill holes in these circumstances is not permitted.
See Also	Auto Drill Manager (Doc. 0703)

aoi_msdos

Type	Boolean
Default	None
Description	Output **jbd** file as MS-DOS text.
See Also	

camtek_def_aoiset

Type	Text
Default	None
Description	Camtek default aoiset name
See Also	Camtek AOI Interface (Doc.0705)

camtek_old_version

Type	Boolean
Default	No
Description	For use with an older Camtek version
See Also	Camtek AOI Interface (Doc.0705)

camtek_out_path

Type	Text
Default	**/home/camtek/jobs**
Description	Default pathname for the CAMTEK output files.
See Also	Camtek AOI Interface (Doc.0705)

cdr_economic_save

Type	Boolean
Default	No
Description	Economic save of cdr set. **Yes** = the CDRset saved to the ODB++ database will include only entities that are NOT empty. This process reduces the amount of disk space required, shortening load and save time. **No** = the CDRset saved to the ODB++ database includes all entities, including those that are empty.
See Also	Orbotech AOI Interface (Doc.0711)

cdr_inspire_output_path

Type	Text (0 - LEN_PATH)
Default	
Description	Default output path for AOI output, when target machine is InSpire
See Also	

cdr_vision_mount_point

Type	Text (0 - LEN_PATH)
Default	
Description	For Orbotech Vision AOI interface. Path to where the Vision RefManager is mounted.
See Also	Vision AOI Interface (Doc.0710)

cdr14_aoi_table_name

Type	Text
Default	24x24
Description	The size of the AOI table. To be chosen from the tables available in the file **/genesis/sys/hooks/cde14.ini**. The standard tables for the PC machine are: 24x24, 24x28 and 24x 36.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_area_x_margin

Type	Floating point (0...200)
Default	0
Description	The margin in mils that will be added to the automatically created horizontal inspection area, if the inspection area is not entered manually. The maximum value is 200 mil.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_area_y_margin

Type	Floating Point (0...200)
Default	0
Description	The margin in mils that will be added to the automatically created vertical inspection area, if the inspection area is not entered manually. The maximum value is 200 ml.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_auto_margin_percent

Type	Floating Point (0...200)
Default	70%
Description	This configuration is relevant only for automatic creation of exclusion zones around text. The number input here is the margin percent that will be used if the default margin is too large and covers an electrical feature near the text.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_default_disp_sr

Type	Boolean
Default	Yes
Description	Defines if the step and repeat features will be seen in the Graphic Editor when a layer is displayed
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_default_zone_margin

Type	Boolean
Default	No
Description	CDR14 exclusion zone default margin (X=Y) in current units.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_display_pad_hole

Type	Boolean
Default	Yes
Description	**Yes** = Features Popup displays section to define the pads/holes list. **No** = Features Popup does not display this section.
See Also	Orbotech AOI Interface (Doc.0711)

cdr14_economic_save

Type	Boolean
Default	No
Description	**Yes** = the CDRset saved to the ODB++ database will include only entities that are NOT empty. This process reduces the amount of disk space required, shortening load and save time. **No** = the CDRset saved to the ODB++ database includes all entities, including those that are empty.
See Also	Orbotech AOI Interface (Doc.0711)

cdr14_include_ftrs_outside_prf

Type	Boolean
Default	Yes
Description	**Yes** = the board dimensions passed to the AOI machine are the dimensions of the panel features' bounding box. **No** = the board dimensions passed to the AOI machine are the dimensions of the Panel's profile and not the Panel features' bounding box.
See Also	Orbotech AOI Interface (Doc.0711)

cdr14_inspect_panel_ftrs

Type	Boolean
Default	Yes
Description	This configuration controls the automatically created inspection area. It defines whether only the PCB area or the entire panel will be checked.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_ min_line_factor

Type	Floating
Default	0.75
Description	Define the factor that will be output to the machine if the minimum or the nominal line is not inserted.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_ min_spacing_factor

Type	Floating
Default	0.75
Description	Define the factor that will be output to the machine if the minimum or the nominal space is not inserted.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_ mir_lyr_rpcb_sort_type

Type	Text
Default	left2right
Description	Genesis looks at the panel after transformation (mirror and rotation) and writes the list of repack lines to the aoiprog file from left to right, like this: **3 6 9** **2 5 8** **1 4 7** As of version 8.2b, this configuration parameter enables Genesis to write the list of rpcb lines to the aoiprog file **from right to left,** like this: **9 6 3** **8 5 2** **7 4 1** This option is available only for mirrored layers. Possible values: **left2right** (before version 8.2b) **right2left** (as of version 8.2b)
See Also	Orbotech AOI Interface (Doc.0711)

cdr14_multi_line_widths

Type	Boolean
Default	No (Single line width)
Description	Allows user to specify single or multiple line widths. Can define up to four line widths.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_output_path

Type	Text
Default	**/id/cdrp**
Description	The directory to which the output files will be sent. You must have two sub-directories in this directory: these are called AOIIMG and AOIPROG.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_pc_version

Type	Text
Default	
Description	Specify version of target PC14xx machine (refer to CDR14_target_machine parameter). This affects the output of various parameters in the AOIPROG file. If you work on an Inspire machine this configuration will be ignored.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_popup_position

Type	Text
Default	BR
Description	Sets the opening position of popup windows in the PC/I interface. Possible values: BR - bottom right of interface window TL - top left of interface window
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_sym_sort_criterion

Type	Text
Default	Size
Description	This configuration controls the way the list of symbols is seen. **Size** - the symbols will be sorted by size from the smallest to the largest. **Frequency** - the symbols will be sorted by their frequency from the most frequent to the least frequent.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_target_machine

Type	Text
Default	PC14
Description	Controls to which machine the output files will go. Possible values: **PC14** (Default) and **Inspire**.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr14_zoom_on_table_disp

Type	Boolean
Default	Yes
Description	Controls whether or not to zoom home when displaying the AOI table.
See Also	CDR-14 AOI Interface (Doc.0709)

cdr_aoi_manager_mount_pt

Type	String
Default	
Description	Default output path for OPFX output
See Also	Electrical Test (Doc. 0708)

cdr_machines_order

Type	String
Default	Pc14;Vision
Description	Defines the machines available onsite, and their order in the Orbotech AOI interface. Supported machines are: Pc14;Vision;InSpire;Infinex. **Note**: The machines defined in `cdr_machines_order` are supported only if there is a license available for these machines.
See Also	Electrical Test (Doc. 0708)

cdr_output_path

Type	String
Default	
Description	Default output path for AOIIPROG/AOIIMG output
See Also	Electrical Test (Doc. 0708)

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copper_calc_ignore_nonplated

Type	Boolean
Default	No
Description	Enables you to ignore non-plated drills and slots in copper area calculation.

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copper_calculation_in_profile

Type	Boolean
Default	Yes
Description	Use profile as exposed area if exposed area is not defined.

cut_data_contourize

Type	Boolean
Description	Specifies how contours are organized.
Default	Yes = Standard methods will be maintained. All overlapping contours will be organized into a single inh. No = New method. All contours will be single island contours with corresponding polarity: islands have positive polarity, holes have negative polarity. **Note:** Setting to No will reduce execution time.
See Also	Netlist Analyzer (Doc.0506)

cut_data_resize

Type	Boolean
Description	Specifies how line widths are calculated.
Default	No (default) = Standard methods will be maintained. Contourize cutting data contours together with lines. Yes = New method. Enlarges contours by line width. **Note:** Setting to Yes will reduce execution time.
See Also	Netlist Analyzer (Doc.0506)

cut_data_simplify

Type	Boolean
Default	Yes
Description	Specifies whether or not surfaces should be simplified and smoothed after creation. Applies the simplification and smoothing algorithm, which greatly reduces the number of vertices in the created surfaces. In addition, the cutting data checks whether SIPs were created and tries to eliminate them.
See Also	Graphic Editor (Doc. 0601)

default_1up_step

Type	Text
Default	pcb
Description	Default 1-up step name in an existing job.
See Also	Netlist Optimizer (Doc. 0610)

default_adjacency_val

Type	Float
Default	20 mil
Min/max values	0.0 - 500.0 mil (unit-sensitive)
Description	Default value for layer adjacencies will be fixed according to the value defined in this configuration parameter, and NOT according to the default in the **sysattr** file as was done in previous versions of Genesis. This parameter is unit-sensitive. This layer attribute applies to output in the following formats: IPC356A, Microcraft, Probot, BSL, Hioki.
See Also	Netlist Optimizer (Doc. 0610)

default_panel_step

Type	Text
Default	panel
Description	Default panel step name in an existing job.
See Also	Netlist Optimizer (Doc. 0610)

default_process

Type	Text
Default	None
Description	Default process for assembly analysis
See Also	

default_step_name

Type	Text
Default	orig
Description	Default step name to be used when creating a new job
See Also	

dfm_cross_hatch_handle_mode

Type	Float
Default	20 ml
Range	0 > 500 (unit-sensitive)
Description	Defines how cross-hatched areas are handled in those DFM actions that have ability to process cross-hatched areas. This configuration parameter has two modes: 1) Replace by surface (default value) - Cross hatch area is replace internally by a solid surface. 2) Fast Contourization - A net that was identified as containing cross-hatched features will be contourized using a fast contourization algorithm. **Note:** Using fast contourization mode might create less accurate results for these nets. Currently, the following DFM actions have the ability to provide special handling for cross-hatching: CDR, PGA, SLA, SMA, Sliver & Peelable Repair.
See Also	DFM Actions (Doc. 0602)

dfm_default_hist_res

Type	Float
Default	1.0 ml
Description	Defines default resolution value for DFM results histograms++. Range: 0.1ml - 10 ml. Default = 1 ml.
See Also	DFM Actions (Doc. 0602)

dfm_default_sym_res

Type	Floating Point (0.01)
Default	0.1 mil
Description	Controls the default symbol resolution of DFM actions. Range: any value *greater than 0* up to 1 mil.

WARNING! Do *not* set this configuration parameter to 0. The absolute minimum is 0.0025 micron or 0.0001 mil.
Note: DFM actions that already have ERF variables to control their symbol resolution will not be affected by this configuration parameter. Following is a list of all DFM actions that currently have such ERF variables.

- Pinhole elimination (v_sym_res)
- Gold Tie Bars Creation (v_sym_res)
- Signal Layer Opt (v_sym_res)
- Solder Mask Opt (v_sym_res)
- Solder Mask Repair (v_sym_res)
- Parallel Spacing Optimization (symbol_resolution)
- Etch Compensate (aper_res)

See Also	DFM Actions (Doc. 0602)

dfm_dev_print_addr

Type	Boolean
Default	No
Description	Print address of loaded DFM action.
See Also	DFM Actions (Doc. 0602)

dfm_dev_reload

Type	Boolean
Default	No
Description	Reload DFM action each time (Dev. Only).
See Also	DFM Actions (Doc. 0602)

dfm_show_loading_messages

Type	Boolean
Default	No
Description	DFM show loading messages.
See Also	DFM Actions (Doc. 0602)

dfm_summary_report_res

Type	Floating Point (0.01)
Default	0.1 mil
Description	Controls the default symbol resolution of DFM actions. Range: any value *greater than 0* up to 1 mil. The default value is 0.1 mil. Range of values is any value greater than 0 up to 10 mils. **WARNING!** Do *not* set this configuration parameter to 0. The absolute minimum value is 0.0025 micron or 0.0001 mil.
See Also	DFM Actions (Doc. 0602)

dfm_typ_attr_res

Type	Text
Default	std
Description	DFM Typical Result Attr Precision (std/high). **std** = rounded to 0.1 mil , **high** = 3 digits after decimal point.
See Also	DFM Actions (Doc. 0602)

dml_auto_set_out_break

Type	Boolean
Default	Yes
Description	Automatically sets the attribute **.out_break** to construct symbols (in Construct Pads (Auto) in Cleanup Actions). After changing this parameter to No, new construct symbols will not receive an **.out_break** attribute.
See Also	Cleanup Actions (Doc.0502)

Note This configuration parameter **MUST** be changed before creating the first construct symbol.

dml_break_check_polarity_mismatch

Type	Boolean
Default	No
Description	Used in conjunction with the Reshape > Break command, which breaks a feature into its basic components. Parameter will be useful in situations when multiple features of different polarity are stacked one on top of another. **YES** - an additional inspection is run to look for features of differing polarity that are touching one another. If the negative outline of a multipolar feature intersects a positive feature in the layer, setting this parameter to **Yes** aborts the break procedure and displays message warning of a polarity mismatch. NO - maintains current default behavior which does not run the additional inspection looking for mismatched feature polarities.
See Also	Graphic Editor (Doc. 0601)

dml_fill_sec_min_brush

Type	Integer
Default	0.0
Min/max values	0.0 - 50.0 mil
Description	Secondary minimum brush size in mils This parameter is used in the fill process. It allows you to fill small surfaces which cannot be filled using the `min_brush` value. If the value of `min_brush` is too big to permit filling, and `dml_fill_sec_min_brush` is greater then 0 (and less then `min_brush`), the fill is repeated with the value specified in `dml_fill_sec_min_brush`.
See Also	The Graphic Editor (Doc.0601)

Note   This configuration parameter is valid only for small, separate islands. It doesn't help to fill problematic areas in the complex surface, such as narrow corners and/or "bottlenecks". In such cases you should decrease the size of the `min_brush` configuration parameter.

dtm_default_user_parameter

Type	Text
Default	Empty
Description	Defines a default value for the user parameter. This is the value that will be set for all undefined (empty) user parameters. When Drill Tool Manager opens, it automatically updates DTM with the value for the user parameter as defined here. If this parameter is empty (default), no changes are performed (previous behavior).
See Also	Auto Drill Manager (Doc. 703)

dtm_finish_size_as_drill_size

Type	Boolean
Default	Yes
Description	To reduce the risk of unequal Drill and Finish sizes, the new configuration parameter **dtm_finish_size_as_drill_size** defines whether or not to allow unequal Drill and Finish sizes. The default value for this parameter is YES: Drill and Finish sizes should be equal. To activate the behavior, and permit *unequal* Drill and Finish sizes, the configuration parameter should be set to NO.
See Also	Auto Drill Manager (Doc. 703)

dtm_slot_recognition

Type	
Default	
Description	Used as a default for the Slots parameter in the Drill Tool Manager while creating a DTM for a new layer.
See Also	Drill Tool Manager (Doc. 0404)

edt_affect_confirm

Type	Boolean
Default	No
Description	Confirmation popup for affected layer operations. This parameter, when set to 'yes', causes a popup to be raised each time a global editing operation is executed on more than one affected layer. This is intended for careful users who are afraid of undesired side affects.
See Also	The Graphic Editor (Doc.0601)

edt_auto_f_inf_window

Type	Boolean
Default	Yes
Description	Determines how to view values defined for the system attribute **.imp_info** used in the Impedance Coupon Generator. **Yes**= By highlighting the required test pad, the information is visible in the Feature Information Popup of the Graphic Editor. **No** = A more complicated system is required. 1. Highlight the required test pad. 2. Press the Shift key and hold it down. 3. Position the mouse on the information bar (bottom part of the editor). 4. Click **M1** and release the Shift key. The Feature Information Popup opens. Here you can see all feature attributes and their values.
See Also	Graphic Editor (Doc. 0601)

edt_auto_sr_prefer_zero

Type	Boolean
Default	No
Description	Prefer zero degree PCB placement on a panel area.
See Also	Graphic Editor (Doc. 0601)

edt_break_mode

Type	Option
Default	Full
Description	Defines break symbol feature behavior. **Full** - Full break. Inherit symbol features attributes (default) **Inherit** - One level break. Inherit symbol features attributes **Retain** - One level break. Retain symbol feature attributes **Merge** - One level break. Merge symbol and symbol feature attributes.
See Also	Graphic Editor (Doc. 0601)

edt_chklist_on_error

Type	Integer
Default	1
Description	On checklist error: **1** = continue **2** = abort This parameter, when set to **2**, causes a checklist to stop whenever one of its action fails.
See Also	Checklist Operations (Doc.0501)

edt_compare_default_tolerance

Type	Float
Default	1.0 ml
Description	Default tolerance for Layer Compare operation
See Also	

edt_compare_double_check

Type	Boolean
Default	No
Description	Apply robust double check comparison algorithm
See Also	Graphic Editor (Doc. 0601)

Maintained for compatibility with Enterprise 3000

edt_compare_lyrs_grid_size

Type	Double
Default	0
Description	Defines raster grid size for layers compare. Range [0.02-0.2 mil] Default=0. Default size (0) maintains compatibility with older versions.
See Also	Graphic Editor (Doc. 0601)

edt_consider_pad_as_limits_box

Type	Boolean
Default	No
Description	**Yes** = Consider a special symbol as the symbol data limits box. **No** (default) = Consider a special symbol as a point located in the datum point.
See Also	Graphic Editor (Doc. 0601)

edt_consider_saved_defaults

Type	Boolean
Default	No
Description	Consider saved Selection & Buffer default values. Enables use of saved default values for Selection options and Buffer options without needing to reopen the Selection Options Popup or the Buffer Options Popup.
See Also	Graphic Editor (Doc. 0601)

edt_cont_brk2islands

Type	Boolean
Default	Yes
Description	Contains default value for Break to Islands in Edit>Reshape>Contourize>Contourize Popup
See Also	Graphic Editor (Doc. 0601)

edt_cont_accuracy

Type	Float
Default	0.0
Description	Contains default value for Accuracy parameter in Edit>Reshape>Contourize>Contourize Popup
See Also	Graphic Editor (Doc. 0601)

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edt_cont_stop_on_polarity_mismatch

Type	Boolean
Default	Yes
Description	Parameter defines whether contourization should be stopped (yes = default value), or may be continued (no), if a polarity mismatch problem is found.
Group	Graphic Editor (Doc. 0601)

edt_decompose_overlap_method

Type	Integer
Default	1
Description	Decompose overlapping method: 1-add patch, 2-enlarge contours.
Group	Graphic Editor (Doc. 0601)

edt_decompose_overlap_size

Type	Double
Default	0.5
Description	Decompose overlapping size (in current units).
Group	Graphic Editor (Doc. 0601)

edt_design2rout_new_simplify

Type	Boolean
Default	Yes
Description	Use new simplification method in Design2Rout function.
Group	Graphic Editor (Doc. 0601)

edt_dimens_text_size_in_points

Type	Boolean
Default	Yes
Description	**Yes** = Text width, Text height, and Line width will be entered in points (1/72 inch). **No** = Text width, Text height and line width will be be displayed in graphic editor units (mils or microns). **Note:** Affects all layers that have not yet been opened. Close the job and reopen it to allow the change to affect all layers without restarting Genesis.
See Also	Graphic Editor (Doc. 0601)

edt_drill_marker_size

Type	Double
Default	0.025
Description	Display drill markers in this size (inches).
See Also	The Graphic Editor (Doc.0601)

edt_drill_preview_pref

Type	String
Default	Blank
Description	Adds a prefix to preview layer names generated in Films Optimization. For example, if you specify "odb" in this parameter, preview layers **olt1**, **olt2**, **olt3**, *etc*. will become **odbolt1**, **odbolt2**, **odbolt3**, *etc*. This is useful when you have existing layers with the names **olt1**, **olt2**, **olt3** that you do not want overwritten.
See Also	Films Optimization (Doc.0706)

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edt_edge2edge_slot_length

Type	Boolean
Default	No
Description	Enables you to define a slot length as edge to edge. (Default = no). Used in these functions: Graphic Editor > Add feature (line slot) Graphic Editor > Pad to Slot Graphic Editor > Extend Slot (when slot_mode = "Extend to") Drill Tool Manager (when slot_mode = "By length") Create Drill Map (when slot_mode = "By length")
See Also	The Graphic Editor (Doc.0601)

edt_fill_min_brush

Type	Float
Default	1.0
Description	Editor minimal brush default This parameter defines the initial value for 'Min Brush' set in the Contour Fill Parameters popup in the Graphic Editor. This parameter can be changed in the screen.
See Also	The Graphic Editor (Doc.0601)

edt_flash_edit_dist

Type	Integer
Default	15
Description	Flash-edit distance default (mil).
See Also	The Graphic Editor (Doc.0601)

edt_home_limits

Type	Integer
Default	1
Description	Zoom limits: 1-layer extents 2-profile limits This parameter defines how to perform the 'zoom home' operation. A value of 1 will use the extreme size of all layers in the step. A value of 2 will zoom around the step profile.
See Also	The Graphic Editor (Doc.0601)

edt_hs_script

Type	Text
Default	`csh`
Description	Hole size script type (`csh`, `Genesis`) This parameter defines which type of script to run for each tool in the Drill Tool Manager. csh scripts are faster but do not have the power of Genesis scripts which may include Genesis line mode commands.
See Also	The Drill Tool Manager (Doc.0404)

edt_include_dcode_in_hist

Type	Boolean
Default	No
Description	Include D-code in features histogram
See Also	The Drill Tool Manager (Doc.0404)

edt_max_undo

Type	Integer
Default	10
Description	Maximal number of undoes in editor This parameter defines how many levels of undo the system remembers. Raising this number causes the system to utilize more memory and disk space.
See Also	The Graphic Editor (Doc.0601)

edt_measurement_display_width

Type	Integer

Default	As of Genesis version 9.0b, default line width
	if (parameter = 0) --> 2 mil.
	Prior to Genesis 9.0b, default line width
	if (parameter = 0) --> 1 display pixel.

Description	Determines the width (in pixels) of DFM measurements.
See Also	The Engineering Toolkit (Doc. 0102)

edt_new_sym_resize_policy

Type	Boolean
Default	
Description	Resize arbitrary special symbol
See Also	The Graphic Editor (Doc.0601)

edt_old_copper_calculation

Type	Boolean
Default	No
Description	Enable the same copper calculation results for the auto Drill Manager as was given in Genesis v8.2.
See Also	The Auto Drill manager (Doc. 0703)

edt_online_error_behaviour

Type	Integer
Default	1
Description	On on-line error: 1=Beep 2=error popup This parameter defines how to behave when an editing error which violates the on-line DRC rules occur.
See Also	The Graphic Editor (Doc.0601)

edt_online_state_reset

Type	Integer
Default	1
Description	On job open: 1=disabled->deferred 2=leave saved status
See Also	The Graphic Editor (Doc.0601)

edt_part_panel_suffix

Type	Text
Default	"_panel"
Description	Default suffix for part panel.
See Also	The Graphic Editor (Doc.0601)

edt_pcbnum_sort_tolerance

Type	Double
Default	0.1
Description	Sorting tolerance value for PCB numbering.
See Also	The Graphic Editor (Doc.0601)

edt_preserve_dynamic_case

Type	Boolean
Default	
Description	Preserve dynamic text case
See Also	The Graphic Editor (Doc.0601)

edt_protect_dependent_step

Type	Boolean
Default	Yes
Description	**Yes** - Prevents the original step of a dependent step from being modified. **No** - Permits modification of an original step.
See Also	Engineering Toolkit (Doc. 0102)

edt_rdo_line_junction

Type	Integer
Default	1
Description	Set multi-mode button default: 1=stretch line 2=move junction.
See Also	The Graphic Editor (Doc.0601)

edt_resize_corners

Type	Double
Default	-1.0
Description	Max distance between original and offset line (in current units).
See Also	The Graphic Editor (Doc.0601)

edt_resize_oct_corners

Type	Boolean
Default	No
Description	Resize octagon corners.
See Also	The Graphic Editor (Doc.0601)

edt_resize_rect_rc

Type	Integer
Default	1
Description	Round/Cut rect symbols resize mode: 1- no corners 2 - resize corners This parameter affects the resizing of rectangular symbols with rounded or chamferred corners. When set to one, the corner radius will remain the same through the resize. When set to 2, the radius will be enlarged as well, creating a rounder figure.
See Also	The Graphic Editor (Doc.0601)

edt_resize_sym_equidistance

Type	Boolean
Default	No
Description	Enables resized symbols to have the specified resize value applied equally over the entire symbol. When this parameter = No, the specified resize value may be applied unevenly over the resized symbol, distorting the shape of the resized symbol. Affects diamond, triangle, octagon, and hexagon-shaped symbols. Also affects rectangular symbols that have rounded or cut corners. **Yes** = Resizes symbols to have he specified resize value applied equally over the entire symbol. **No** = Symbols are not resized equally over the entire surface. **Note:** If edt_resize_sym_equidistance = **Yes**, other configuration parameters that influence symbol resizing values (**edt_resize_oct_corners** and **edt_resize_rect_rc**) are ignored because **edt_resize_sym_equidistance** controls *all* symbols composed of the shaped defined above.
See Also	Graphic Editor (Doc. 0601)

edt_rout_copy_stay_in_chain

Type	Boolean
Default	No
Description	Save original chain number in the feature(s) after copy.
See Also	The Graphic Editor (Doc.0601)

edt_rout_display_width

Type	Float
Default	0.01
Description	Display rout lines/arcs in this width (inches). This parameter defines the default width in which rout lines/arcs are displayed in the Graphic Editor.
See Also	The Rout Editor (Doc.0606)

edt_rv_sev_mode

Type	Integer
Default	1
Description	Results viewer Severity Mode: 1=Show current and below 2=Show current only
See Also	

edt_rv_zoom_mode

Type	Integer
Default	1
Description	Results viewer: 1=auto zoom 2=pan only 3=popview This parameter defines the default setting of the view mode in the Results Viewer for checklists results.
See Also	Checklist Operations (Doc.0501)

edt_shrink_poly_to_zero

Type	Integer
Default	1
Description	Arc shrinks to zero after resize. (**1** - Default behavior; **2** - keep as is; **3** - delete arc)
See Also	Graphic Editor (Doc. 0601)

edt_sr_del_rot_step_msg

Type	Boolean
Default	Yes
Description	Determines whether to show a warning message when deleting a rotated step **Yes (default)** = Show warning notice. **No** = Do not show warning notice.
See Also	Graphic Editor (Doc. 0601)

edt_sredit_disable_mirror

Type	Boolean
Default	No
Description	Use Flip Step only (Disable mirror)
See Also	Graphic Editor (Doc. 0601)

edt_sr_fill_feat

Type	Integer
Default	1
Description	Control parameter for the step & repeat fill. Indicates whether the feature limits or the feature outline is considered by the fill algorithm. **Mode**: 1-Limits 2-Non-textual outlines 3-All feature outlines
See Also	Input Process (Doc. 0401)

edt_sredit_hgap

Type	Integer
Default	200
Description	Default horizontal gap for Step & Repeat Editor (in mils)
See Also	Graphic Editor (Doc. 0601

edt_sredit_vgap

Type	Integer
Default	200
Description	Default vertical gap for Step & Repeat Editor (in mils)
See Also	Graphic Editor (Doc. 0601

edt_sr_name_col_width

Type	Integer
Default	12
Description	Sets the column width for the Step column in the Step & Repeat Table. Range is 12 to 64. If edt_sr_name_col_width = 0, the column width display will be equal to the number of characters used in the longest step name found in the S&R table (but never less than 12).
See Also	Graphic Editor (Doc. 0601

edt_sr_panel_util_by_active

Type	Boolean
Default	Yes
Description	If yes calculate panel utilization as ratio of combined pcb surface to panel ACTIVE area. If no calculate panel utilization as ratio of combined pcb surface to FULL panel area.
See Also	Graphic Editor (Doc. 0601

edt_stop_on_sym_res_failure

Type	Boolean
Default	Yes
Description	Stop on special symbol resizing failure
See Also	Graphic Editor (Doc. 0601

edt_ultra_hi_prec

Type	Boolean
Default	No
Description	Allow using an ultra high precision tolerance value when contourizing in the Graphic Editor functions: Edit>Reshape>Contourize or Edit>Reshape>Cutting Data. - Yes - accepts tolerance values as set by the user, down to zero. - No - defaults to a minimum value that will minimize the generation of very small segments in contourization (defaults to 0.25 mil, for example, for contour smoothing in the functions mentioned above).
See Also	Graphic Editor (Doc.0601)

edt_update_dependent_step

Type	Boolean
Default	No
Description	**Yes** - all modified steps will be updated automatically **Confirm** - user will be asked to confirm the update operation **No** - a message appears informing the user that modified steps will not be updated. No other action is taken.
See Also	Graphic Editor (Doc.0601)

edt_user_display_width

Type	Integer
Default	
Description	Enables you to define the net width when displaying a netlist. Range = 0 to 100 mil.
See Also	Graphic Editor (Doc.0601)

et_action_report_init_val

Type	String
Default	Display
Description	Allows action reports, which are created at the end of every tool action in the Electrical Testing Manager, to be visible to the user. This parameter controls the value appearing in the Action Report radio button in the ET Control Popup. - **Display** - allows reports to be visible. - **Hide** - reports are not visible
See Also	Electrical Testing Manager (Doc. 0708)

et_add_pads_on_sm_openings

Type	Text
Default	
Description	To enable ETM, which works with older (v9.7) netlist data structures, to function properly with Netlist Analyzer, which was updated to work with new (v9.8) netlist data structures. **et_add_pads_on_sm_openings** is relevant only if the current/reference netlist was created when net_calc_with_sm_policy = 1 or 2. In this situation, you can create net points on the basis of solder mask openings only, without the need for pads. Since netlist optimisation still requires pads for each net point in this version (v9.8), there must be a mechanism to tell Netlist Optimizer about these new, additional net points.
	Values:
	Add
	In the appropriate layers, add rectangular/circular pads only for those net points that are lacking pads by assigning them the attribute .generated_net_point=gasket as is done in the DFT option.
	Remove
	All net points that do not have a pad will be removed from the netlist.
	Ask
	Whenever you create a new Etset, a popup appears stating that there are net points without pads, and asking what should be done about them.
	- **Remove** – these net points
	- **Add** – pads with .generated_net_point attribute
	This popup appears after defining the required tester. Once pads are added for a defined Etset, then all future Etsets will already have pads for these net points.
	Note: After completing netlist optimisation and creating the relevant output(s), the extra pads can be detected (by means of the assigned attribute .generated_net_point=gasket) and removed, if you don't want these pads to remain in the layer data.

et_ask_adapter_from_job

Type	Boolean
Default	No
Description	Controls appearance of popup "Create Adapter from Job?". **Yes** = Popup appears at the proper time. **No** (default) = the popup will not appear, and the adapter will NOT be created from a job.
See Also	Electrical Testing Manager (Doc. 0708)

et_auto_zoom_area

Type	Integer
Default	
Description	Sets the size of the automatic zoom window in ETM reports. The size defined here (in mils) will be added to the limits of the reported item.
See Also	Electrical Testing Manager (Doc. 0708)

et_calc_drill_tolerance

Type	Double
Default	0.0
Description	When a drill size is automatically calculated for a pin, this value will be added to the calculated size. The value is in mils.
See Also	Electrical Testing Manager (Doc. 0708)

et_create_location_pin_by_npth

Type	Integer
Default	-1
Description	Should be set to 0.0 or higher (in mils) to enable use of dynamic location pins.
See Also	Electrical Testing Manager (Doc. 0708)

et_drill_out_coordinates

Type	String
Default	
Description	Drill output files can be produced in board or tester coordinates. This variable defines the drill output mode as being in tester or board coordinates.
See Also	Electrical Testing Manager (Doc. 0708)

et_drill_to_slot

Type	String
Default	No
Description	Allows the user to change the drill of a deflected pin to a slot. Changing the drill to a slot makes the slot smaller than the drill size, and helps solve drill spacing problems. Slots are allowed for test points only. Slots are not allowed for tooling pins, even if they are deflected. Values= **No** (default): user does not allow drills to be converted to slots **Calc**: Slots will be allowed only for system-calculated drills **All**: Slots will be allowed for all drills
See Also	Electrical Testing Manager (Doc. 0708)

et_extended_p2g

Type	String
Default	No
Description	Controls the ability of the automatic pin to grid algorithm to remove pins that touch each other. Recommended values: **No** (default) for densely-populated boards. **Yes** for less-crowded boards.
See Also	Electrical Testing Manager (Doc. 0708)

et_extended_udl_file

Type	Boolean
Default	No
Description	No = Outputs Luther & Maelzer UDL file without pin table. Yes = Outputs Luther & Maelzer UDL file with pin table.
See Also	Electrical Testing Manager (Doc. 0708)

et_grid_mark_size

Type	Integer
Default	
Description	Defines the size of the symbol used to mark grid positions. The symbol size is measured in pixels, and thus is not affected by the zoom factor. The grid will always be displayed the same size, as long as the zoom is not too small. In that case, the grid locations will not be displayed at all.
See Also	Electrical Testing Manager (Doc. 0708)

et_ignore_drill_stage

Type	String
Default	
Description	Controls second stage NPTH drills filtration for location pins. The configuration parameter has the following values: - **no** - don't ignore anything - **yes** - NPTH with the **.drill_stage** attribute values 2 or 3 will not be considered for location usage - **123** - NPTH with the **.drill_stage** attribute values 1, 2 or 3 will not be considered for location usage (which means that no NPTH will be taken.) Drills without the attribute are considered as **.drill_stage = 1**. - **23** - same as yes - **3** - NPTH with the **.drill_stage** attribute value 3 will not be considered for location usage The action takes into account NPTHs within other NPTHs - but only for the purpose of ignoring specific NPTHs.
See Also	Electrical Testing Manager (Doc. 0708)

et_man_auto_deflection

Type	Integer
Default	
Description	Sets the value for maximum pin deflection for pin to grid assignments to follow either the Automatic or Manual setting, as defined in the pin definition. This setting can be changed in the ET Control popup, via the Deflection Required parameter.
See Also	Electrical Testing Manager (Doc. 0708)

et_min_drill_spacing

Type	Double
Default	0.0
Description	The minimal spacing between drills permitted by the automatic drill spacing checks ETM performs when entering the Plates stage. Drills spaced closer than the value specified by **et_min_drill_spacing** will be reported in the red severity range, and the user will not be allowed to continue to the next stage. If et_min_drill_spacing = 0.0, Genesis will report only drills that actually touch each other.
See Also	Electrical Testing Manager (Doc. 0708)

et_net_output_popup

Type	Boolean
Default	
Description	Raise popup to request offsets before doing the netlist output
See Also	Electrical Testing Manager (Doc. 0708)

et_p2g_force

Type	Boolean
Default	
Description	Use extended pin to grid assignment
See Also	Electrical Testing Manager (Doc. 0708)

et_p2g_imrove_passes

Type	Integer
Default	3
Description	The maximum number of Pin to Grid improve attempts permitted in manual improvement (in ETM, Tools>Pin to Grid>Improve Assignment). Improvement attempts will continue as long as improvement is achieved or if the number of attempts has not yet reached this maximum. It has no effect on the automatic process, in which this parameter is set according to the mode (Fast, Medium or Thorough) selected in the ET control popup. Only pin to grid assignments with the largest deflections will be targeted for improvement. This reduces processing time. You can specify the extent of deflection that will be considered for improvement through the configuration parameter **et_p2g_imrove_th**.
See Also	Electrical Testing Manager (Doc. 0708)

et_p2g_imrove_th

Type	Float
Default	0.95
Description	Controls the selection of Pin to Grid assignments, which are candidates for improvement in manual Pin to Grid (in ETM, Tools > Pin to Grid > Assign Probe to Grid). Only pins with deflection close to the local maximum are selected. This reduces processing time. Local maximum is the largest deflection in the area. Close mean that the ratio between this deflection and the maximum local deflection is more then this parameter. For example, if the local maximum is 400 mil and the parameter is 0.95, then the candidates for improvement are all the assignments with deflection above 380 mil. This parameter has no effect on the automatic process, in which this parameter is set according to the mode (Fast, Medium or Thorough) selected in the ET control popup.
See Also	Electrical Testing Manager (Doc. 0708)

et_pin_shaft_size

Type	Integer
Default	0.1 (mils)
Description	Defines the width of the pin shaft (in mils) as seen in the pin to grid stage of the ETM. If this parameter is undefined, the pin shaft width is set to the default value (0.1 mils).
See Also	Electrical Testing Manager (Doc. 0708)

et_pin_tolerance_from_sm

Type	Integer
Default	0 (mils)
Description	Defines the minimal distance from the soldermask edge for pins defined to be "kept inside" the soldermask opening. The minimal distance allowed from the pin edge to the closest solder mask edge.
See Also	Electrical Testing Manager (Doc. 0708)

et_pin_with_limitation

Type	Text
Default	Empty string
Description	Name of a pin, which cannot be used on the second grid defined in a double density grid definition. It is applicable for old Mania tester where the second grid points in a double density grid are of different size and the pin shaft size can be used only on the points of the first grid.
See Also	Electrical Testing Manager (Doc. 0708)

et_selection_zoom_init_val

Type	String
Default	Nets
Description	Sets the initial value for the Selection Zoom radio button in the ET Control Popup. Acceptable values are Nets (default), All, and None. This value may be changed through the ET Control Popup.
See Also	Electrical Testing Manager (Doc. 0708)

et_show_netlist_output_popup

Type	Boolean
Default	No
Description	Controls appearance of Netlist Output Popup window. **Yes** = Popup appears at the appropriate time, and you can add additional transformations to the current netlist output. **No** (default) = Popup window does not appear.
See Also	Electrical Testing Manager (Doc. 0708)

et_snap_max_dist

Type	Integer
Default	
Description	Defines the maximal snapping distance, in pixels. By defining the distance in pixels, the maximal snapping distance remains the same regardless of the zoom factor or window size.
See Also	Electrical Testing Manager (Doc. 0708)

et_stagger_from_edge

Type	String
Default	Yes
Description	Defines how the staggering offset defined in the pin rules or in the manual staggering tool should be calculated. **Yes** (default) = calculate offset from the edge of the pin to the edge of the pad. **No** = calculate offset from the center of the pin to the edge of the pad.
See Also	Electrical Testing Manager (Doc. 0708)

et_stagger_rotated

Type	Boolean
Default	No
Description	Enables staggering rotated SMDs. The default value for the configuration parameter et_stagger_rotated was changed to **No** to enable rotated net points output.
See Also	Netlist Optimizer (Doc. 0610)

films_box_frame_width

Type	Integer
Default	2 mil
Description	Defines the width (in mils) of the box frame drawn around each layer in the film optimization output. If the value is 0 - no frame is drawn at all. Min.-0 (mils). Max.-300 (mils).
See Also	Films Optimization (Doc. 0706)

films_cut_line_width

Type	Integer
Default	10 mil
Description	Defines the width (in mils) of the cut line in the film optimization output. If the width is 0 - no cut lines are drawn. Min.-0 (mils). Max.-300 (mils).
See Also	Films Optimization (Doc. 0706)

films_film_frame_width

Type	Integer
Default	5 mil
Description	Defines the width (in mils) of the frame drawn around the film in the film optimization output. If the value is 0 - no frame is drawn at all. Min.-0 (mils). Max.-300 (mils).
See Also	Films Optimization (Doc. 0706)

films_scale_anchor_default

Type	Integer
Default	2

Description	This parameter controls the position of the scale anchor for each layer added to a film. The parameter has the following values:
	  1 - scale anchor is source profile center.
	  2 - scale anchor is source profile origin (default value).

See Also	Films Optimization (Doc. 0706)

films_scale_mode_default

Type	Integer
Default	1

Description	This parameter controls scaling features used with the with **.out_scale** attribute, and is similar to the **scale_mode** parameter found in the Output screen (**More...**). The configuration parameter has the following values:
	  1 (default) - Scale all features
	(Ignore the **.out_scale** attribute) .
	  2 - Scale features
	(Don't scale features marked with the **.out_scale** attribute).
	  3 - Unscale targets
	(Don't scale ordinary features: scale only features having the **.out_scale** attribute with scale = 1/<defined scale>.

See Also	Films Optimization (Doc. 0706)

fw_date_fmt

Type	Integer
Default	2
Description	This parameter defines the way date is displayed in the framework package.
Date format	1-mm/dd/yy 2-dd/mm/yy 3-dd mmm yy
See Also	The Framework (Doc.0803)

fw_refresh_interval

Type	integer
Default	30
Description	Refresh interval, in seconds This parameter defines how often the view is updated in the Framework package.
See Also	The Framework (Doc.0803)

fw_relative_job_path

Type	Boolean
Default	No
Description	Add **genesis** to the standard job path This parameter, when set to 'yes' will add to each job path the added branch **genesis**'
See Also	ODB++ (Doc.0202)

.

gen_attr_merge_method

Type	Text
Default	Don't merge
Description	Define the user attributes merge method **Values**: **Don't merge** - Use FORCE_LIB parameter (Default) **Merge to lib** - Use all user attributes from the LIB + new from JOB **Merge to job** - Use all user attributes from the JOB + new from LIB
See Also	

gen_contours_smoothing

Type	Boolean
Default	Yes
Description	Use smoothing and simplification inside Decompose and Resize functions.
See Also	Graphic Editor (Doc. 0601)

gen_errors_announce

Type	Boolean
Default	No
Description	If set to "no", the "internal error" sound will not be played.
See Also	

gen_line_skip_pre_hooks

Type	Integer
Default	1
Description	Skip line pre-hook when run from script and GUI **Values**: **1** - Never skip **2** – Skip when run from script **3** - Skip when run from GUI **4** – Skip always **Note:** The existing LMC **skip_pre_hook** forces next pre-hook skipping for any configuration parameter gen_line_skip_pre_hooks value.
See Also	Scripts (Doc. 0204)

gen_line_skip_post_hooks

Type	Integer
Default	1
Description	Skip line post-hook when run from script and GUI **Values**: **1** - Never skip **2** – Skip when run from script **3** - Skip when run from GUI **4** – Skip always
See Also	Scripts (Doc. 0204)

gen_week_number_even

Type	Boolean
Default	No
Description	Use even week number only.
See Also	Graphic Editor (Doc. 0601)

gen_week_number_format

Type	Integer
Default	
Description	The parameter determines how the first week of the year, and subsequent weeks, are calculated. The parameter can have one of the following values: 1 - First week of the year starts on first Sunday 2 - First week of the year starts on first Monday 3 - Week numbers are calculated accordingly to ISO 8601. 4 - First week of the year contains January, 1.
See Also	Graphic Editor (Doc. 0601)

gen_week_start_day

Type	Integer
Default	1
Description	The parameter determines the starting day of the week. The parameter can have one of the following values: 1 - First day of the week starts on Sunday. 2 - First day of the week starts on Monday. 3 - First day of the week starts on Tuesday. 4 - First day of the week starts on Wednesday. 5 - First day of the week starts on Thursday. 6 - First day of the week starts on Friday. 7 - First day of the week starts on Saturday.
See Also	Graphic Editor (Doc. 0601)

gen_year_number_format

Type	Integer
Default	1
Description	The parameter determines how a year is numbered. Values: **1**-Year within century, **2**-Week-based year. **1** - Year within century [%y "strftime" system calls] (default). **2** - Week-based year [%g "strftime" system calls, the ISO 8601 year). **Note:** If gen_year_number_format = 2, then set the configuration parameter gen_week_number_format = 3. (This sets the week numbers to be calculated according to ISO 8601.)
See Also	Graphic Editor (Doc. 0601)

gen_log_max_file_size

Type	Integer
Default	
Description	Sets the maximum file size (in KBytes) of the Genesis log file. When the file size grows to this value it is cut by 50%.
See Also	

get_confirm_undo

Type	Boolean
Default	No
Description	Demand user confirmation before undo operation.
See Also	

get_def_units

Type	Text
Default	Inch
Description	Default units (Inch, MM) This parameter defines the default units for the Graphic Editor upon system startup.
See Also	The Graphic Editor (Doc.0601)

get_fill_line_width_res

Type	Integer
Default	
Description	This parameter is used in the fill process. It is used to restrict the number of apertures among the fill lines, and to round aperture sizes to those values. The value of **get_fill_line_width_res** defines the minimal rounding value **r** according to the following table. Fill line apertures larger than **r** can be taken only from the values in the following set: r, r*2, r*4, r*8, r*16, and then increasing in r*16 steps.

get_fill_line_width_res	r - minimal rounding value
1	1/16 mil
2	1/4 micron
3	0.1 mil
4	1 micron

Notes:
A) Some fill lines can have a width of
`min_brush`*(power of 2).
B) `min_brush` and `secondary_min_brush` (if defined) are rounded to the corresponding value. A warning is issued if `min_brush` or `secondary_min_brush` have been rounded.

See Also	The Graphic Editor (Doc.0601)

get_inp_exclude

Type	Text
Default	`*tar`, `*zip`
Description	Exclude input files This parameter defines the default value for the exclude filter used by the Auto Input Package for filtering files for identification.
See Also	The Input Process (Doc.0401)

get_keep_round_pad_angle

Type	Boolean
Default	No

Description	**No** (default) - System will maintain current behavior - in some cases the angle will be accumulated and in some cases the angle will be reset.
	Yes -System will preserve the angle that currently exists for the Pad.
	The functions listed below are affected by this change.
	ADM/ARM
	ETM - when defining transformation with rotation
	Input -
	RS274X input
	NEC input
	All formats when using registration
	Graphic Editor:
	  Copy/Move same/different layer (with rotation)
	  Transformation (with rotation)
	  Buffer operations
	  Special symbol creation for text,
	  Dimensions
	  Register layers

See Also	Graphic Editor (Doc. 0601)

get_odbmsgr_autologin

Type	Boolean
Default	
Description	Login to ODB++ Messenger at Genesis start. **Yes** = the user logs in to ODB++ Messenger automatically at Genesis start. **No** = the user will be logged in to ODB++ Messenger at first call to the Messenger.
See Also	

get_user_dir_mask

Type	Boolean
Default	Yes
Description	Enables all system directories to be created using the user's umask value. **No** (default) = System directories created with a default permission level without considering the users umask value. **Yes** = If umask =0, job directory has full permissions (777).
See Also	The Engineering Toolkit (Doc.0102)

gns_editor_icon

Type	Text
Default	**/usr/vue/bin/vueicon -f**
Description	Default Icon Editor This parameter defines the program which is launched when the user needs to edit a pixmap icon (e.g. in the Form Builder package).
See Also	Work Forms (Doc.0801)

gns_editor_text

Type	Text
Default	**/usr/vue/bin/vuepad**
Description	Default Text Editor This parameter defines the program which is launched when the user needs to edit a text file (e.g. callbacks in the Form Builder package).
See Also	Work Forms (Doc.0801)

gns_form_text_chop

Type	Boolean
Default	No
Description	Chop text on <return> in form text fields This parameter defines how the behavior in forms when the user hits <return> in mid field. The default (and recommended) behavior is to leave the rest of the field unchanged and move to the next one (fields can be multi lines and considerable data may be lost if it is changed).
See Also	Work Forms (Doc.0801)

gns_form_text_cut

Type	Boolean
Default	
Description	Limit text length in forms to text field size This parameter defines whether the data entered to a form text field will be limited to the field size. All information in the form will be visible on screen.
See Also	Work Forms (Doc.0801)

gns_only_accessible_jobs

Type	Boolean
Default	No
Description	Display only accessible jobs. No (Default) = Display all jobs. Yes = Only display jobs that have a path to their databases defined in the **dblist** file.
See Also	Work Forms (Doc.0801); Engineering Toolkit (Doc. 0102)

gui_auto_accept

Type	Boolean
Default	No
Description	Accept text input when focus is lost This parameter defines the general behavior of text fields throughout the application. If changed to 'yes', the affect of moving the cursor to another input field will be similar to pressing <return>. This helps by saving the need to hit <return> on fields. When setting this parameter to 'yes', be sure to set **gui_text_chop**='no'.
See Also	All manuals

gui_auto_focus

Type	Boolean
Default	No
Description	Set focus when field is entered This parameter defines whether focus will be automatically moved to a field when the user moves the pointer into it (without the need to click on the field).
See Also	All manuals

gui_color_no_mix

Type	Text
Default	None
Description	Applies to the UNIX environment and not to Windows NT. Do not mix (s)elect,(h)ighlight,(r)ubberband),(a)ny This parameter defines whether the colors of the select, highlight and rubberband will be mixed with layer colors or will totally cover them. The value to enter is any combination of **s, h, r,** or just '**a**'. For example, enter '**sh**' to just select and highlight overlay the layers (however, with '**sh**' the 'Select' ('**s**') color always dominates under UNIX). After changing this parameter, open the Options>Colors popup in the Graphic Editor, change any color parameter (you may change it back, as well) to activate the change. You have the option of entering any combination of **s, h, r.**
Limitations	This parameter is not active under Windows NT.
See Also	The Graphic Editor (Doc.0601)

gui_color_spare

Type	Integer
Default	0
Description	Leave this number of colors free This parameter defines how many of the first 128 colors the application will be spared (e.g. not allocated). This is useful if you wish to compromise by working with less exact colors for menus, buttons, etc. so that other application will suffer less of lack of colors. Note 1: This parameter does not affect the colors on the graphic area in the graphic station. Note 2: The PCMAP environment variable is an alternative for setting this parameter
See Also	

.

gui_decompose_negative_surface

Type	Boolean
Default	Yes
Description	Enables you to decompose negative surfaces with holes to avoid an incorrect display. To restore the previous behavior, set the parameter to "NO".
See Also	

gui_focus_on_option

Type	Boolean
Default	Yes
Description	Controls keyboard focus when pressing "Enter" in a GUI window. **Yes =** Focus will be moved to the next text or option field. **No =** When pressing "Enter" in a GUI window, the keyboard focus will be moved to the next text field (Genesis default behavior before v8.1b).
See Also	

gui_native_color_mix

Type	Boolean
Default	No
Description	Affects graphic viewing when working in TrueColor. Enable users in TrueColor mode to use the same colors that are available in Pseudo Color mode. Color mixing for TrueColor is different than the color mixing for Pseudo Color. Operators who have become used to working with Pseudo Color visuals are surprised to find that color mixing is different when using a True Color visual. Setting this variable to "Yes" provides the operator with the color mixing they are used to. **Note:** This parameter requires setting Windows to 24 or 32 bit color mode. For Linux, we recommend using this option on newer systems, those with Xserver version 4.3 and higher. This version of Xserver is found in Red Hat version 9.0 and the 8.2 version of SuSE Linux. The new color matrix will work with older systems as well, but with significantly reduced performance.
See Also	Graphic Editor

gui_print_color_images

Type	Boolean
Default	Yes
Description	Enable/Disable printing of color images This parameter defines whether color images will be printed when activating **ctrl p** on a form which contains a raster image.
See Also	Work Forms (Doc.0801)

gui_progress_remains

Type	Boolean
Default	Yes
Description	If set to YES the progress bar window always remains the top window. If set to NO, the progress bar window can be hidden behind other windows on screen.
See Also	All manuals

gui_sel_net_use_filter

Type	Boolean
Default	No
Description	If set to **yes**, enables using the feature filter while selecting layer/board net features.
See Also	Graphic Editor (Doc. 0601)

gui_text_chop

Type	Boolean
Default	No
Description	Chop text on <return> in text fields This parameter defines behavior in all the application text fields when the user hits <return> in midfield. The default behavior is to chop the rest of the field and move to the next one.
See Also	All manuals

imp_coupon_viewer

Type	Integer
Default	1

Description	View coupon by: 1=Internal viewer 2=Graphic editor.
See Also	Graphic Editor (Doc. 0601)

inp_default_path

Type	Text
Default	" "
Description	Default path for input screen
See Also	Graphic Editor (Doc. 0601)

iol_274x_am_prim_rot_center

Type	Boolean
Default	No
Description	Determines the anchor point around which the primitives of the aperture macro will be rotated. **No (default)** = Rotate aperture macro primitive around it's center point. **Yes** = Rotate around the 0;0 anchor point.
See Also	Graphic Editor (Doc. 0601)

iol_274x_aname_with_comma

Type	Boolean
Default	Yes
Description	Allow comma in rs274x aperture macro names. If set to No, it will report an error.
See Also	Input Formats (Doc.0403)

iol_274x_circle_as_edge_in_poly

Type	Boolean
Default	No
Description	Allows the user to decide how to treat full circles that appear as edges of a polygon. **No** (default) - draw a full circle. **Yes** - treat circle as an arc of 0 degrees.
See Also	Input Formats (Doc.0403)

iol_274x_contourize_neg_symbol

Type	Boolean
Default	No
Description	Genesis paints the input line in Yellow, for both values (Yes and No) of the parameter, if it encounters a macro with negative element in it. Previously, the input line was colored pink.
See Also	Input Formats (Doc.0403)

iol_274x_contourize_neg_symbol_color

Type	Integer
Default	1
Description	Controls the color coding in the input screen when symbols with negative features are encountered in the translated RS-274x file. **Values:** **1** (default) - the line in the input screen will be painted **Yellow**. **2** - the line in the input screen will be painted **Pink**.
See Also	Output Formats (Doc. 0702)

iol_274x_convert_macro

Type	Boolean
Default	Yes
Description	**Yes** (default) - convert aperture macro to Genesis symbols. **No** - do not convert, special symbols created. **Note**: The automatic symbol recognition process uses a 0.25 mil tolerance, so in some cases the symbol size is a little different than the original macro.
See Also	Input Formats (Doc.0403)

iol_274x_convert_macro_tolerance

Type	Floating Point (0.01)
Default	0.25 mil
Description	Enables controlling the tolerance level permitted when translating 274x aperture macros to standard Genesis symbols.
See Also	Input Formats (Doc.0403)

iol_274x_dont_accumulate_of

Type	Boolean
Default	No
Description	Used when a file contains commands such as SF, MI (mirror), OF (offset). **No** (default) – The OF and MI parameters are accumulated as before. **Example**: if you have MI, all the features after this command will be mirrored. Then, from the next MI command forward, the features will not be mirrored. **Yes** - parameters are not accumulated. Only a parameter's first appearance is considered. (Absolute) **Note**: **Yes** is recommended.
See Also	Input Formats (Doc.0403)

iol_274x_first_eob

Type	Boolean
Default	No
Description	If set to **Yes**, the first character in the file will be taken as the **RS274X** file separator. In some cases, the first character of an RS274X file is the "End-Of-Block" character. In order to make sure that the Identify process does not recognize another EOB character, the first character in the file will be used as EOB, if this parameter is set to **Yes**. Default = **No**
See Also	Input Formats (Doc.0403)

iol_274x_g75_current_arc

Type	Boolean
Default	No
Description	**No** (default) - when negative I or J encountered and G75 was not set, G75 is assumed from now on. **Yes** - when negative I or J encountered and G75 was not set, G75 is assumed for current arc only.
See Also	Input Formats (Doc.0403)

iol_274x_g75_current_arc

Type	Boolean
Default	No
Description	**No** - draw line when block contains only D01 command, **Yes** - do not draw.
See Also	Input Formats (Doc.0403)

iol_274x_ill_polygon

Type	Boolean
Default	No
Description	Disable rs274x illegal polygon checking (NOT RECOMMENDED) Yes - No attempt to check/fix of SIP will be done No - Polygons will be checked and be corrected if SIP is found **Note:** The configuration parameter **ill_enable_ill_polygon** has no effect on **iol_274x_ill_polygon**.
See Also	Input Formats (Doc.0403)

iol_274x_ip_background

Type	Boolean
Default	No
Description	Determines how to interpret the IPNEG parameter which is encountered inside a RS274X file. Some CAD systems refer to it in a different manner. Available values: No, Yes, Invert. No (default) - Input as is - do not add positive background to the layer in case an IPNEG parameter is encountered. Yes - Add positive background. Invert - Invert data polarity (no background is added in this case). **Note**: This parameter affects the data only when the command IPNEG exists in the file.
See Also	Graphic Editor (Doc. 0601)

iol_274x_ko_polarity

Type	Integer
Default	1
Description	KO (knockdown) parameter polarity method used in rs274x input Legal values: 1 - **Absolute**. Determine polarity according to the value written in KO param.(ignore IP & LP). 2 - **Relative**. Take into account the IP & LP values. **Note**: IP (image polarity); LP (layer polarity)
See Also	Input Formats (Doc.0403)

iol_274X_limit_dcode

Type	Boolean
Default	No
Description	**No** (default) - Input will accept dcodes out of this range **Yes** - to limit the input of files with dcodes within the range defined (10-999)
See Also	Input Formats Doc.0403.

iol_274X_set_octagon rotation

Type	Boolean
Default	No
Description	For RS274X input data. The RS-274x format is ambiguous. From its description, it is unclear whether an octagon's base with zero (0) degrees rotation should be flat or sitting on a corner. Therefore, this configuration parameter was added to enable the user to determine the angle of the octagon. **Yes** = enables the user to set the Octagon starting rotation angle to 0 degrees. **No** (default) = Octagon starting rotation angle remains at its standard 22.5 degrees.
See Also	Input Formats Doc.0403.

iol_274X_set_polygon_rotation

Type	Boolean
Default	No
Description	The RS-274x format is ambiguous. From its description, it is unclear whether an polygon's base with zero (0) degrees rotation should be flat or sitting on a corner. Therefore, this configuration parameter was added to enable the user to determine the angle of the polygon. **Yes** = enables the user to set the Polygon starting rotation angle to 0 degrees. **No** (default) = Polygon starting rotation angle remains the default rotation angle.
See Also	Output Formats Doc. 0702

iol_274X_sr_merge_pcb

Type	Boolean
Default	Yes
Description	For RS274X input data. **Yes** (default)- Genesis tries to match PCB to previous PCBs according to transformation parameters, as before. **No** - each 274x layer is input as a different PCB. When setting this config param to "no", the S&R table after input looks like the original S&R table. **Note**: There is still a limitation of the RS-274x format. The format does not have an S&R offset command.
See Also	Input Formats Doc.0403.

iol_274x_sr_ij_scaled

Type	Boolean
Default	No
Description	For RS274X input data. **No** - the IJ values of the SR command are not scaled, **Yes** - the values are scaled.
See Also	Input Formats Doc.0403.

iol_accept_raw_data

Type	Boolean
Default	No
Description	Controls input of polygons with self-intersecting points for RS274X input data. **No** (default) – The SIP is part of the surface. **Yes =** input polygons with self-intersecting points are converted to outline. Notes pointing to the self-intersecting points are added to the input layer. No correction is made to the input data. If **Yes**, the parameter overrides any combination of `iol_fix_ill_polygon` or `iol_274x_ill_polygon`. On RS-274x input, aperture macros that looks like thermals are converted to real Genesis thermals. Now their spoke width can be analyzed.
See Also	Input Formats Doc.0403.

iol_atf_k_points_after_tools

Type	Boolean
Default	No
Description	Controls placement of contour points in ATF output for non-panel step output. **Yes =** Contour points, marked with a "K", are placed after the tools list for a non-panel step. For panel step output, this configuration parameter has no effect. **No (default) =** Contour points information is not added to output file for non-panel step output.
See Also	Netlist Analyzer

iol_atf_mark_pg_nets

Type	Boolean
Default	No
Description	Controls marking of P&G nets in ATF Output. **No** - do not mark P&G nets. **Yes** - mark P&G nets.
See Also	Netlist Analyzer

iol_atf_output_adjacencies

Type	Boolean
Default	No
Description	Controls outputting of the ATF adjacency file. **No** - do not output ATF adjacency file. **Yes** - output ATF adjacency file.
See Also	Netlist Analyzer

iol_atf_output_midpoints

Type	Boolean
Default	No
Description	Controls whether to output mid points currently marked as comments. **Yes** - Outputs mid points marked as comments. Also changes the comment structure in the file. The old structure **/... comment .../** becomes the new structure **/*... comment ...*/**. **No** (default) - Does not output mid points marked as comments.
See Also	Output Formats (Doc. 0702)

iol_clean_surface_min_brush

Type	Integer
Default	0.0
Description	Controls whether or not the input process should try to 'clean'/'smooth' input surfaces , i.e. reduce the number of edges of the input polygons. If the file contains huge polygons with a lot of vertices, the user may set this min_brush value and the surfaces will be smoothed by this value. Range = 0.0 to any positive number. Default = 0.0: no cleaning is done. Any positive value specifies the minimum brush size used in the 'cleaning' algorithm. **Note:** A high value might cause distortions of the original surface. **Note:** supported only for DPF input.
See Also	Input Process (Doc. 0401)

iol_compress_meas

Type	Boolean
Default	Yes
Description	Compress measurement files of action results This parameter controls whether measurement files for checklists, which tend to be somewhat large, will be compressed upon saving.
See Also	ODB++ (Doc.0202)

iol_create_checksum

Type	Boolean
Default	Yes
Description	Generate checksum for database files This parameter controls whether checksum is generated for files saved in ODB++. Currently, this parameter has to be set to 'no', since checksums verification is not implemented during reading.
See Also	ODB++ (Doc.0202)

iol_diag_rect_line

Type	Integer
Default	1
Description	The configuration parameter **iol_diag_rect_line** determines how a diagonal rectangular line is defined during input. 1. (default) - Diagonal rectangular line input as line. 2. Diagonal rectangular line input as contour.
See Also	Output Formats (Doc. 0702)

iol_dpf_output_cont_as_com

Type	Boolean
Default	No
Description	Define contours as complex in DPF Output.
See Also	The Output Process (Doc.0701)

iol_dpf_output_zero_aper

Type	Boolean
Default	TRUE
Description	Allows zero width apertures in DPF output If parameter is set to FALSE, every encountered zero aperture symbol is not outputted. Whenever this happens, an appropriate warning message is written to the log file.
See Also	The Output Process (Doc.0701)

iol_dpf_patt_border

Type	Integer
Default	3
Description	User can set the clipping policy of the fill pattern in a polygon. Legal values: 1- Lines will have rounded corners; pads that touch the border will be ignored 2- Elements that touch the border will be 'shaved' 3- An outline of the border will be added
See Also	The Output Process (Doc.0701)

iol_dpf_separate_letters

Type	Boolean
Default	No
Description	Determines whether text in DPF input is read as a single feature or as separate letters, with each letter considered a separate feature. This allows more accurate conversion of text into the Genesis ODB++ format. **No** (default) - Text is read as a single feature. **Yes** - Text is read as separate letters, and each letter is considered a separate feature.
See Also	Input Formats (Doc.0403)

iol_dpf_text_font

Type	Text
Default	Empty string
Description	This parameter determines which font is used for text when inputting data in DPF format. **Empty string (default)** = DPF input uses the standard font for text. **not empty** (name of font file) - the string should contain the name of the font to be used to create the text. If the font file specified here is not found in the job or in the library, the standard font is used and a warning written to the log and to the report.
See Also	Input Formats (Doc. 0403)

iol_dpf_text_width_factor

Type	Integer
Default	0.83333
Description	The size of DPF text is defined by the height only. The width is calculated as a factor of the height. The value entered here is the factor by which to multiply the height in order to obtain the text width.
See Also	Input Formats (Doc.0403)

iol_drl_def_drill

Type	Integer
Default	0
Description	Defines the default drill format. If the drill format cannot be recognized because there is not enough data in the file, the drill/rout file will be recognized as this format by default. Default drill input format: 0 - Excellon 1 - Trudrill 2 - Posalux 3 - SM
See Also	Input Formats (Doc.0403)

iol_dxf_circle_to_pad

Type	Boolean
Default	
Description	For DXF input - controls input of circles in DXF input. **Yes** - input converts DXF circles into pads **No** – input converts them as circles
See Also	Input Formats (Doc.0403)

iol_dxf_default_shx_bigfont

Type	Text
Default	" "
Description	Defines the default "big font" file (.shx) that Genesis will use for displaying text entities which have no "big font" defined, or where the defined "big font" was not found. If the specified default "big font" does not exist in the font_ex library, Genesis will input DXF files using the Genesis standard font. .shx fonts to be used in a job should be placed in the GENESIS_LIB/fonts_ex/shx directory. Fonts already used in a job are saved in the JOB/fonts_ex/shx directory. **Note:** "Big font" files are used for characters not found in the English language. Text files for some alphabets contain thousands of non - ASCII characters. Genesis enables display of these text entities by using a special shape definition known as a "Big font" file (.shx).
See Also	Input Formats (Doc.0403)

iol_dxf_default_width

Type	Boolean
Default	
Description	Zero size features created with default size.
See Also	Input Formats (Doc.0403)

iol_dxf_default_width

Type	Boolean
Default	Yes
Description	DXF input will input all empty/invisible text/mtext.
See Also	Graphic Editor (Doc. 0601)

iol_dxf_model_only

Type	Boolean
Default	No
Description	**No** - reads model features and paper (layout) features **Yes** - reads only DXF model features
See Also	Graphic Editor (Doc. 0601)

iol_dxf_poly_to_surface

Type	Boolean
Default	No
Description	If set to Yes, closed polygons of zero width will be input as surfaces. **Note:** This parameter requires that the user have licenses for cutting data. If the user does not have the required license, or Enterprise / Genesis fails to input the polygon as surfaces, an appropriate warning message will be issued, and the polygon input as an outline.
See Also	Output Formats (Doc. 0702)

iol_dxf_round_cap

Type	Boolean
Default	Yes
Description	For DXF input use round capped lines. **Yes** – The line will be created with rectangular corners. **No** – The line will be created with rounded corners.
See Also	Input Formats (Doc.0403)

iol_dxf_round_line

Type	Integer
Default	0
Description	For DXF, Replace square lines with round lines. Values: (0 - No, 1 - Yes).
See Also	Input Formats (Doc.0403)

iol_dxf_separate_frozen_layers

Type	Boolean
Default	No
Description	**Yes** - All DXF frozen layers are put into a separate Genesis layer. This parameter applies only when the configuration parameter iol_dxf_single_layer = "yes". List of frozen layers (if it exists) is added to the log, and a warning is added to the report.
See Also	Input Formats (Doc.0403)

iol_dxf_single_layer

Type	Boolean
Default	No
Description	Controls how layers in a DXF file are handled. Yes - All layers of a DXF file will be merged into a single layer No - Layers of a DXF file will be handled separately
See Also	Input Formats (Doc.0403)

iol_dxf_ttf_default_path

Type	Text
Default	Empty string
Description	This parameter defines the default path for TrueType fonts. **Empty string (default)** = Genesis first looks for the font in the **$JOB_PATH/font_ex/ttf** directory, and then in the **$GENESIS_LIB/fonts_ex/ttf** directory. **string (showing** path to fonts) - Genesis first looks for the font in the path defined (here) in the configuration parameter. Genesis then looks for the font in the **$JOB_PATH/font_ex/ttf** directory, and then in the **$GENESIS_LIB/fonts_ex/ttf** directory.
See Also	Input Formats (Doc. 0403)

iol_enable_ill_polygon

Type	Boolean
Default	No
Description	Enables input of self-intersecting polygons in IGI Par data. **Yes** - Enables input of illegal (self-intersecting) polygons in IGI Par data. Note: This procedure is NOT recommended unless cleaning processes are performed immediately after input. **No** - Disables input of self-intersecting polygons. In this case, the process will fail to translate the file. **Note**: This procedure is NOT recommended unless cleaning processes are performed immediately after input.
See Also	Input Formats (Doc.0403)

iol_epc_output_mid_points

Type	Boolean
Default	No
Description	Output mid points in EPC file
See Also	Input Formats (Doc.0403)

iol_esi_any_tool

Type	Boolean
Default	No
Description	Defines how many digits can be in tool number. **No** - tool number is limited to 3 digits. **Yes** - not limited.
See Also	Input Formats (Doc.0403)

iol_exc_g00_canc_comp

Type	Boolean
Default	Yes
Description	Excellon g00 command cancels compensation. **Yes** (default) - G00 always cancels the compensation. **No** - will cause G00 to leave the compensation as is.
See Also	Input Formats (Doc.0403)

iol_exc_g32_g33_comp

Type	Boolean
Default	No
Description	Controls whether arcs created with the G32/G33 commands will be inputted with compensation . If **No** (default) - arcs are input without compensation. If **Yes** - arcs are input with compensation.
See Also	Output Formats (Doc. 0702)

iol_exc_use_header

Type	Boolean
Default	No
Description	Use header information when identifying Excellon files. **No** (default) – header information is ignored during identify. **Yes** - used to set the parameters during identify. **Example:** **M48** **FMAT,2** **VER,1** **METRIC** **Note**: We have come across many files with seemingly inappropriate headers. Genesis auto-identifying algorithms will usually be accurate. It is recommended that **iol_exc_use_header = No** unless it is certain that the header section of input files is accurate.
See Also	Input Formats (Doc.0403)

iol_fill_abort_on_drop

Type	Boolean
Default	No
Description	Yes - Fill contouring that drops a surface will abort the fill process. No (default) - Fill contouring process will not abort if a surface is dropped. On completion, a warning will be added to the log file.
See Also	

iol_fill_use_break_arc_k

Type	Boolean
Default	No
Description	If Yes, and the "Use Arcs" parameter of Contour Fill = No (as in Image output), the fill algorithm will break arcs to lines according to the value of the configuration parameter **out_break_arc_k**. No - the fill algorithm will break arcs to lines according to the value of the internal tolerance.
See Also	

iol_fill_validation

Type	Boolean
Default	No
Description	Alerts the user that something went wrong during the fill process.
See Also	

iol_fix_ill_polygon

Type	Boolean
Default	No
Description	Automatically fix self-intersecting polygons. Affects autoplot format, as well as IGI-par format. **No** (default) -Only basic SIP elimination is carried out. Modification is up to 0.05 mil. **Yes** - If, after basic SIP elimination, some self-intersecting polygons remain, an additional SIP elimination algorithm is run that will recreate the polygons. Modification is up to 0.5 mil. **Note:** The configuration parameter **ill_enable_ill_polygon** has no effect on **iol_fix_ill_polygon**. The parameter affects Autoplot formats, as well as IGI-par formats.
See Also	Input Formats (Doc.0403)

iol_force_no_break_sr

Type	Boolean
Default	No
Description	**Yes** – In Solio and RS274-X input, *with Break S&R=no,* Genesis will not break the S&R in any case (a warning is issued to the log file). **No** – The Genesis input process will break the S&R if negative features in different steps might overlap each other.
See Also	Input Formats (Doc.0403)

iol_gbr_arc_as_full_circle

Type	Boolean
Default	
Description	When the G75 command (Multiquadrant (360°) Circular Interpolation) is missing, it is unclear whether a zero degree arc should be interpreted as a full circle arc or as a zero length line. This configuration parameter determines how such arcs will be translated (e.g. Input-8). **Yes** – zero degree arc is translated as full circle. **No** – zero degree arc translate as zero length line.
See Also	Output Formats

iol_gbr_arc_on_axis

Type	Boolean
Default	No
Description	Disable / Enable arc creation when the arc's start and end points are on the same axis, and the arc creation option is in single quadrant mode. **No** (default) - Disable arc creation (as in previous versions). **Yes** - Enable arc creation. **Note**: Affects Gerber and RS274X input formats.
See Also	Input Formats (Doc. 0403)

iol_gbr_check_dcode

Type	Integer
Default	0
Description	Controls whether or not to input Gerber files in cases where the Dcode is missing or not translated correctly in the wheel. **0** (default)—create null-input symbol. **1**—Gerber file translation is stopped if the Dcode used is translated as pink in the wheel template. This indicates a symbol identified as a Dcode but without a record. **2**—Gerber file translation is stopped if the dcode used is translated as pink or yellow in the wheel template.This indicates a symbol identified as a Dcode but without a record, or a duplicate Dcode or symbol conflict (i.e. same Dcode number with a different symbol).
See Also	Input Formats (Doc. 0403)

iol_gbr_brk_diag_sqrs

Type	Boolean
Default	No
Description	Break Diagonal square line during Gerber input (e.g. Input-9). **Yes** = diagonal square lines in Gerber, RS-274X and Autoplot, input of diagonal lines with square apertures will be processed as 2 pads and a line instead of one diagonal line.
See Also	Input Formats (Doc.0403)

iol_gbr_def_pentax

Type	Boolean
Default	No
Description	Identify Gerber files as Pentax Gerber format by default.
See Also	Input Formats (Doc.0403)

iol_gbr_diag_type

Type	Integer
Default	2
Description	Diagonal square type in Gerber input: 1 - lines 2 - contours (e.g. Input-9). **Note**: This variable works only if iol_gbr_brk_diag_sqrs = Yes. If iol_gbr_brk_diag_sqrs = No, the feature will be defined as a line.
See Also	Input Formats (Doc.0403)

iol_gbr_eof_err

Type	Boolean
Default	No
Description	Error on illegal EOF in gerber files (Missing M02/M00). **No** (default) - the translation of GERBER files without M02 at the end will succeed, with error messages placed in the log. **Yes** - the translation of GERBER files without M02 at the end will fail. **Note**: If set to Yes, this helps catch customer Gerber errors if they mistakenly send only half of the file.
See Also	Input Formats (Doc.0403)

iol_gbr_ignore_zero_radius_arc

Type	Boolean
Default	Yes
Description	In Gerber274x arcs (G03) that have I & J that equal zero. **Yes** (default)- Ignores zero radius arcs, as before. **No** - Draws a zero length line. (e.g. Input-10)
See Also	Input Formats (Doc.0403)

iol_gbr_japan_gerber

Type	Boolean
Default	No
Description	Input Gerber files using Japanese style.
See Also	Input Formats (Doc.0403)

iol_gbr_limit_dcode

Type	Boolean
Default	No
Description	Yes - do not read Gerber files with dcodes (10-999) that are out of range. No - read all dcodes Limitation: the dcode number will not be stored in the feature if the dcode used to create that feature is greater than 8192.
See Also	Input Formats (Doc.0403)

iol_gbr_percent_comment

Type	Boolean
Default	No
Description	Extracts lines from Gerber files that begin with **%** **Yes** - all lines beginning with % are extracted to a separate file under the directory **genesis.ext**. **Note:** This command could be used for extracting headers of EIE Gerber extended format lines.
See Also	The Input Process (Doc.0401), Input Formats (Doc.0403)

iol_gbr_polygon_break

Type	integer
Default	2
Description	This configuration parameter controls how Genesis behaves when a **D02** command appears inside a polygon block. According to Gerber's RS274x specification, when a **D02** command appears inside a polygon block, the pending polygon is closed, and a new polygon is started. By default, files containing this anomaly are rejected. This configuration parameter applies to both Gerber and RS-274X formats. **1 - Allow** = causes the input to act according to the specification, closing the pending polygon and starting a new one. **2 - Don't Allow** = causes the input operation to the fail if it finds a **D02** code inside a polygon block. **3 - Ignore** = causes the input to ignore the "D02" code, proceeding as if the code did not appear in the file. **4 - Contourize**
See Also	Input Formats (Doc.0403)

iol_gbr_report_japan_gerber

Type	Boolean
Default	No
Description	**Yes** - issue a warning of Japan-like Gerber, when only D03 appears in a block (*D03*). **No** (default) - do not warn. **Note**: This parameter works only if iol_gbr_japan_gerber = yes.
See Also	Input Formats (Doc.0403)

iol_hioki_1st_net_is_0

Type	Boolean
Default	No
Description	Controls net numbering in Hioki output files. **Yes =** Numbering of nets in output files starts from 0. **No (default) =** Numbering of nets in output files starts from 1.
See Also	Output Formats (doc. 0702)

iol_hioki_add_drill_info

Type	Boolean
Default	No
Description	Controls placement of additional information in output file required by some types of Hioki testers. **Yes =** Every test point on a through hole drill is marked with a 'T', and every test point on a blind drill is marked with a 'V'. The drill diameter is also written in the file. This information is needed for some types of Hioki testers. **No (default) =** Extra information is not added to output file.
See Also	Netlist Analyzer

iol_hioki_clean_hole_size

Type	Double
Default	0.05
Description	Hioki clean hole minimal size (in current units). To control the accuracy of the search for net points that reside over net shapes, use this configuration parameter (default = 0.05 inch). Any hole within a surface that is smaller than this value will be considered NOT to exist.
See Also	Netlist Analyzer

iol_hioki_inner_layer_data_output

Type	Boolean
Default	No
Description	Create the inner layer data (.ind) output file. An extra file, the IND file (inner layer data file), was added to the Hioki output files. This file lists all inner layer nets that reside under each net point, and then lists every net that covers all the points of another net. To produce the IND file, set this configuration parameter to yes (default = no).
See Also	Netlist Analyzer

iol_hpgl_close_edge

Type	Boolean
Default	Yes
Description	Implicitly close polygons for HPGL/2 "EdgePoly". **Yes** (default) – Implicitly (by hint) close Edge Polygons. **No** - Do not close Edge Polygons unless done explicitly.
See Also	Input Formats (Doc.0403)

iol_hpgl_pe_syntax

Type	Boolean
Default	Yes
Description	Yes (default) - PE command is according to syntax, terminated by semicolon. No - the PE command is not terminated by a semicolon.
See Also	Input Formats - Doc. 0403

iol_ihit_incremental_sub_call

Type	Boolean
Default	No
Description	**No** (default) - current behavior. **Yes** - the subprogram call coordinates are treated as incremental, regardless of the G90/G91 commands (e.g. input-12). **Note**: When working with the ARM, this parameter must be **No**.
See Also	Input Formats (Doc.0403)

iol_ihit_mirror_mandatory

Type	Boolean
Default	No
Description	controls mirroring behavior in the step & repeat pattern. **No** (default) - Mirror flags in step & repeat pattern are affected only for a single repeat step without affecting the XY offset repeat coordinate. **Yes** - Mirror flags in step & repeat pattern are mandatory and are affected from the moment they turn on till they turn off. Steps and XY offsets are affected.
See Also	Input Formats (Doc.0403)

iol_ihit_work_coordinate_to_zero

Type	Boolean
Default	No
Description	Permits setting the Hitachi input set work coordinate to zero in case of G92X0Y0. **No** (default) - shifts the work coordinate so that the current position will be located at X#Y# (of G92) work coordinates. **Yes** - shifts the work coordinate as done in the default above, *except* in cases of G92X0Y0. In that case, the work coordinate is set to zero (0,0).
See Also	Input Formats (Doc.0403)

iol_img_drill_as_finish

Type	Boolean
Default	No
Description	**No** (default) - drills are translated as drill size (current behavior). **Yes** - drills are translated as finished size.
See Also	Output Formats (Doc.0702)

iol_img_ext_limits

Type	Boolean
Default	No
Description	Extend limits beyond profile. **Yes** - the profile limits will grow to include data that is outside the profile. **No** (default) - maintains previous behavior, that the profile limits of the panel step will be as defined in Genesis.
See Also	Output Formats (Doc.0702)

iol_img_max_complex_sym_size

Type	Integer
Default	4
Description	Allow the user to determine the maximum size of a symbol NOT to be broken when Genesis outputs an IMAG file. Default = 4 inches. This size maintains compatibility with older versions.
See Also	Output Formats (Doc.0702)

iol_img_pnl_no_off

Type	Boolean
Default	No
Description	No offset for panels in Image output This parameter is used by the output translator in 'Image' format. Sometimes the translator shifts the coordinates because of the limitations in the Image database. In some cases customers don't want coordinates to change. Setting the parameter to 'yes' will leave the panel coordinates unchanged in any case.
See Also	Output Formats (Doc.0702)

iol_img_r199_r200

Type	Text
Default	None
Description	Suffix added to r199.125-r200 aperture names in Image output. This parameter is used by the output translator for 'Image' format. The Image database cannot accept an aperture name like - r2000, which is used for a 200 mil round aperture. This parameter serves as a suffix to the r2000 that we assign. If the suffix is '-b', a 200 mil round aperture that we translate will be called r2000-b on the Image system.
See Also	Output Formats (Doc.0702)

iol_img_rename_symbols_names

Type	Boolean
Default	Yes
Description	Rename symbols names to be job specific Yes - symbols names renamed to be job specific No - symbols names not renamed
See Also	Output Formats (Doc.0702)

iol_img_rnd_prod_params

Type	Boolean
Default	
Description	Round Image production parameters in Image output
See Also	Output Formats (Doc.0702)

iol_img_shift_comp

Type	Boolean
Default	Yes
Description	Compensate for shift in production parameters.
See Also	Output Formats (Doc.0702)

iol_img_shift_comp_if_non_zero

Type	Boolean
Default	No
Description	Compensate for shift in production parameters only in Mirror and Stretch center if nonzero.
See Also	Output Formats (Doc.0702)

iol_img_use_plotprms

Type	Boolean
Default	No
Description	Use plot parameters of layers in Image input/output. This parameter is set to be used in system mode only; It meant to allow the system administrator exclusive control over this value for all stations. Therefore, it cannot be set for user and host modes.
See Also	Output Formats (Doc.0702)

iol_img_use_tp_aper

Type	Boolean
Default	Yes
Description	Use IMAGE TP apertures in Image Output.
See Also	Output Formats (Doc.0702)

iol_inp_default_multi_quadrant

Type	Text
Default	No
Description	Sets the default circular interpolation in case of arc without an earlier G74/G75 command. Available values: no, yes, stop. **NO** (default) - the default circular interpolation is single quadrant (G74). **YES** - the default circular interpolation is multi quadrant (G75). **STOP** - The input process stops if it encounters an arc without an earlier G74/G75 command. **Note:** Applicable for 274x and AutoPlot input.
See Also	Input Process (Doc. 0401)

iol_inp_drl_units

Type	integer
Default	1
Description	Input Drill units:1=AUTO 2=INCH 3=MM This parameter affects the automatic identification of drill files during automatic input. The user can bias the algorithm to force certain units in order to avoid confusion between inches(2.4 inch) and metric (3.3 mm) units.
See Also	Input Process (Doc.0401)

iol_inp_gbr_units

Type	Integer
Default	1
Description	Input Gerber units: 1=AUTO 2=INCH 3=MM This parameter affects the automatic identification of Gerber files during automatic input. The user can bias the algorithm to force a certain units in order to avoid confusion between inches(2.4 inch) and metric (3.3 mm) units.
See Also	Input Process (Doc.0401)

iol_inp_identify_warn_color

Type	Boolean
Default	No
Description	Controls the color of the file status line in the Input window. **No** (default) - leave the line green, as usual. **Yes** - use yellow color to warn of identification changes.
See Also	Input Formats (Doc.0403)

iol_inp_inconsistent_arc_note_threshold

Type	Integer
Default	
Description	This configuration parameter determines the threshold for inconsistent arc center movement when correcting the arc. If the arc center movement is less than this threshold, a note will not be added. An inconsistent arc is an arc which cannot be drawn with the given start point, end point, and center. Genesis fixes such arcs on input by moving their center point, reports them to the log, and adds notes to the layer.
See Also	Input Formats (Doc.0403)

iol_inp_reinput

Type	Boolean
Default	No
Description	Enables automatic re-input of RS-274-X files if a warning is issued during file translation. Values: **No** (default) - do not run the auto re-input. **Yes** - run the auto re-input when warning issued.
See Also	Input Formats (Doc. 0403)

iol_inp_skip _auto_reg

Type	Boolean
Default	No
Description	Used in all formats that support drill/rout layers. Allows the user to skip the auto registration process of drill/rout layers. **No (**default value**) =** The auto registration process is carried out. **Yes** = The auto registration process is skipped. If **Yes**, an appropriate warning message is written to the log file.
See Also	Input Process (Doc.0401)

iol_inp_unify_gerber_pentax

Type	Boolean
Default	Yes
Description	Controls whether or not Gerber/Pentax input files convert to the same format if their format changes during input. This ability can be helpful in situations when there is a problem in a specific file and its format changes, the format of the other file(s) need not be changed. **Yes** (default) - convert all files to the same input format (as in previous versions). **No** - Do not match file input formats. Each file retains its own input format.
See Also	Input Formats (Doc. 0403)

iol_ipc_output_net_pt_rotate

Type	Boolean
Default	Yes
Description	It controls whether rotation data will be output. The parameter affects IPC356 & IPC356A output formats.
See Also	Netlist Optimizer (Doc. 0610)

iol_ipc356_a_default_radius

Type	Double
Default	2.0
Description	IPC 356 and 356A default radius for net points lacking dimensions (in current units).
See Also	Input Process (Doc.0401)

iol_ipcd356a_complex_relation

Type	String
Default	Touch
Description	Enables you to control how drilled SMDs are output, using complex records, in IPC-D-356A and MicroCraft output. Enables you to decide how SMDs and the drills that touch them, but are not completely included, should be output using complex records. Possible values are touch, center, and include. **Touch** = If a drill merely touches the SMD netpoint, than they should be output together in the same complex record. This is the parameter default value because this was the rule prior to the addition of this configuration parameter. **Center** = The drill and the SMD are output in the same complex record only if the center of the drill is inside the SMD netpoint. If the center of the drill is outside the SMD netpoint, the drill and the SMD are output as separate records. **Include** = The drill and the SMD are output in the same complex record only when the drill is completely included within the SMD netpoint. Otherwise, they are output as separate records.
See Also	Output Formats (Doc. 0702)

iol_ipcd356a_include_neg_layer_shapes

Type	Boolean
Default	No
Description	Supports output of inner negative layer shapes when trace mode is **yes**. Applicable to IPC-D-356A output, for output of negative layers in IPC-356-A "Car" files for electrical testing, and for Microcraft output for both ETM and standard output.
See Also	Output Formats (Doc. 0702)

iol_ipcd356a_output_profiles

Type	Boolean
Default	Yes
Description	Controls outputting profiles in the IPC 356A format . If **No** - no panel information will be output.
See Also	Output Formats (Doc. 0702)

.

iol_keep_direction

Type	Boolean
Default	Yes
Description	Keep polygon direction as set in ODB++
See Also	

.

iol_lld_non_copper_drl

Type	Integer
Default	1
Description	Include non-copper drills: - **1**-PG Layers - **2**-PG and outer - **3**-All layers - **4**-All Layers (differentiate through hole and blind vias)
See Also	Output Formats (Doc. 0702)

.

iol_lld_tool_size_limit

Type	Integer
Default	40 mm
Range	40 - 80mm
Description	Controls the maximum sum of tool sizes in a layer for Lloyd Doyle netlist output.
See Also	Output Formats (Doc. 0702)

iol_mentor_nf_comp

Type	Boolean
Default	No
Description	Read component info from a Mentor neutral file (**License Required**) This parameter affects how a Mentor Neutral File is read during auto input (NOT while reading a Mentor database directly). **No** - only the netlist is read from the Neutral file. **Yes** - both netlist and components data are read from the Neutral file. This choice can be changed in the Parameters Popup which can be opened from the Input Package.
See Also	Input Formats (Doc.0403)

iol_microcraft_clean_hole_size

Type	Floating Point (0.0...10.0)
Default	0.04 inches
Description	MicroCraft clean 'hole' maximal size (in inches). Defines maximum size of the 'holes' in the split plane area that should be ignored.
See Also	Output Formats (Doc. 0702)

iol_microcraft_output_sub_panel_profiles

Type	Boolean
Default	Yes
Description	Output profiles for empty sub panels as well as the main panel profile.
See Also	Electrical Testing Manager (Doc. 0708)

iol_microcraft_write_adjacency_distance

Type	Boolean
Default	No
Description	Write the adjacency distance for each adjacent net.
See Also	Electrical Testing Manager (Doc. 0708)

iol_min_f_comp

Type	Integer
Default	1000
Description	Minimal number of features to compress. This parameter defines how large a feature file should be in order to be compressed when stored in the ODB++. Small files are not worth the overhead of launching the compression program.
See Also	ODB++ (Doc.0202)

iol_modal_i_and_j

Type	Boolean
Default	Yes
Description	Applies to Sieb & Maier-format input data. **Yes** (default) - missing I or J is treated as modal. **No** - missing I or J accepts value of zero.
See Also	ODB++ (Doc.0202)

iol_nec_brk_diag_sqrs

Type	Boolean
Default	No
Description	Determines if diagonal square lines are broken during NEC input. Yes = diagonal lines with square apertures will be processed as 2 pads and a line during file input. No (default)= diagonal lines with square apertures will be processed as one diagonal line during file input.
See Also	Input Formats (Doc. 0403)

iol_nec_diag_sqr_type

Type	Integer
Default	2
Description	Determines the diagonal square type during NEC input. 1 = diagonal square type in NEC input is lines 2 = diagonal square type in NEC input is contours
See Also	Input Formats (Doc. 0403)

iol_no_alignment_points_is_valid

Type	Boolean
Default	No
Description	Allow output to have zero alignment points. As of version 9.6b, if **iol_no_alignment_points_is_valid = yes**, you can define zero alignment points on only one side of a board. **Note: This change is for Hioki output only!** Prior to version 9.6b, you could define zero alignment points only for both sides of a board when iol_no_alignment_points_is_valid = yes. In the past, only if the board being tested had no test points on a given side did the output procedure allow zero alignment points on the board side that had no test points. As of version 9.6b, even if there are test points on both board sides, if iol_no_alignment_points_is_valid = yes, then alignment points can be assigned to one board side only.
See Also	Output Formats (Doc. 0702)

iol_opfx_allow_out_limits

Type	Boolean
Default	No
Description	Enable output even if some features will not be plotted.
See Also	Output Formats (Doc. 0702)

iol_opfx_enlarge_standard

Type	Boolean
Default	No
Description	This configuration parameter affects the enlargement of some semi-standard symbols in OPFX output made through Image Manager, when **Enlarge Symbols = Yes** in the Image Production Parameters Popup. The semi-standard symbols affected include: Rectangle, Oval, Donut, Square-Donut, Ellipse. **Yes** = All symbols (including these semi-standard symbols) will be enlarged by the plotter's RIP. **No** = These semi-standard symbols will not be enlarged by the plotter's RIP.
See Also	Output Formats (Doc. 0702)

iol_opfx_use_profile_limits

Type	Boolean
Default	No
Description	Consider profile limits in GLOBAL_LIMITS calculations. Values: **No** - consider layer limits only **Yes** - consider layer + profile limits **Only** - consider only profile limits
See Also	Output Formats (Doc. 0702)

iol_out_allow_overlapping_profiles

Type	Boolean
Default	No
Description	In RS-274x S&R output, Genesis will flatten the panel if the PCB profiles are overlapping. In order to avoid this flattening, use this configuration parameter. **Yes** – the S&R will not be broken **No** - the S&R will be broken
See Also	Netlist Analyzer

iol_pg_nets_check_all

Type	Boolean
Default	No
Description	Affects the method Genesis uses to check for ground nets. **No** (default) = Genesis recognizes ground nets correctly only if they have a minimum number of test points. (See **Note** for an explanation of how this minimum number of test points is calculated.) **Yes** = Genesis recognizes ground nets correctly regardless of the number of test points in the net being tested. **Note** When checking which ground nets are ground nets in output formats, Genesis sorts nets by size, in descending order. (In this case, size is the total number of test points in each net). Genesis scans the nets by size order (large to small), checking if each net is a ground net. Genesis assumes that the largest nets are the ground nets. When Genesis recognizes its first non-ground net, it assumes that there are no more ground nets, and ceases checking for them.
See Also	Output Formats (Doc. 0702)

iol_pg_nets_nfps_remove

Type	String
Default	Regular
Description	Affects how Genesis recognizes non-functional pads, when looking for ground nets in netlist outputs. **Regular** (default)= Genesis will recognize non-functional pads only on positive P&G layers, when there is only one pad touching the drill. This may cause nets that have drills going through non-functional pads to be recognized as P&G nets. **Complex** = Genesis will activate a more accurate check to determine if the drill is inside a non-functional pad. Results will be more accurate, but Genesis will take more time to generate test results.
See Also	Output Formats (Doc. 0702)

iol_ps_no_margin

Type	Boolean
Default	
Description	If "yes" then there is no margin and border when outputting postscript files in the output module.
See Also	Output Formats (Doc.0702)

iol_read_rout_chain

Type	Boolean
Default	Yes
Description	Whether to preserve the chaining information contained in NC rout files when imported. This applies to Excellon, Sieb&Mayer (both SM1000 & SM3000), and Wessel rout files. The layer must be defined as a rout layer in order for the chaining information to be displayed. Yes - adds the chaining information during input (sets `.chain_num` attribute). No - ignores chaining information.
See Also	Input Process (Doc.0403)

iol_read_stp_origin

Type	Boolean
Default	No
Description	Controls restoration of step origins saved with a job. As of Genesis version 8.2, step origins are saved when a job is saved. Whenever a job is opened in the Graphic Editor, the saved step origins can be restored. **Yes =** Step origins are restored when the job is read. **No (default) =** Step origins are not restored when the job is read. When opening a job, step origins are set to (0,0) - the default behavior of Genesis v8.1 and before. **Note**: The default value is set to **No** to maintain backward compatibility.
See Also	Graphic Editor (Doc. 0601)

iol_reset_after_tool_change

Type	Boolean
Default	No

Description	Control the reset after changing tool.
	No (default) – Do not reset after tool change. (In case of modality, the last coordinate value will be taken.)
	Yes - reset (to zero) coordinates after changing tool.
	Example:
	`T05`
	`X00235Y00455`
	`X00145Y00595`
	`X02145`
	`T06`
	`X011 -> No = X011Y00595 Yes = X011Y0`

See Also	Input Process (Doc.0403)

iol_save_undo_reset

Type	Boolean
Default	No
Description	Reset the undo stack after save to database This parameter controls whether all operations before save are erased from the undo stack, making it impossible to undo past the last save.
See Also	ODB++ (Doc.0202)

iol_sm_g84_radius

Type	Boolean
Default	No
Description	Determine if the R parameter in the G84 command is the RADIUS or DIAMETER of the hole. **Yes** = the input refers to the R as the hole Radius. **No** = the R is the hole Diameter. This parameter only affects the 'regular' input/output.
See Also	Auto Drill Manager (Doc. 0703)

iol_sm_t0_after_full_circle

Type	Boolean
Default	Yes
Description	Enables adding a T0 command after the last G45/G46 command. Yes (default) - add T0 command after last G45/G46 command (routing full circle). No - does not add T0 command (maintain old behavior).
See Also	Output Formats (Doc. 0702)

iol_solio_diff_aper

Type	boolean
Default	no
Description	This parameter allows Solio output files to use a different aperture file for each layer in the PCB. No (default) - Use the same aperture file for all layers. Yes - Use different aperture file for every layer.
See Also	Output Formats (Doc. 0702)

iol_solio_negative_symbol_background

Type	Boolean
Default	Yes
Description	Controls placement of background contour in certain situations. Yes (default) = A background positive rectangular contour is added before a negative placement of a symbol. No = The positive contour is not added.
See Also	Output Formats (Doc. 0702)

iol_solio_text_as_text

Type	Boolean
Default	No
Description	Controls input of Solio text input. No (default) = Solio text is input as a symbol containing a graphic description of the text. Yes = Solio text is input as a symbol containing a text feature.
See Also	Output Formats (Doc. 0702)

iol_surface_check

Type	Boolean
Default	No
Description	**No** (default) - Only SIP (self-intersecting polygons) check made on surfaces during output (as in previous versions). **Yes** -Additional checks are made on surfaces, including wrong nesting checks. **Note:** Currently implemented on LP7008, LP9008, LP-9 and Either OPFX output formats.
See Also	Output Formats (Doc. 0702)

iol_tif_multiple_tools

Type	Boolean
Default	No
Description	TIF output for IPC-356 files has been improved to support more versions of [tooling holes descriptions] fixturing software. Possible values: Yes = O-type records will be produced. No = M-type records will be produced [for the tooling holes description]. **Note:** Only the two first tooling holes will be used.
See Also	Output Formats (Doc.0702)

lpd_default_resolution

Type	Text
Default	None
Description	The default resolution value for the production parameter. The value of an empty string means what is did in previous version = 1/4 mil. The value must be an existing resolution in the site. Examples: 1/8 mil, 2.5 micron, 10000 dpi.
See Also	Graphic Editor (Doc. 0601)

lpd_devices_types

Type	Text
Default	EITHER TYPE; LP7008; XPRESS; LP5008; DP100; LP9008

lpd_devices_types

Description	Lists the available devices on site.
See Also	Graphic Editor (Doc. 0601)

lpd_either_type_only

Type	Boolean
Default	No
Description	Controls use of multiple device types or the EITHER_TYPE device only. **No -** Use multiple device types. **Yes -** Use the EITHER_TYPE device only.

lpd_single_device

Type	Boolean
Default	No
Description	Defines whether to allow multiple output devices (default), or only a single output device. **Yes** = The list in "lpd_device_types" is ignored. The Image Production Parameter popup works with the EITHER TYPE device only. **No** = List of devices is defined according to the "lpd_device_types" parameter. The first name in the list is used as the default device when opening the Image Production Params through the Graphic Editor.
See Also	Graphic Editor (Doc. 0601)

mania_out_msdos

Type	Boolean
Default	No
Description	Output jbd file as MS-DOS text.
See Also	MANIA AOI Interface (Doc.0707)

mania_out_path

Type	Text
Default	**/mania/jobs**
Description	Mania default output directory.
See Also	MANIA AOI Interface (Doc.0707)

net_1_side_for_barrel

Type	Boolean
Default	No
Description	A Barrel Test can now be conducted from only one side of a drill, if both sides of a PTH are isolated. The side tested is determined by the value of the Default Access to PTH control. This configuration parameter controls this option. **No** = barrel test not conducted from one side of a drill **Yes** = barrel test is conducted from one side of a drill
See Also	The Netlist Optimizer (Doc. 0603)

net_add_inner_drill_net_points

Type	Boolean
Default	No
Description	Whether to add inner drill points to the netlist created.
See Also	The Netlist Optimizer (Doc. 0603)

net_add_layer_name_of_short_to_report

Type	Boolean
Default	No
Description	Yes - layer marked with the letter 'S' will be added to the report.
See Also	Netlist Analyzer (Doc. 0506)

net_add_net_point_to_NPTH_copper

Type	Boolean
Default	No
Description	To define whether or not to add a net point on a round or square copper pad if that copper pad is drilled around an HPTH hole. **Yes** = add a net point on copper pads if they are drilled around NPTH holes. **No** = Do not add a net point on copper pads. **Note:** If the board under examination is a single-layer board, the decision whether or not to relate to NPTHs is controlled by the configuration parameter **net_add_tools_on_one_sided_board**.
See Also	Output Formats (Doc. 0702)

net_add_tools_on_one_sided_board

Type	Boolean
Default	No
Description	Add tools (mark NPTHs) on single sided boards.
See Also	The Netlist Optimizer (Doc. 0603)

net_add_touched_smds

Type	Integer
Default	1
Description	Add smds to the netlist: 0-no 1-intersect with vias
See Also	The Netlist Optimizer (Doc. 0603)

net_assign_net_points_on_all_DFT_pads

Type	Boolean
Default	No
Description	Whether or not to assign net points on all DFT pads. **No** - Only split DFT generated pads. **Yes** - All DFT generated pads
See Also	The Netlist Optimizer (Doc. 0603)

net_calc_enable_memory_release

Type	Boolean
Default	Yes
Description	Used during netlist calculation to deal with problems of memory exhaustion due to storing too many shapelists. If enabled, will first releases shapelists for all internal layers already processed whose shapelists were created during the netlist creation process, then attempts to reallocate memory. If this action does not help, internal layers that were read as part of the netlist calculation are closed.
See Also	The Netlist Optimizer (Doc. 0610)

net_calc_with_sm_policy

Type	Integer
Default	0
Description	Enables detection of net points in solder mask openings or pad recognition **Values:** **0 (default)** = detect net points using pad recognition only (backwards compatible) **1** = search for net points under solder mask openings that do not have pads. In this mode there is a preference for pads, but this is not a requirement. **2** = In addition to searching under solder mask openings, we will also relate to the silkscreen layers as a possible additional obstruction to the solder mask opening. **Note:** If **net_calc_with_sm_policy = 1 or 2**, the actual net point will be the true gasket opening. This applies to net points based on pads as well for those based on openings in the solder mask.
See Also	Netlist Analyzer (Doc. 0503)

net_calculate_rotated_net_points

Type	Boolean
Default	No
Description	If set to **Yes**, you will be able to see rotated net points, and then use the configuration parameter **`iol_ipcd356a_output_net_pt_rotate`** to generated rotated net point output.
See Also	Netlist Optimizer (Doc. 0610)

net_create_neg_layer_netlist_quick_mode

Type	Boolean
Default	No
Description	Allow the creation of the netlist for negative layers by the raster/fast method.
See Also	Netlist Optimizer (Doc. 0610)

net_dont_test_inside_slot

Type	Boolean
Default	No
Description	Controls placement of net points **Yes =** the Netlist Analyzer will place a net point *not* on a slot, but on the slot's annular ring. **No =** the Netlist Analyzer will place a net point on a slot.
See Also	The Netlist Optimizer (Doc. 0603)

net_filter_report_options

Type	Integer
Default	0
Description	Used to configure Netlist analyzer Compare Report. Integer values define masking values that decide which items are filtered from the Compare Report. **Values:** +1 = Names +2 = Cad Problems +4 = NFP +8 = Attributes +16 = Extra on copper +32 = Backdrill **Examples:** 33 = the Names filter (1) and the Backdrill (32) will be filtered out 10 = the CAD Problems filter (2) and the Attributes (8) will be filtered out 63 = that all filters are to be applied (1+2+4+8+16+32 = 63) 0 (default) = no filters are to be applied
See Also	Netlist Analyzer (Doc. 0503)

net_filter_short_broken_options

Type	Boolean
Default	No
Description	Controls how to use the netlist filter for shorts/brokens when using Netlist Compare. **Options**: 0 - Previous behavior (default)- i.e. no filters for shorts and brokens 1-Use name filter only for shorts and brokens 2-Use only the CAD problem filter for shorts and brokens 3-use both the name and CAD problem filters for shorts and brokens
See Also	Netlist Analyzer (Doc.0506)

net_first_name_is_1

Type	Boolean
Default	No
Description	Controls netlist numbering **yes =** net names numbering starts from NET00001. **no** = net names numbering starts from NET00000. **Note:** This configuration parameter has no effect if the netlist is a saved reference netlist. In this case, net names are read from the saved file.
See Also	The Netlist Optimizer (Doc. 0603)

net_full_report_data_on_read

Type	Boolean
Default	No
Description	Calculate all relevant netlist data for the report when reading in a netlist.
See Also	The Netlist Optimizer (Doc. 0603)

net_min_ar_dist

Type	Integer (0 - 20)
Default	
Description	Minimum annular ring width
See Also	The Netlist Optimizer (Doc. 0603)

net_minimum_net_point_size

Type	Float
Default	0.5 ml
Description	Used to prevent the automatic creation of net points that are very thin by checking the width and height of the limits of the net point. The default is 0.5 mil
See Also	The Netlist Optimizer (Doc. 0610)

net_names_to_ignore_for_compare

Type	Text
Default	$NONE$;spnet
Description	Defines the default list of net name prefixes to be ignored in the netlist compare action. The default list is $NONE$;spnet. Users can add other names to this list by editing the parameter in the Configuration window in the Engineering Toolkit, or adding net names in the Ignore Names field in the Netlist Compare Popup.
See Also	Netlist Analyzer (Doc. 0506)

net_opt_analyze_surface

Type	Boolean
Default	Yes
Description	Analyze surfaces for test point detection.
See Also	The Netlist Optimizer (Doc. 0603)

net_opt_cover_margin

Type	Integer
Default	
Description	Used to select completely covered net points as test points. If the distance from a point completely covered with copper (by a terminal shape) to the edge of the covering copper is less than the value of net_opt_cover_margin it will still be tested.
See Also	The Netlist Optimizer (Doc. 0603)

net_opt_extended_interface

Type	Boolean
Default	No
Description	Controls the appearance of End Point Optimization Popup [EPOP] in the Netlist Optimizer. **Yes** = EPOP appears when the user clicks on one of the `Optimize Nets` options in the Netlist Optimizer main window [or the Running Man icon?]. The netlist test configuration as defined in 'Setup' is ignored. **No** = The End Point Optimization Popup does not appear. The netlist test configuration as defined in 'Setup' is followed when the user clicks the Running Man icon [or one of the `Optimize Nets` options in the Netlist Optimizer main window?].
See Also	The Netlist Optimizer (Doc. 0603)

net_opt_loop

Type	Boolean
Default	No
Description	No = Points on a loop are not marked as end points. Yes = Mark All Points On Loop as End Points
See Also	The Netlist Optimizer (Doc. 0603)

net_opt_max_num_elements

Type	Integer
Default	
Description	Defines minimum size for a surface to be defined as a large contour.
See Also	The Netlist Optimizer (Doc. 0603)

net_opt_restrictions

Type	Integer
Default	0
Description	Test isolated pads: 0 - treats all rectangular pads as SMDs, even if the pad is not marked with an `.smd` attribute. 1 - only pads marked with a `.smd` attribute are treated as SMDs. 2-no vias 3-only smd and no vias
See Also	The Netlist Optimizer (Doc. 0603)

net_opt_stub_mode

Type	Boolean
Default	
Description	Controls use of improved end point detection algorithm. **Yes** = Activates the improved algorithm. **No** = Uses the old algorithm.
See Also	The Netlist Optimizer (Doc. 0603)

net_opt_surface_cover_margin

Type	Boolean
Default	
Description	Controls which pads on a copper surface will become test points. If set to 0 (recommended) then only pads that are touching the surface edge will be tested. If the value > 0 then pads which are closer then this margin to the edge will also be tested.
See Also	The Netlist Optimizer (Doc. 0603)

net_opt_test_all_points_on_surface

Type	Boolean
Default	
Description	**Yes** - all points on surfaces will be tested. **No** - only external points will be tested.
See Also	The Netlist Optimizer (Doc. 0603)

net_opt_test_isolated_drilled_smds

Type	Boolean
Default	Yes
Description	To always test any drilled pad that is isolated in an outer layer, even if we do not require barrel testing. New optimizer only.
See Also	The Netlist Optimizer (Doc. 0603)

net_opt_thermal_hole_margin

Type	Integer (0...200)
Default	
Description	Maximal search distance between hole and spokes (in Mils). Only thermals with an internal radius less than `<value>` will be detected.
See Also	The Netlist Optimizer (Doc. 0603)

net_opt_via_if_touch_2

Type	Boolean
Default	
Description	To relate to connecting drills as vias, for old optimizer only .
See Also	The Netlist Optimizer (Doc. 0603)

net_point_radius_after_reduce_to_center

Type	Double
Default	2.0
Range	0.01 to10.0
Description	The radius of the net points when reduced to center.
See Also	The Netlist Optimizer (Doc. 0603)

net_pointer_size

Type	Float
Default	0.07
Description	Controls the size of the symbol used to mark the test points in the Fault Viewer.
See Also	The Netlist Optimizer (Doc. 0603)

net_raster_resolution

Type	Double
Default	0.5
Range	0.01 to 100.0
Description	Elements separated by more than this value belong to different nets.
See Also	The Netlist Optimizer (Doc. 0603)

net_ref_start_extended

Type	Boolean
Default	
Description	Defines the default value that appears in the Reduce parameter in the Update Reference Netlist popup. Possible values: **No** = the default value of the Reduce parameter is set to Yes. This produces results acceptable for netlist compare. **Yes** = the default value of Reduce is set to No. This provides more complete results suitable for netlist optimization.
See Also	The Netlist Optimizer (Doc. 0603)

net_report_cad_net_point_with_no_copper

Type	Boolean
Default	No
Description	Reports CAD net points that have are not located over copper or drill as missing/extra. **No** (default) = a net point defined in the CAD netlist that does not reside over copper or drill will not be reported as a missing or extra (current Genesis behavior) **Yes** = Reports CAD net points that are not located over copper/drill as missing/extra. When performing CAD to CBC netlist compare, a CAD net point that is not located over copper, nor over a drill, will be removed from the CBC netlist. As such, these points will be reported as missing or extras. **Note:** This configuration parameter also solves the problem where the CAD netlist has reference points for certain nets which overlap, but the reference points are not located over copper. When **net_report_cad_net_point_with_no_copper= Yes**, these reference points (i.e. not located over copper) will no longer be wrongly reported as shorts/brokens.
See Also	Netlist Analyzer (Doc. 0506)

net_report_missing_extra

Type	Boolean
Default	No
Description	If **net_report_missing_extra = yes,** the Netlist Analyzer will report 1 broken, 1 missing, and 2 extra for a missing drill. If **net_report_missing_extra = no (default),** the Netlist Analyzer will report only 1 broken for a missing drill. Why this configuration parameter is necessary If you delete a drill from the drill layer and then compare the reference netlist to the current netlist, the Netlist Analyzer reports 1 broken. Earlier versions of Genesis used to report 1 Broken, 1 Missing and 2 Extra for the missing drill: 1 broken for the connectivity from layer 1 to layer 2 that no longer exists, 1 missing for the thru hole net point that is no longer there, and 2 extras, one for the (new) top side accessible net point and one for the (new) bottom side accessible net point. (The extra points are not really "extra" since they already existed in the original netlist, and now belong to different nets.) net_report_missing_extra gives you the option to generate the report with whatever information you desire. **Note:** Netlist Analyzer does zoom & pan to the correct location when closing the broken.
See Also	Netlist Optimizer (Doc. 0610)

net_sel_side_by_dist2inner

Type	Boolean
Default	No
Description	Side select by distance from inner layer.
See Also	The Netlist Optimizer (Doc. 0603)

net_side_select_ctrl

Type	Boolean
Default	
Description	Enables automatic specification of the board side (where the fault being examined is located) by inserting a special, pre-defined control character in the X-coordinate field. Possible values: **Test Point Side Character (**This character does not appear onscreen.) T = the Component/Upper side is selected B = the Solder/Lower side is selected This character does not appear onscreen. **Control Character** - Should not be a digit, '+', '-' or '.'. (This character is entered onscreen.)
See Also	The Netlist Optimizer (Doc. 0603)

net_test_angle

Type	Integer
Default	1
Description	Test Angle
See Also	The Netlist Optimizer (Doc. 0603)

net_test_unbalanced_smd

Type	Boolean
Default	No
Description	Controls testing of unbalanced SMD pads. Some SMD pads have more then one connection (trace or drill) but still need to be tested, as all connections are located on only a small part of the pad (either along one side or close to one corner). This configuration parameter controls this option. If **net_test_unbalanced_smd = Yes**, additional SMDs will be tested, SMDs which otherwise might have been considered to be midpoints. The unbalanced SMDs will be also tested. An additional selection of net points located on the plane will also be assigned as test points. Note that all true endpoints will be assigned as test points regardless of these settings.
See Also	The Netlist Optimizer (Doc. 0603)

net_to_layer_by_side

Type	Boolean
Default	
Description	Two functions are affected by this variable: Netlist to Layer and ETM. **Yes** - compatibility mode will be applied. The side to be tested will be the side from which the test point(s) can be accessed. All through points will be bound to the component side. **No** - the algorithm described in the **Test Side** parameter will be used. **Notes:** Points marked as testable from any side will be bound to the TOP layer for Netlist to Layers, and to the bottom fixture in ETM. Points marked as **Both** will be represented in top and bottom layers (Netlist to Layers) and in upper and lower fixtures in ETM.
See Also	The Netlist Optimizer (Doc. 0603)

orbotech_barcode_str_def

Type	Integer
Default	0
Description	Determines the default value of the .orbotech_barcode_string system attribute when adding an Orbotech barcode plot stamp feature. If the attribute is set in the Add Feature Popup it takes precedence over the default. If the attribute is not set the additional string is sets according to the configuration parameter. **0 (default)** = No text will be added to the bars. **1** = The text will be added above the bars. **2** = The text will be added bellow the bars.
See Also	Graphic Editor (Doc. 0601)

orbotech_plot_spooler

Type	Integer
Default	2
Description	Determines how plot data files are translated, directly to the Orbotech Plotter/DI via the Image Manager, or via Xpert. **1**= translated via Image Manager (directly to Orbotech plotters/DI). **2** (default) = translated via Xpert. 3 = translated via Image Manger for DP100; translated via Xpert for photoplotters
See Also	Output Formats (Doc. 0702)

out_274_apr_max_size

Type	Integer
Default	High (never intended to be reached)
Description	Sets maximum aperture size for output toRS274x format. **Note:** If this limit is exceeded, the polygon or symbol is broken into simple elements (i.e. filled).
See Also	Output Formats (Doc.0702)

out_274_poly_max_edges

Type	Integer
Default	High (never intended to be reached)
Description	Sets maximum number of elements in a special symbol for output toRS274x format. **Note:** If this limit is exceeded, the polygon or symbol is broken into simple elements (i.e. filled).
See Also	Output Formats (Doc.0702)

out_274x_rotate_octagon

Type	Boolean
Default	
Description	The Rs274x format is ambiguous. From its description, it is unclear whether an octagon's base with 0 degree rotation should be flat or sitting on a corner. This configuration parameter was added to Genesis to determine the angle of the octagon. **Yes** – the octagon will be rotated by 22.5 degrees. **No** – the octagon will not be rotated. .
See Also	Output Formats

out_274_special_max_elements

Type	Integer
Default	High (never intended to be reached)
Description	Sets maximum number of edges in a polygon for output toRS274x format. **Note:** If this limit is exceeded, the polygon or symbol is broken into simple elements (i.e. filled).
See Also	Output Formats (Doc.0702)

out_356_tooling_mode

Type	Integer
Default	1
Description	Hole attribute for output to IPC356 format. Set the tooling holes npth (default) or to assign **.tooling_hole** attribute. 1 = npth 2 = **.tooling_hole** attribute
See Also	Output Formats (Doc.0702)

out_atp_apr_max_size

Type	Integer
Default	400
Description	Autoplot aperture maximum size (in mils). Min. = 200 Max.= 2000 The aperture definition resolution in Autoplot output. The resolution will be 1/value of an inch (e.g. 8000 for a resolution of 1/8 of a mil).
See Also	Output Formats (Doc.0702)

out_atp_apr_res

Type	Integer
Default	8000
Description	Autoplot aperture resolution The aperture definition resolution in Autoplot output. The resolution will be 1/value of an inch (e.g. 8000 for a resolution of 1/8 of a mil).
See Also	Output Formats (Doc.0702)

out_atp_compensate_offset

Type	Boolean
Default	
Description	Yes - add compensation offset to put whole image at first quarter
See Also	Output Formats (Doc.0702)

out_atp_d02_after_poly

Type	Boolean
Default	No
Description	Controls insertion of a D02 line after a polygon. Used only for autoplot. No (default) = Does not insert D02 line after a polygon. Yes = D02 line inserted after a polygon.
See Also	Output Formats (Doc.0702)

out_atp_full_path

Type	Boolean
Default	No
Description	Affects the way **NEXT** and **SUBF** commands are written. Outputs either a file name or a full pathname. **No** (default): Don't write the full path, only the file name: NEXT=="file name" SUBF=="file name" (T*wo* equal signs when writing file name only) **Yes**: Write the full path: NEXT="pathname" SUBF="pathname" (*One* equal sign when writing full path)
See Also	Output Formats (Doc.0702)

out_atp_max_fold_length

Type	Float
Default	1mil
Description	AutoPlot output will stop and display an error message if it encounters a fold length less than the value set in this configuration parameter. Available range: 0 - 20 mils.
See Also	Graphic Editor (Doc. 0601)

out_break_arc_k

Type	Integer
Default	200
Description	Arcs break constant (num chords = out_break_arc_k*sqrt (radius)) This parameter defines the way an arc is broken into segments in all output operations which do not implement arcs.
See Also	Output Formats (Doc.0702)

out_bsl_mid

Type	Boolean
Default	Yes
Description	Output mid points to BSL
See Also	

out_ds_drawarea_x

Type	Integer
Default	710000
Range	10, 710000
Description	Output Dai-Nippon Screen draw area x size in microns.
See Also	Output Formats (Doc.0702)

out_ds_drawarea_y

Type	Integer
Default	812000
Range	10, 812000
Description	Output Dai-Nippon Screen draw area y size in microns.
See Also	Output Formats (Doc.0702)

out_ds_neg_margin

Type	Integer
Default	50000
Range	10, 999999
Description	Output Dai-Nippon Screen negative margin
See Also	Output Formats (Doc.0702)

out_ds_use_recf

Type	Boolean
Default	No
Description	Output Dai-Nippon RECF aperture.
See Also	Output Formats (Doc.0702)

out_dxf_decompose

Type	Boolean
Default	No
Description	Determines whether the output layer will be decomposed for DXF format output. **Yes** - the output layer will be decomposed , **No** (default value) - Output layer is not decomposed.
See Also	Output Formats (Doc. 0702)

out_dxf_min_symbol

Type	Float
Default	0
Description	All features with a symbol size smaller then the value in the configuration parameter will be output with the symbol size defined here. Default value is 0.
See Also	Output Formats (Doc. 0702)

out_dxf_polyline_pads

Type	Boolean
Default	Yes
Description	Add round pads at end of polyline.
See Also	Output Formats (Doc.0702)

out_exc_old_sr_syntax

Type	Boolean
Default	No
Description	Output Excellon Step & Repeat without R commands.
See Also	Output Formats (Doc.0702)

out_fill_min_brush

Type	Float
Default	1.0
Description	Output minimal brush default Defines the brush size used when filling a contour during an output operation of a format which does not support polygons.
See Also	Output Formats (Doc.0702)

out_gbr_break_r_m_special

Type	Boolean
Default	Yes
Description	Break rotated or mirrored special symbols.
See Also	

out_gbr_empty_macro_stop

Type	Boolean
Default	No
Description	Controls the output of formats Gerber274x, Autoplot, LP7008, LP9008,DP100, and OPFX. **Yes -** If the output layer contains a special aperture (symbol) that is empty, output stops and the following message appears: "Empty macro was found - sym name: xxx". **No -** Output continues as normal.
See Also	

out_gbr_modal

Type	Boolean
Default	Yes
Description	Output gerber file coordinates in modal mode.
See Also	

out_gbr_override_standard_precision

Type	Boolean
Default	No
Description	Allows the user to override Genesis standard precision when outputting surfaces using surface mode=contour in Gerber 274x format. If **out_gbr_override_standard_precision=no**, a message popup will appear warning that Genesis is enforcing its standard precision. If the user refuses to accept Genesis standard precision, outputting will not be done. If **out_gbr_override_standard_precision=yes**, the customer's level of precision will be used. No warning message will appear.
See Also	Output Formats (Doc.0702)

out_gbr_wheel_parameters

Type	Boolean
Default	No
Description	**No (default)** - do not write translation parameters to the wheel file (as done in previous versions). **Yes** - write the parameters to the wheel file.
See Also	Output Formats (Doc. 0702)

out_high_res_val

Type	Boolean
Default	No
Description	Is high resolution needed for PROBOT For resolution of PROBOT output. If yes the res is 0.01 mil. Otherwise, res is 1 mil
See Also	Output Formats (Doc.0702)

out_hpgl_eof

Type	Boolean
Default	No
Description	Output special end-of-file in hpgl.
See Also	Output Formats (Doc.0702)

out_img_text_control

Type	Boolean
Default	No
Description	Convert text features to Image texts
	With this parameter, the customer can control whether the text will be translated as text features or not. Since Genesis texts are different from Image texts, this applies only to text features with parameters (width, height, etc.) that exactly match an Image text. The option was specially developed for one single customer, and we do not advise using it.
	When using Orbotech Plot Stamps in Image output, set `out_img_text_control = yes` before inserting the Plot Stamp to the layer. Otherwise, if set to no (default), the Plot Stamps will be broken.
See Also	Output Formats (Doc.0702)

out_neg_background_limits

Type	Boolean
Default	No
Description	Controls the background limits in case of negative output and features outside the profile (Currently only in DPF output).
	No (default) - the background is the bounding box of the layer limits and the profile.
	Yes - the background is according to the profile.
See Also	Graphic Editor (Doc. 0601)

out_new_drill_process

Type	Boolean
Default	No
Description	No = Do not use new drill output process.
	Yes = Use new drill output process (see KIT 6942 for details).
See Also	Output Process (Doc. 0701)

out_prb_nopt_via

Type	Boolean
Default	No
Description	Yes - vias will not be tested in a non-optimized netlist
See Also	Output Formats (Doc.0702)

out_rpd_break_surface_arcs

Type	Boolean
Default	Yes
Description	Break surface arcs when scale_x is different than scale_y.
See Also	Output Formats (Doc.0702)

out_sqr_diag_line

Type	Integer
Default	1
Description	Controls how Genesis diagonal lines with square symbol will be outputted. 1 (default) - Breaks the square diagonal lines. 2 - Output the square diagonal lines as polygons. 3 - Stop the output with an error message.
See Also	Output Formats (Doc.0702)

out_zero_line_to_pad

Type	Boolean
Default	Yes
Description	Convert zero length lines to pads This parameter is used by the output translator of the following formats: Gerber274d, Gebrer274x, Autoplot. Some of the systems that accept these formats do not support zero length lines. With this parameter, the customer can control whether zero length lines will be converted into pads or not.
See Also	Output Formats (Doc.0702)

out_zero_size_feature

Type	Integer
Default	1
Description	Controls the output of zero size features in particular output formats. Possible values: 1. Default - maintains behavior of version 9.7, and adds warning when a zero size feature is skipped. 2. Output of zero size features is prevented, and an error message is issued. 3. Output of zero size features is permitted. The zero size features are written to the output file. **out_zero_size_feature** has been implemented in the following output formats:

Gerber	DPF	Either OPFX	AutoPlot
Pentax	OPFX	DP100	LP9008
RS-274X	LP7008	Dai-Nippon	LP-9

When **out_zero_size_feature = 2**, in addition to the formats described above, zero size feature output is prevented in the following formats:

Image	Excellon.img	Solio	NEC
HPGL	DXF	RPD	PostScript

See Also	Output Process (Doc. 0701)

rout_arc_as_ij

Type	Boolean
Default	No
Description	The configuration parameter **`rout_arc_as_ij`** controls how arcs are converted in Posalux output. **Yes** = arcs will be converted with I&J commands. **No** = arcs will be converted with A commands.
See Also	Output Formats (Doc.0702)

rout_chain_reverse_by_tool

Type	Boolean
Default	No
Description	Reverse mirrored chain order for each tool.
See Also	Output Formats (Doc.0702)

rout_hit_add_g92_g00

Type	Boolean
Default	No
Description	Controls whether to add or remove the G00 and G92 commands. **Note:** Affects only Hitachi rout output. If **Yes**, the G00 and G92 commands are added to the output file. If **No**, the G00 and G92 commands are [not added to] [removed from] the output file.
See Also	Output Formats (Doc. 0702)

rout_min_move

Type	Float (0 - 50)
Default	
Description	Minimal rout move or cut distance (in mils)
See Also	

rout_mirror_reverse_compensation

Type	Boolean
Default	No
Description	**No** (default) - Chain compensation remains as defined in the Rout Editor GUI (current GenFlex behavior). **Yes** -Chain compensation is reversed. This compensates layer creation and rout output.
See Also	Rout Editor (Doc. 0606)

rout_skip_tool_dup_check

Type	Boolean
Default	Yes
Description	Enable merging all chains that use the same tool & compensation so it will be outputted once for each. **Yes** = Skip check **No** = Perform check.
See Also	

rout_use_table_feed_rate

Type	Boolean
Default	No
Description	If Yes, ignores feed rate definition algorithm and uses feed rate from NC Table.
See Also	Auto Rout Manager (Doc. 0704)

scr_history

Type	Boolean
Default	No
Description	History Logging of commands Controls whether all line mode commands are recorded to a history file. Since this file can become quite large, and currently no real benefits exist, it is recommended to leave this parameter as 'no'.
See Also	Scripts (Doc.0204)

simple_copper_calculation

Type	Boolean
Default	No
Description	Forces use of a more limited, but faster, copper calculation algorithm. The limited algorithm considers only holes (single pads) and slots (single lines).
See Also	Graphic Editor (Doc. 0601)

sm_g84_radius

Type	Boolean
Default	No
Description	Added to the **format** section of a machine file, and to the **format** section of a NCD header file.

```
format {
        format       = sm3000
                . . . .
        sm_g84_radius = yes
}
```

See Also	Auto Drill Manager (Doc. 0704)

statistics_enable

Type	Boolean
Default	
Description	Enable statistics collection
See Also	

stk_tol_calc_method

Type	Text
Default	Naive
Description	Calculates stackup thickness tolerance using the square roots of the sum of squares of sheet tolerances. Naive = combines all tolerances Squares = combines squares of tolerances and takes square root
See Also	The Stackup Editor (Doc.0604)

stk_units

Type	Text
Default	Inch
Description	Stackup units (Inch, mm) This parameter defines the default units for the Stackup Editor upon system startup.
See Also	The Stackup Editor (Doc.0604)

symbol_name_mm_accuracy

Type	Integer
Default	2
Description	Defines standard symbol name accuracy when the name is in microns (1 - 0.1micron; 2 - 0.01micron)
See Also	Graphic Editor (Doc. 0601)

use_group_units

Type	Boolean
Default	No
Description	Controls in which units line mode commands are interpreted in. The default value is **No**. When set to **Yes**, the line mode commands are interpreted in the current units of the line mode command's module. If set to **No**, the line mode commands are interpreted in inch units. **Note:** This parameter does not affect the line mode commands belonging to the Graphic Editor, the Stackup Editor, or the Orbotech PC/I AOI interface. Those line mode commands are always interpreted in the current units of their corresponding module/window.
See Also	Checklist Operations (Doc. 0501)

vshare_inform

Type	Boolean
Default	Yes
Description	Inform vShare when data processing is finished.
See Also	Graphic Editor (Doc. 0601)

vshare_num_issues

Type	Integer
Default	300
Description	Maximum number of issues for vShare export per category (-1 for export all issues).
See Also	Graphic Editor (Doc. 0601)

vshare_pixels_image

Type	Integer
Default	600
Range	500 to 1000
Description	Image size in pixels for vShare export.
See Also	Graphic Editor (Doc. 0601)

vshare_save_in

Type	Text
Default	job
Description	Library path for save vShare data export. (\"job\" If you wish to save under your job_path/misc library).
See Also	Graphic Editor (Doc. 0601)

vshare_severity

Type	Text
Default	red
Description	Severity level used for vShare export (red, yellow, green).
See Also	Graphic Editor (Doc. 0601)

vshare_units

Type	Text
Default	inch
Description	Units used for vShare export (inch, mm).
See Also	Graphic Editor (Doc. 0601)

whole_number_micron_rounding

Type	Boolean
Default	No
Description	Performs rounding to micron when a value is close to whole number (replaces environment variable V93_MM_ROUNDING).
See Also	

wtp_editor

Type	integer
Defaul	2
Description	Wheel template editor1-Old 2-New This parameter defines which wheel template is used. The new wheel template which was introduced in 1996 is a much better tool and should be preferred.
See Also	The Wheel Template Editor (Doc.0402)

y2k_forms

Type	Boolean
Default	Yes
Description	Yes - displays dates in Forms text fields in 4-digit year formats.
See Also	

y2k_info_4

Type	Boolean
Default	Yes
Description	Yes - uses 4-digit year format in the **info** line mode command. For options **-t notes** and **-t check.**
See Also	

y2k_last_saved

Type	Boolean
Default	Yes
Description	Yes - adjusts the **last_saved** stamp in the **save_job** line mode command to use 4-digit year format.
See Also	

Environment Variables

Alphabetically ordered list of environment variables used by the system.

CNS_USERS_PATH

Default	**$GENESIS_DIR/sys/cns_users**
Mandatory	No
Description	Can be used to define the path to the users file used by the CNS process in the Cyberlink environment.
See Also	The Cyberlink Environment (Doc.0804)

DISPLAY

Default	None
Mandatory	Yes
Description	Must exist for the X Windows system to work properly. It has the format <host>:<number>
See Also	X Windows Manuals

GENESIS_DIR

Default	**/genesis**
Mandatory	No
Description	This variable defines the home directory of the Genesis tree. It can be defined to override the default path.
See Also	Software Installation (Doc.0201)

GENESIS_EDIR

Default	**e<version>**
Mandatory	No
Description	This variable defines the path of the executables of the application. If defined without a leading '/', the path is relative to the path defined by **$GENESIS_DIR**. Otherwise, with a leading '/' the path is absolute. On Windows NT, a path defined as x:/ (where x is any letter) also indicates that the path is absolute.
See Also	Software Installation (Doc.0201)

GENESIS_EXPOSE_MODE

Default	None
Mandatory	No
Description	This variable should be set to 1 when running on a system without the 'backing store' option. Most workstations have this option, so the variable is not required. Some X Terminals will require it to be set to 1, forcing an expose event.
See Also	Software Installation (Doc.0201)

GENESIS_FIXED_PIXSIZE

Default	None
Mandatory	No
Description	When the system tries to determine the actual size of the screen (in mm), this results in different values for different screens. If you need to have a fixed value for the screen size (used when displaying Work Forms) so that it is the same for all screens, this variable needs to be set and it will choose the values: width = 300 mm; height = 240 mm.
See Also	Work Forms (Doc.0801)

GENESIS_FONTSIZE

Default	None
Mandatory	No
Description	When set to 1, this variable will cause some fonts on the system's screens to be displayed in a size of 12 points. Otherwise, all small fonts will be raised to 14 points. Fonts smaller than 14 points are not legible in Asian languages (Japanese, Chinese, etc.).
See Also	None

GENESIS_HELP_DIRS

Default	`$GENESIS_DIR/e$GENESIS_VER/all/helps`
Mandatory	No
Description	Defines the location of the online help documents. The variable may contain a list of directories, separated by the semi colon character (;). Each directory should contain a file called 'index' which contains the names and references of the book sets and books.
See Also	Documentation Basics (Doc.0103)

GENESIS_LANG

Default	None
Mandatory	No
Description	This is actually the name of the language directory under **$GENESIS_DIR/all/lang**. If undefined, the system language will be English.
See Also	None

GENESIS_LANG_ENCODING

Default	None
Mandatory	No
Description	Name of the encoding scheme used for foreign language translations.
See Also	

GENESIS_LANG_MSG

Default	None
Mandatory	No
Description	Enables extended diagnostic messages about NLS translation files.
See Also	

GENESIS_LANG_SUPPORT

Default	None
Mandatory	No
Description	If set to 1, the labels and error messages will be in English, but the system will use the internal mechanism of language support (e.g. for string handling). This mode is used for debugging.
See Also	None

GENESIS_MEASURE_CURSOR_TYPE

Default	None
Mandatory	No
Description	To avoid using a corrupted cursor for measurement operations in Suse 9.3, use a new environment variable to define any cursor. We recommend 110 - sb_left_arrow.
See Also	None

GENESIS_MIX_KEEP_SPARE

Default	None
Mandatory	No
Description	To inform the application to keep a number of colormap entries free at the end of the colormap. This variable can be set to the number of entries you wish to be kept free. This should be used on DISPLAYS that are running Window systems that take up entries from the end of the colormap, seen on X-emulation PC software. The value can be between 0-64.
See Also	The Graphic Editor (Doc.0601)

GENESIS_PREFER_SYSTEM_ACTIONS

Type	Boolean
Default	None
Description	When this variable is activated, system libraries are given search preference. GENESIS_PREFER_SYSTEM_ACTIONS reverses the default search order, which prefers searching for shared libraries in the user's home directory.
See Also	System Management (Doc.0203)

GENESIS_QUICK_DBUTIL

Default	None
Mandatory	No
Description	When set to 1, the `dbutil` program will not read the error message file when a problem occurs and will print the numeric status (this was the default mode).
See Also	System Management (Doc.0203)

GENESIS_SHAREDIR

Default	None
Mandatory	No
Description	This can be used to define a different share directory other than the default one where all hosts on the net.
See Also	Software Installation (Doc.0201)

GENESIS_STK_LIB

Default	None
Mandatory	No
Description	Path of stackup library. When not set the default is **misc/stk** inside **genesislib**. This environment variable may be useful during stackup library development.
See Also	The Stackup Editor (Doc.0604)

GENESIS_TMP

Default	**$GENESIS_DIR/tmp**
Mandatory	No
Description	Defines the location of the directory where the system creates volatile, temporary files. By changing the default to a local directory, performance may be improved, especially on busy networks.
See Also	Software Installation (Doc.0201)

GENESIS_VER

Default	None
Mandatory	Yes
Description	This variable should be set to the version number of the application (e.g. 31 for version 3.1). It should be set in the **.cshrc** file of each user running the system.
See Also	Software Installation (Doc.0201)

GENESIS_XSERVER

Default	XVision
Mandatory	No
Description	This environment variable is active on Windows systems only. It defines an X-server to run at Genesis start if no X-server is running. This is useful for customers who use an X-Server other than SCO X-Vision. This variable allows the system manager to define the path of the executable of the desired X-Server.
See Also	

GERBER_PLOT_SERVER

Default	None
Mandatory	No
Description	The Gerber plotter software looks for data in a special directory. The name of this directory should be mentioned in the plotq file (plotter queue description file)
See Also	Output Formats (Doc.0702)

HOME

Default	None
Mandatory	Yes
Description	This variable should be set in order for the application to locate the correct genesis directory for the user. Normally it is set to the user's home directory by the operating system.
See Also	System Management (Doc.0203)

KIT_DIR

Default	None
Mandatory	Yes
Description	This variable defines which directory contains the various files required by the KIT (Keep In Touch) program. By changing this variable prior to running KIT, the program can be operated on a totally different database.
See Also	System Management (Doc.0203)

KIT_EDITOR

Default	HP / AIX:
	`/usr/bin/X11/xterm -bg aquamarine -bd red -bw 2 \`
	`-e /bin/csh -c /usr/bin/vi`
	SUNOS / SOLARIS:
	`/usr/openwin/bin/xterm -bg aquamarine -bd red -bw 2 \`
	` -e /bin/csh -c /usr/bin/vi`

Mandatory	No
Description	This variable defines the editor which is invoked by the KIT program when the Editor... button is pressed on the New Item screen.
See Also	System Management (Doc.0203)

LANG

Default	C
Mandatory	No
Description	This variable is usually set by the overlying UNIX system to define the current language set. The application uses this variable to find which language encoding mechanism to use.
See Also	None

ODB_PRINT_ADDR

Default	None
Mandatory	No
Description	When the system loads the DFM shared programs and this variable is set, the addresses of the loaded modules are printed to **stdout**. This can help when working in the DFM Environment and debugging your programs when your debugger needs specific addresses and cannot relate to the function names in the module.
See Also	The DFM Programming Environment (Doc.0205)

PCMAP

Default	None
Mandatory	No
Description	When you have many graphic applications running on the same display, the colormap table of the display gets used up quickly. Setting this variable will run Genesis with its own private colormap.
See Also	The Graphic Editor (Doc.0601)

FRONTLINE_NO_LOGIN_SCREEN

Default	None
Mandatory	No
Description	Set to 1 in order for the system to bypass the login screen and take the login and password from **$HOME/.genesis/login**
See Also	

Memory Usage

The basic memory usage of each entity is as follows:

Entity	Memory Used
Feature in a memory layer	40 bytes
Measurement in a memory checklist	60 bytes
Shape in a shapelist *	110 bytes

*   Number of shapes in a layer shape list = number of features in layer + number of drills
thru this layer (not for masks).

Negative Power & Ground

If the Drill Summary action is run, an inverted layer is created. The memory required, as a rough estimate, to be in use until the job is closed:

`(memory consumed by layer features) + (shape list x 2.2)`

If the Power & Ground drill check sub-test is run, the memory in use for the duration of the check will be:

`(# of features x 40) + (1.2 x  memory consumed by layer features)`

Negative Signal Mixed

When signal layer checks or any other check that references the layer is run, an inverted layer is created. Calculate memory, as a rough estimate, until the job is closed:

`(memory consumed by layer features + shape list) x 2.2`

Allocation Overheads

For instance, if there are 72,000 features in a layer the system allocates space for 80,000 shapes accumulated over 30+ layers which accumulates to a significant amount of memory.

Calculating Memory Usage - Example

A seemingly simple multi-layer memory board that has, for example:

- 11 power & ground layers (~40K features each) - all negative
- 13 inner signals (~40K features each)
- 2 outer layers (~100K features each)
- Usual assortment of solder mask, silk screen.
- 1 thru drill layer - 30K drills
- 6 buried via layers for each pair of inners (about 3k drills in each)

The memory that accumulates for these, can be calculated as follows:

Note   In the formulas below: **x** = multiplication, **+** = addition, **K** = thousands.

Feature Memory

```
40x[(11 x 40K)+(13x40K)+(2x100k)+(4x30K)+(6x3K)+(30K)] = 45MB
   PG           Signal         outer         mask
```

Shape List (regular)

```
110x[(11x(40+30)K)+(13x(40+30)K)+(4x30K)+(6x3K)+(30K)+
(2x(100+30)K)+(13x3K)] = 235MB
```

Total   **`Feature + Shape list = 280 MB`**

Plus the following:

Measurement estimate - actual signal layer check on top layer = 150K. Add to this an Annular Ring measure per pad, and a Size measure for every feature .

Actual measurement - running signal layer checks on the third layer results in 20MB memory usage increase due to the number of measurements.

So just having one measurement per feature for all layers would be 70MB, probably more. The size checks (size for signal layer checks, plated-thru-hole summary for drill checks) produce one measurement per feature.

Annular ring checks produce one measurement per hole and even more if **`pth2c`** distances are relevant. Drill summary checks multiply the amount of annular ring measurements, etc...

In order to limit the number of measurements, do not run size checks. The maximum search parameters (typical spacing in this job is 6.35 mils between pads) affect the number of measurements. If you set the spacing parameter of the signal layer checks to 6.0, this means 50K less measurements, just for the top layer.

Chapter 3 *Attribute Management*

Attribute Types

Attributes provide a powerful way of extending the Genesis 2000 database according to general and specific requirements. An attribute is a piece of information which is attached to one of the system's basic objects.

The following types of attributes are supported by the system:

Boolean	This attribute is either set (exists) or unset.
Text	This attribute can contain a string of characters.
Option	This attribute can be one of a set of discrete values.
Integer	This attribute can contain an integer number.
Float	This attribute can contain a floating (real) number.

The following entities in the database can have attributes attached to them:

- Job
- Step
- Layer
- Wheel

- Symbol
- Stackup
- Feature
- Component

Each attribute must have a unique name. Attributes which start with the dot (.) character are System Attributes and can only be added by Frontline. The user can add any number of additional attributes, which are referred to as User Attributes. They can have any legal name (lower case letters, digits and the characters + - _ .), except ones which start with a dot.

Note: Units of measurement can be defined for **float** type (floating number) attributes. The **UNITS** field can be defined using any of the following:

- **NO_UNITS**
- **INCH_MM**
- **MIL_MICRON**

The **MIN_VAL** and **MAX_VAL** fields for these attributes will accept values in inches or mils only, depending on the value of the UNITS field. For an example, see the attribute **.se_coupon_min_dist**.

System attributes are listed in the file:

$GENESIS_DIR/e$GENESIS_VER/all/sysattr

Here is a small excerpt from this file:

```
OPTION {
  NAME    =.pad_usage
  ENTITY  = FEATURE
```

```
  OPTIONS = toeprint;via;g_fiducial;l_fiducial;tooling_hole
}

...........

TEXT {
 NAME    =.comment
 ENTITY  = JOB;STEP;LAYER;WHEEL;SYMBOL;STACKUP
 MIN_LEN = 0
 MAX_LEN = 500
 PROMPT  = Comment
}

...........

BOOLEAN {
 NAME   = .out_break
 ENTITY = SYMBOL;FEATURE
 DEF    = NO
 PROMPT = Output break
}

................

INTEGER {
 NAME    = .num_local_fiducials
 ENTITY  = COMPONENT
 DEF     = 0
 MIN_VAL = 0
 MAX_VAL = 20
}
```

Explanation

The **.pad_usage** attribute can be attached to a feature and can be set to one of 5 values

> **– toeprint**
>
> **– via**
>
> **– g_fiducial**
>
> **– l_fiducial**
>
> **– tooling_hole**

The **.comment** attribute can be added to 6 different entities, it can be up to 500 characters, and it uses the prompt 'Comment' when presented in an input screen.

The **.out_break** attribute can be attached to a symbol or a feature. It is considered TRUE when it is attached, and FALSE when it is not.

The **.num_local_fiducials** attribute can be attached to a component. It is limited to values between 0 and 20, with a default of 0.

Defining User Attributes

Before defining user attributes, considerable thought should be given to the different needs and potential usage of the attributes. Once defined, it is recommended that they are not deleted, although each job maintains the user attributes which existed when it was created. This will assure consistent operation of scripts, which rely on the existence of these attributes.

The global definition of user attributes is done in the user attributes file which resides in the library job. The path to the library job is by default:

`$GENESIS_DIR/fw/lib/misc/userattr`

The format of this file is identical to the format of the **`sysattr`** file described earlier. For more information, refer to the ODB++ manual (Doc.0202).

Before defining user attributes you must be aware of the database structure and operation. User attributes can be defined in order to store additional information in the database, and for later use. However, the system implementor should realize the potential caveats and be sure to avoid them.

The user attributes file in the library is used as the main reference and base for all the other jobs. There are two modes of operation when working with user attributes. The operation mode is defined by the **`FORCE_LIB`** parameter that is part of the 'userattr' file (specified in the first two lines).

We strongly recommend working with the parameter set to 'yes'. In this mode the system always uses the 'library' file as the attributes list. By this, all jobs use one common list of attributes, and there are no problems of moving data between jobs. When the mode is set to 'no' there is no way of performing a global change, and every job has its own (historical) attributes list. This may lead to many problems, such as how to treat an attribute that was changed and is now defined in two different ways in two different jobs. It is impossible to maintain any level of automation when the same attribute may have a different meaning in different jobs that are part of the same database.

The first mode is supported mainly for compatibility reasons. It also has merits when importing jobs from another system with a need to maintain the original attributes.

The mode can be changed from 'no' to 'yes' as long as the customer is aware of the differences between the two modes. In most cases there should be no problem changing the mode.

There are several common characteristics in both of the modes:

– The job has its own **`userattr`** file. Thus, the attributes list is stored under the job directory.

– **option** attributes for features/components:

Option items cannot be removed from the list, nor can the order change.

Option items can only be added to the end of the list. The reason for this is that the layers reference the option's serial number rather than the option name.

Changing the options in the **userattr** file may create inconsistencies in the database.

– Default values can be changed at any time in the library.

– Min/Max values can be changed at any time in the library.

– Changing the type of an attribute may lead to inconsistencies.

For example:

Assume an attribute is of type **text** and the value of the text is **abc**. If you change the type to **integer**, the **abc** value is no longer a valid attribute value. This may cause the system to not open the job or cause other problems.

1. **FORCE_LIB** = yes

   - When opening the job, the attributes list will be copied from the library and will be used for the job.

   - Any other attributes that existed in the job are removed.

   - If the attribute in the library has the same name as in the job, but the definition is different, the following happens:

     – a. Different type
       In case of a feature attribute, it will be removed from the layer.
       In case of an entity attribute it will receive a default value.

     – b. Different options for an 'options' attribute
       Values that are added to the end will not have any effect
       (present situation in current versions).

   For entity attributes, the system allows changing the list and the order of the list. If the attribute has a value that does not exist any more, the default value will be assigned.

   This is also referred to in Kit #1736.

   - There will never be a case in which attributes are duplicated. There are assertions inside the code to check for this. Since all the jobs get the list of attributes from the library, there should never be a case of a mismatch in attributes between different jobs.

   - In case of a change that relates to entity attributes, all the associated entities will be marked as 'changed' and will be saved upon the save command.

   - All the layers that include feature attributes that were changed will be read into the memory and saved with the save command.

2. **FORCE_LIB** = no

   As explained before, this mode of operation uses the older method which is not recommended. Below is a short description of this mode of operation.

   - When a job is opened the **userattr** file is read from the database, and serves as the basic attributes list. The system adds all the additional attributes that exist in the library into the job (and to the list). For all option attributes the system compares the attributes between the library and the job, and adds options that were added in the library to the end of the list. If there are attributes with the same name in the library and the job (with different definitions), the job attributes are the ones that remain in the list.

   - Entity attributes that are of the type **option** in which the option lists don't match for the minimal number of the two, will not be considered to be the same. In this case the following copying scheme will be used (as for other cases in which the attributes do not match).

   - When copying data entities from one job to another the system checks that attributes with the same name are actually the same. If not, the system creates, in the target job, attributes with the same name, and adds a +1, +2, +n suffix.

There is a text attribute in the source job that is a text field by the name 'date'. In the target job there is an attribute by the same name, but it is an 'integer' attribute. When the system copies this attribute into the target job it's name will be 'date+1', or 'date+2', etc..

System Attributes

Here is a list of system attributes sorted alphabetically with a brief explanation:

.action_mask_layer

Type	Integer
Entity	LAYER
Description	Name of the mask layer
See Also	DFM Actions (DFM 0602)
See Also	Assembly Analysis (Doc.0504)

.action_mask_layer_type

Type	Text
Entity	LAYER
Description	Sets the type of mask: Inclusion or Exclusion.
See Also	DFM Actions (DFM 0602)
See Also	Assembly Analysis (Doc.0504)

Maintained for compatibility with Enterprise 3000

.area_name

Type	Text[0..64]
Entities	FEATURE
Default	None
Description	This attribute can be attached to surface features which are drawn in a process map layer. A process map layer is used in assembly analysis for determining the process type used in the place a measurement is found.
See Also	Assembly Analysis (Doc.0504)

Maintained for compatibility with Enterprise 3000

.array_with_rotation

Type	Boolean
Entity	STEP
Description	If TRUE, this step is a multi-panel array, with the same panel possibly appearing in 180-degree rotation to itself
See Also	Assembly Analysis (Doc.0504)

.assembly_proc_bottom

Type	Text[0..20]
Entity	STEP
Description	Similar to assembly_proc_top, for the bottom side.
See Also	Assembly Analysis (Doc.0504)

.assembly_proc_top

Type	Text[0..20]
Entity	STEP
Description	Default assembly process for the top side, to be used when there is no specific area defined in the process map layer (or no process map layer at all).
See Also	Assembly Analysis (Doc.0504)

.avoid_pattern_fill

Type	Boolean
Entities	
Default	
Description	This attribute is attached to features that should not be covered by the pattern fill. The margin used for these excluded features is the configuration parameter **Features margin**. This attribute solves the problem of panels that have more than one S&R level and contain features that lie outside the profile of the S&R'd steps, when the features (that are outside the S&R profile) are covered by the pattern fill algorithm. To activate the **.avoid_pattern_fill** attribute, set the configuration parameter **Consider feature** to **Yes**.
See Also	

.avoid_shave

Type	Boolean
Entities	FEATURE
Default	None
Description	If set, tells a DFM action not to shave a Pad with this attribute.
See Also	DFM Actions (Doc. 0602)

.bit

Type	Text [0..64 characters]
Entities	FEATURE
Default	None
Description	Feature attributes that contain the drill designator which is set to each tool in the Drill Tools Manager.
See Also	The Drill Tool Manager (Doc.0404)

Maintained for compatibility with Enterprise 3000

.board_thickness

Type	Float [0.0..10.0]
Entity	JOB
Default	0.0
Description	Total thickness of the board
See Also	Assembly Analysis (Doc.0504)

.break_away

Type	Boolean
Entities	SYMBOL
Default	No
Description	This attribute is given to a symbol that represents a break-away that can be inserted into any line or arc of the rout path. When adding a **break_away** symbol thru dimensions, it automatically adjusts to the line or arc angle (which it was put on), breaks that feature (in the breaking points defined in that symbol with **.brk_pnt** attribute), and adds all the necessary connections and dimensions.
See Also	The Rout Editor (Doc. 0606)

.brk_point

Type	Boolean
Entities	FEATURE
Default	No
Description	This attribute is given to a pad or a dpoint in a break-away symbol (that was given the attribute **.break_away**). When adding the break-away to the line/arc in the layer, thru dimensions, the line/arc is broken at the connection point with the dpoint that has the **.brk_point** attribute. In each break-away symbol there should be two points with this attribute.
See Also	The Rout Editor (Doc. 0606)

.canned_text

Type	Boolean
Entities	FEATURE
Default	No
Prompt	Canned text
Description	Indicates that a text is drilled (applies to features).
See Also	

.cdr_drill_type

Type	Text
Entities	FEATURE
Default	Unset
Description	Enables control of type of assigned drill layers. The attribute can have the following values: **unset, laser, photo, through, blind**. If **cdr_drill_type** = **unset,** the drill type is set automatically. Otherwise, the drill type is taken from the attribute. For Discovery machines, laser drills and photo via drills get the type **blind_via**.
See Also	Orbotech AOI Interface (Doc.0711)

.cdr_mirror

Type	Text
Entities	LAYER
Default	No
Description	The mirroring of a layer for AOI inspection is set in the **.cdr_mirror** layer attribute.
	If .cdr_mirror = **Yes**, than the layer is mirrored for AOI inspection.
	If .cdr_mirror = **No**, the layer is not mirrored for AOI inspection.
	If .cdr_mirror = **Unset**, the mirroring of the layer for AOI is assumed to be the opposite of mirroring for plotting. The mirroring used for plotting is deduced from the combination of two factors: the value of the layer attribute .out_mirror, and the existence of mirroring in the layer's Image Production parameters.
	The table below summarizes the possible combinations of these factors, and the result in terms of AOI mirroring.

Mirroring in Image Production Parameters	Value of `.out_ mirror`	AOI Mirror (Result)
No	No	Yes
No	Yes	No
Yes	No	No
Yes	Yes	No

See Also	Orbotech AOI Interface (Doc. 0711)

.cdr_val

Type	Integer (-1 to 100000)
Entities	FEATURE
Default	0
Description	
See Also	Orbotech CDR-14 AOI Interface (Doc. 0709)

.cdr14_stages

Type	Text
Entities	FEATURE
Default	No
Description	This attribute is assigned to alignment target features, and describes the work stage(s) for which the target was set. Min_Length = 0 Max_Length = 400
See Also	Orbotech CDR-14 AOI Interface (Doc. 0709)

.cdr14_zone_type

Type	Text
Entities	FEATURE
Default	No
Description	This attribute is assigned to features which represent exclusion zones, and describes its zone type as set by the operator. Min_Length = 0 Max_Length = 30
See Also	Orbotech CDR-14 AOI Interface (Doc. 0709)

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.center_fiducial

Type	Boolean
Entities	COMPONENT
Default	No
Description	This attribute specifies that the component is expected to have a fiducial at its center.
See Also	Assembly Analysis (Doc.0504)
-	

.clear_dont_opt

Type	Boolean
Entities	FEATURE
Default	No
Description	When an SM clearance is assigned this attribute, and it is a single clearance for the Pad, the action will not change this clearance.
See Also	DFM Actions (Doc.0602)

`.color`

Type	Text
Entities	FEATURE
Default	None

Description	This attribute can be attached to any feature/component to define a color to be used in plotting a layer in HPGL-1 or 2. The format is **`rrggbb`** (where **`r`**=red, **`g`**=green, **`b`**=blue) with a range of 00-99 for each color.
	
	 `White    - .color = "999999"`
	 `Black    - .color = "000000"`
	 `Red      - .color = "990000"`
	 `Green    - .color = "009900"`
	 `Yellow   - .color = "009999"`
	 `Blue     - .color = "000099"`
	 `Magenta  - .color = "990099"`
	 `Cyan     - .color = "999900"`

See Also	Output Formats, (Doc.0702), HPGL Format

Note (**`.color`**) HPGL supports eight colors only (for eight-pen plotters). Other colors will be remapped to a different pen.
If you require black&white output only, remove the **`.color`** attribute from all features.
You can use the Options>Colors command to explore color possibilities for selected features.

`.combined_size`

Type	Float[0-100000.0] (in mils)
Entities	FEATURE
Default	None
Description	Keep original size for combined tools. If tool is combined drill size equal combine drill size. The original size is equal the previous drill size. For non-combined tools the attribute is undefined.
See Also	The Drill Tool Manager (Doc.0404)

`.comment`

Type	Text[0..500]
Entities	JOB; STEP; LAYER; WHEEL; SYMBOL; STACKUP
Default	None
Description	This attribute is used for general textual comments.
See Also	The Engineering Toolkit (Doc.0102)

.comp

Type	Option (none; right; left)
Entities	FEATURE
Default	None
Description	For a chained feature, this attribute sets the offset of the cutting tool from the rout path. There are three options - None - in center of the rout path - Left - to the left of the rout path in the direction of cutting - Right - to the right of the path.
See Also	The Rout Editor (Doc.0606)

.comp_height

Type	Float (0.0 - 10.0)
Entities	COMPONENT
Default	None
Description	This attribute stores the height of the component above the board surface (in inches).
See Also	The Graphic Editor (Doc.0601)

.comp_htol_minus

Type	Float (0.0 - 10.0)
Entities	COMPONENT
Default	None
Description	This attribute contains the minus tolerance (in inches) for component height, used for calculation of plug-in boards.
See Also	The Engineering Toolkit (Doc.0102)

.comp_htol_plus

Type	Float (0.0 - 10.0)
Entities	COMPONENT
Default	None
Description	This attribute contains the plus tolerance (in inches) for component height, used for calculation of plug-in boards.
See Also	The Engineering Toolkit (Doc.0102)

Maintained for compatibility with Enterprise 3000	**.comp_ign_spacing**	
	Type	Boolean
	Entities	COMPONENT
	Default	No
	Description	This attribute, when set, disables spacing checks on a component during assembly analysis. It is used for printed components which have no actual body
	See Also	

Maintained for compatibility with Enterprise 3000	**.comp_ignore**	
	Type	Boolean
	Entities	COMPONENT
	Default	No
	Description	Determines whether the component is to be ignored when calculating statistics, or during certain operations, such as Analysis.
	See Also	

Maintained for compatibility with Enterprise 3000	**.comp_mount_type**	
	Type	Option (Other; SMT; THMT)
	Entity	COMPONENT
	Default	Other
	Description	Indicates whether the component is a surface mount, through-hole mount, or other.
	See Also	

.comp_type

Type	Option

- axial	- pqfp	- tab
- bga	- printed	- tqfp
- cbga	- qfp	- tsoic
- cob	- radial	- tsop
- dip	- sip	
- discrete	- smtconn	
- discrete402	- smtmisc	
- abel	- socket	
- pga	- soic	
- pihconn	- soj	
- pihmisc	- sop	
- plcc	- sot	

Entities	COMPONENT
Default	None
Description	This attribute is very important for determining dynamic categories during assembly analysis. It represents the type of the component. When the user defines a user attribute: **_comp_type**, it shadows this system attribute. **Important**: Do not use the underscore "_" character in the Type values of this attribute.
See Also	

.comp_weight

Type	Float (0.0 - 1000.0)
Entities	COMPONENT
Default	None
Description	This attribute stores the weight of the component (in ounces) for the purpose of the total weight calculation.
See Also	The Graphic Editor (Doc.0601)

.connection_id

Type	Integer
Entities	FEATURE
Default	1
Description	In JTAG operations, all traces and pads that were electrically connected to a cut polyline are assigned the attribute **.connection_id**. This attribute is used to aid in reconnecting the traces. The value of.connection_id is the value of the attribute .jtag_component_id * 100, plus a value that relates to the internal index of the originating JTAG pad.
See Also	JTAG Operations in Doc. 0601, Graphic Editor

.copper_thickness

Type	Float
Entities	
Default	
Prompt	
Description	Used in Drill Touching Copper Count Analysis Action. The default unit of measurement for this attribute is micron or mil, depending on the currently-defined unit of measurement used in Genesis. This attribute can also be specified in the DTCC report by specifying the value of the variable **v_report_unit**.
See Also	Orbotech AOI Interface (Doc.0711)

.copper_weight

Type	Float (0.0 - 1000.0)
Entities	LAYER
Default	1.0
Prompt	Copper Weight(oz)
Description	This attribute stores the copper weight (in ounces) of the layer being inspected.
See Also	Orbotech AOI Interface (Doc.0711)

.critical_net

Type	Boolean
Entities	FEATURE
Default	
Description	For future use.
See Also	

.critical_tp

Type	Boolean
Entities	FEATURE
Default	
Description	This attribute is assigned to a mid-point of a netlist to force it to become a testpoint (it will not be removed by the Netlist Optimizer). If both `.non_tp` and `.critical_tp` are assigned to the same point, `.critical_tp` takes precedence and the mid point is tested.. In case of a drilled feature the attribute must be added to the drill hole.
See Also	Doc. 0202 ODB++ System Attributes

.cu_base

Type	Boolean
Entities	LAYER
Default	No
Description	This attribute signals to an analysis action (Signal Layer Checks or Power & Ground Checks) that the specific via layer is built in such a way that it necessitates a copper pad on each layer of the stackup, since the vias are drilled and filled (rather than plated), and the pads are an essential element in ensuring connectivity.
See Also	The Graphic Editor (Doc.0601) and Fabrication Analysis (Doc.0503)

.customer

Type	Text[0..100]
Entities	JOB
Default	None
Description	This attribute is used for information purposes. It is used specifically in the input process when processing the `lyr_rule` file.
See Also	The Input Process (Doc.0401)

`.cut_line`

Type	Integer
Entities	FEATURE
Default	None
Description	This attribute is given to lines added in the creation of film layers by the film optimization algorithm. The attribute is given to three kinds of lines: 1) frame of the film 2) cutting lines inside the film 3) frame of each layer inside the film
See Also	Film Optimization (Doc.0706)

`.deferred`

Type	Boolean
Entities	FEATURE
Default	None
Description	Indicates that a plot stamp feature is flagged as deferred while being output to LP7008 and DP100.
See Also	Output Formats - 0702

`.depth`

Type	Float (1.0 - 1000.0)
Entities	LAYER
Default	0.0
Prompt	Drill Depth
Description	Depth of drill layer in mils (applies to layers)
See Also	

`.design_center`

Type	Text
Entities	STEP
Default	0.0
Prompt	Design Center
Description	The design center from which the job originated.
See Also	Engineering Toolkit (Doc. 0102)

`.design_origin_x`

Type	Integer (-254 - +254)
Entities	JOB
Default	0.0
Prompt	.design_origin_x
Description	Displays the X origin read in from the CAD data.
See Also	Engineering Toolkit (Doc. 0102)'

`.design_origin_y`

Type	Integer (-254 - +254)
Entities	JOB
Default	0
Prompt	.design_origin_y
Description	Displays the Y origin read in from the CAD data.
See Also	Engineering Toolkit (Doc. 0102)'

`.detch_smooth`

Type	Boolean
Entities	FEATURE
Default	None
Description	Smoothing lines are marked with this attribute.
See Also	DFM Actions (Doc. 0602)

`.detch_tapering`

Type	Boolean
Entities	FEATURE
Default	None
Description	Tapering lines are marked with this attribute.
See Also	DFM Actions (Doc. 0602)

.drc_add_rad

Type	Integer (0 - 100)
Entities	MANIA-AOI
Default	2
Prompt	Enlarge by
Description	Type the value in mils by which the system will enlarge the borders of the measurement segment (Test Areas in DRC Error layer).
See Also	The MANIA AOI Interface (Doc.0707)

.drc_min_space

Type	Integer (1 - 100)
Entities	MANIA-AOI
Default	5
Prompt	Min Spacing
Description	Type the minimum spacing in mils below which measurements will be reported after analysis.
See Also	The MANIA AOI Interface (Doc.0707)

.drc_min_width

Type	Integer (1 - 100)
Entities	MANIA-AOI
Default	7
Prompt	Min Track Width
Description	Type the minimum track width in mils below which measurements will be reported after analysis.
See Also	The MANIA AOI Interface (Doc.0707)

.drill

Type	Option (plated; non_plated; via)
Entities	FEATURE
Default	None
Description	This attribute is attached to hole features in drill layers. It defines the type of the drill and is used extensively during fabrication analysis. Set using Attributes Popup or DTM.
See Also	Fabrication Analysis (Doc.0503) or Drill Tool Mgr. (Doc. 0404)

**.drill_
first_last**

Type	Option (first; last; none
Entities	FEATURE
Default	None
Description	By default, the Auto Drill Manager defines which drills are the first and last drill holes. If a customer wants to define the first/last hole in a location different from that defined by ADM, they should use this attribute. When outputting, ADM can check for this attribute, and assign the first/last hole as defined by the customer. There are three options: **.drill_first_last = first** . Feature is drilled first in the Tool. **.drill_first_last = last**. Feature is drilled last in the Tool. **.drill_first_last = none**. (default) Feature is drilled in order defined by ADM.
See Also	Drill Tool Mgr. (Doc. 0404)

.drill_flag

Type	Integer (0 - 100000)
Entities	FEATURE
Default	0
Description	Used by the Auto Drill Manager. It is an integer feature attribute that should be used on the drill layer. When the Auto Drill Manager package creates the NC Drills table it separates the different drills based on several values: size, drill type and also the value of this attribute. This is useful in cases where specific drills need to be treated in a specific way.
See Also	The Auto Drill Manager (Doc. 0703)

.drill_layer_direction

Type	Option
Entities	LAYER
Default	top2bottom
Description	Whether a pad is reported as on the top or bottom of the drill layer is determined by this attribute. If set to bottom2top, pads on the bottom are reported at 'top'. Values: top2bottom, bottom2top
See Also	The Auto Drill Manager (Doc. 0703)

`.drill_noopt`

Type	Boolean
Entities	FEATURE
Default	No
Description	Used by the 'Auto Drill Manager'. Feature attribute that is used on the drill layers. Setting a group of drills with this value will force the drill optimizer to keep the order within that group. This is important for preventing the drill path to pass through mechanical pins.
See Also	The Auto Drill Manager (Doc. 0703)

`.drill_sr_zero`

Type	Option (1; 2; 3)
Entities	FEATURE
Default	None
Description	Used by the Auto Drill Manager. This is a feature attribute that should be set to a single drill feature in the PCB step. If a single feature in a step is set with this attribute, it will be used for setting the 'step & repeat zero offset' of that step. In other words, that feature will receive the coordinates - (0,0) in the step & repeat block, and all other coordinates will be relative to it. In order for this attribute to be used other configuration parameters of the package should be set. This is defined in the 'Auto Drill Manager' manual.
See Also	The Auto Drill Manager (Doc. 0703)

`.drill_stage`

Type	Option
Entities	FEATURE
Default	None
Description	Used by the Auto Drill Manager. Feature attribute that should be used on the drill layer. This attribute receives three values - '1', '2', and '3', specifying the drill stage of that specific drill hole/slot.
See Also	The Auto Drill Manager (Doc. 0703)

.dxf_dimension

Type	Boolean
Entities	FEATURE
Default	None
Description	Assigned during DXF file input to mark its features as part of a DXF dimension entity.
See Also	Input Formats (Doc. 0403)

.eda_layers

Type	Text [0..1000]
Entities	LAYER
Default	None
Description	This attribute is loaded with the EDA system layer names which compose a physical layer in Genesis. It is loaded during the direct EDA translation and is used for the graphic synchronization with the EDA system.
See Also	The Graphic Editor (Doc.0601)

.entity_version

Type	Integer (0 - 2147418112
Entities	STEP;SYMBOL
Default	0
Prompt	Number of changes
Description	Counts the number of changes made in an entity (applies to steps and symbols). **Note** - Do not modify!
See Also	

.et_adjacency

Type	Float (1.0 - 1000.0)
Entities	LAYER
Default	20.0
Description	A distance value (per layer) to use for netlist adjacency calculation for moving probe testers (currently BSL, PROBOT, Microcraft, and Integritest).
See Also	Output Formats (Doc. 0702)

`.et_align`

Type	Boolean
Entities	FEATURE
Default	No
Description	A feature tagged with this attribute will be used as an alignment target for PROBOT output
See Also	Output Formats (0702)

`.et_stamp`

Type	Boolean
Entities	FEATURE
Default	No
Description	A feature tagged with this attribute will be used as a stamp point in Hioki output
See Also	Output Formats (0702)

`.etch_comp_addition`

Type	Boolean
Entities	FEATURE
Default	No
Description	
See Also	

`.etm_adapter_h`

Type	Integer (0.000001-5000)
Entities	STEP
Default	3750
Description	Adapter Height in Mils.
See Also	Electrical Testing Manager (Doc. 0708)

.etm_constant_drill_usage

Type	Option
Entities	FEATURE
Options	plate; cs_board; cs_grid; test
Prompt	ETM constant drill usage
Description	
See Also	

.etm_height

Type	Float (0.0 - 5000.0)
Entities	LAYER
Default	20.0
Prompt	Plate Height (ET)
Description	For the Job to Adapter option. This parameter defines the height of the plate in the adapter represented by the given layer.
See Also	Electrical Testing Manager (Doc. 0708)

.etm_mirror

Type	Boolean
Entities	LAYER
Default	No
Prompt	Plate mirror for drill (ET)
Description	For the Job to Adapter option. This parameter will update the mirror of the drill output transformation for the required plate.
See Also	Electrical Testing Manager (Doc. 0708)

.etm_pin_name

Type	Text (0-64 characters)
Entities	FEATURE
Default	No
Description	ETM pin name.
See Also	Electrical Testing Manager (Doc. 0708)

`.etm_pin_style`

Type	Option
Entities	STEP
Default	Regular
Description	ETM Pin Guiding Style. Options: Regular, Mania
See Also	Electrical Testing Manager (Doc. 0708)

`.etm_prim_sink_h`

Type	Float (0.0 - 1000.0)
Entities	LAYER
Default	0.0
Prompt	Countersink Depth on Primary side (ET)
Description	For the Job to Adapter option. This parameter will define the depth of the countersink from the board side of the plate for the required plate.
See Also	Electrical Testing Manager (Doc. 0708)

`.etm_prim_sink_r`

Type	Float (0.0 - 1000.0)
Entities	LAYER
Default	0.0
Prompt	Countersink Threshold Radius on Primary side(ET)
Description	For the Job to Adapter option. This parameter is not used anymore.
See Also	Electrical Testing Manager (Doc. 0708)

`.etm_repair_fmt`

Type	Option
Entities	STEP
Default	None
Description	ETM Repair file format. Options: None, EPC
See Also	Electrical Testing Manager (Doc. 0708)

.etm_rotate

Type	Option
Entities	LAYER
Default	0
Prompt	Plate rotation for drill (ET)
Description	For the Job to Adapter option. This parameter will define the rotation of the drill output transformation for the given plate definition. Options: 0: 90: 180: 270.
See Also	Electrical Testing Manager (Doc. 0708)

.etm_sec_sink_h

Type	Float (0.0 - 1000.0)
Entities	LAYER
Default	0.0
Prompt	Countersink Depth on Secondary side(ET)
Description	For the Job to Adapter option. This parameter will define the depth of the countersink for the grid side of the required plate.
See Also	Electrical Testing Manager (Doc. 0708)

.etm_sec_sink_r

Type	Float (0.0 - 1000.0)
Entities	LAYER
Default	0.0
Prompt	Countersink Threshold Radius on Secondary side(ET)
Description	For the Job to Adapter option. Not used anymore.
See Also	Electrical Testing Manager (Doc. 0708)

.etm_sec_sink_s

Type	Float (0.0 - 1000.0)
Entities	LAYER
Default	0.0
Prompt	Countersink Drill Size on Secondary side(ET)
Description	For the Job to Adapter option. Not used anymore.
See Also	Electrical Testing Manager (Doc. 0708)

.etm_shift_x

Type	Float (-10000.0 - 10000.0)
Entities	LAYER
Default	0.0
Prompt	Shift for drill by x (ET)
Description	For the Job to Adapter option in the ETM. This parameter defines the x offset of the drill output transformation for the given plate (represented by the layer it is assigned to).
See Also	Electrical Testing Manager (Doc. 0708)

.etm_shift_y

Type	Float (-10000.0 - 10000.0)
Entities	LAYER
Default	0.0
Prompt	Shift for drill by y (ET)
Description	For the Job to Adapter option in the ETM. This parameter defines the y offset of the drill output transformation for the given plate (represented by the layer it is assigned to).
See Also	Electrical Testing Manager (Doc. 0708)

.etm_step_x

Type	Float (0.0 - 1000.0)
Entities	LAYER
Default	0.0
Prompt	Grid step by x (ET)
Description	For the Job to Adapter option in the ETM. With this parameter the user can define the step of the grid he is defining on the x axis.
See Also	Electrical Testing Manager (Doc. 0708)

.etm_step_y

Type	Float (0.0 - 1000.0)
Entities	LAYER
Default	0.0
Prompt	Grid step by y (ET)
Description	For the Job to Adapter option in the ETM. With this parameter the user can define the step of the grid he is defining on the y axis.
See Also	Electrical Testing Manager (Doc. 0708)

.etm_tester

Type	Text (0-64 characters)
Entities	STEP
Default	None
Options	Mania ; Everett Charles ; Circuitline ; Luther Maelzer ; Probot ; BSL ; IntegriTest ; MicroCraft ; ATG
Prompt	Tester Name
Description	ETM tester name.
See Also	Electrical Testing Manager (Doc. 0708)

.etm_thickness

Type	Float (0.0 - 1000.0)
Entities	LAYER
Default	20.0
Prompt	Plate Thickness (ET)
Description	For the Job to Adapter option in the ETM. This parameter defines the thickness of the plate that is being defined.
See Also	Electrical Testing Manager (Doc. 0708)

`.extended`

Type	Integer (-1 - 100000)
Entities	FEATURE
Default	0
Description	The extended attribute is given to features that are construction features (lines and pads) added to assist the creation of a rout path. These features have zero width and are not output to the rout machine as regular features. They are used, for example, as source elements from which to create actual features by dimensions. If the attribute value is not zero then the feature is an extended feature and the decimal value is its serial value in the layer (to be referenced in dimension creation).
See Also	The Rout Editor (Doc.0606)

`.feature_fill_margin`

Type	
Entities	
Default	
Prompt	
Description	This attribute enables you to define a fill margin other then the feature margin parameter defined in the function GUI. Features that have this attribute define their fill margin according to the value of this attribute.
See Also	

`.feed`

Type	Integer (0 - 100000)
Entities	FEATURE
Default	0
Description	For a chained feature this attribute sets the table feed rate when routing.
See Also	The Auto Rout Manager (Doc. 0704)

`.fiducial_name`

Type	Text[0..64]
Entities	FEATURE
Default	None
Description	This attribute is used for etec output format. A pad that was given a fiducial name is used for registration between layers.
See Also	Output Formats (Doc. 0702)

`.fill_dx`

Type	Float (0.000001 - 50.0)
Entities	SYMBOL
Default	0.1
Description	This attribute is used as the default horizontal distance between symbols when the symbol is used for pattern filling.
See Also	The Graphic Editor (Doc.0601)

`.fill_dy`

Type	Float (0.000001 - 50.0)
Entities	SYMBOL
Default	0.1
Description	This attribute is used as the default vertical distance between symbols when the symbol is used for pattern filling
See Also	The Graphic Editor (Doc.0601)

.flipped_of

Type	Text
Entities	STEP; LAYER
Default	Empty string
MIN_LEN	0
MAX_LEN	64
Prompt	Source entity
Description	This attribute, when attached to a STEP, defines the STEP as a flipped step. This attribute, when attached to a LAYER, means that the layer was created as a result of a (layer) flipping operation. The attribute value will be the name of the original (unflipped) layer. This is done in order to keep the elements of the original layer.
See Also	

.flipped_out_of_date

Type	Boolean
Entities	STEP
Default	No
Prompt	Out of date
Description	**No** (default) = indicates that the flipped step is an accurate copy of the original step. **Yes** = indicates that the flipped step is no longer an accurate copy of the original step. One or the other has changed since the first flipping operation that created the step.
See Also	FOR FUTURE USE

.foot_down

Type	Text
Entities	FEATURE
Default	None
Description	Attached to feature it causes a `foot_down_cmd` to be generated by the Auto Rout Manager in the rout file just before the feature. Used only for Excellon files (ignored for other formats).
See Also	The Auto Rout Manager (Doc.0704)

.force_galv_etch

Type	Boolean
Entities	FEATURE
Default	None
Description	Attribute assigned to mark a pad feature that should be enlarged by the Galvanic Etch Compensation DFM action .
See Also	Graphic Editor (Doc. 0601)

Maintained for compatibility with Enterprise 3000

.fs_direction_bottom

Type	Option (Left2Right; Right2Left; Top2Bottom; Bottom2Top)
Entities	STEP
Default	Right2Left
Description	This attribute is used for the thieving pad check in assembly analysis. It determines the flow direction for the bottom layer. Thieving pad check is required for some components during the flow solder process.
See Also	

Maintained for compatibility with Enterprise 3000

.fs_direction_top

Type	Option (Left2Right; Right2Left; Top2Bottom; Bottom2Top)
Entities	STEP
Default	Right2Left
Description	This attribute is used for the thieving pad check in assembly analysis. It determines the flow direction for the top layer. Thieving pad check is required for some components during the flow solder process.
See Also	

OBSOLETE: No longer in use

.full_plane

Type	Boolean
Entities	FEATURE
Default	
Description	
See Also	

**OBSOLETE:
No longer in
use**

`.generated_net_point`

Type	Boolean
Entities	FEATURE
Default	
Description	Openings in the solder mask covering the outer layer which expose locations in the board's outer layer that could be used as test points. The detected points are inserted into the layer as rectangular, square or round pads, and marked with the .generated_net_point attribute.
See Also	The Netlist Optimizer (Doc. 0610)

`.geometry`

Type	Text[0..100]
Entities	FEATURE
Default	None
Description	This attribute contains the name of the padstack which created this feature. It is loaded during direct EDA translation. For layers which are created from component layers during the 'Draw to Layer' operation, the attribute will contain (for centroid pads) useful information on the component, package and part name.
See Also	The Graphic Editor (Doc.0601)

`.global_camtek_aoiset`

Type	Text
Entities	JOB
Default	None
Description	This attribute contains the name of the AOIset to be assigned to each layer upon layer selection in the CAMTEK AOI Interface. Once a name is defined, the AOIset field in the CAMTEK popup will be filled with this name and a new AOIset created in the layer (if already exists, the AOIset will become the current set). The value in this attribute overrides the value defined in the configuration parameter **`camtek_def_aoiset`**, but if no value is specified in this attribute, the **`camtek_def_aoiset`** value will apply. Range of characters in the name= 0-80 Prompt: Global CAMTEK aoi-set.
See Also	The CAMTEK AOI Interface (Doc.0705)

`.gold_plating`

Type	Boolean
Entities	FEATURE
Default	No
Description	This attribute should be attached (manually) to features which are a part of a gold plated connector. It is used during auto-panelization to orient the gold plated area toward the extreme side of the panel.
See Also	The Graphic Editor (Doc.0601)

Maintained for compatibility with Enterprise 3000

`.guard_comp`

Type	Boolean
Entity	COMPONENT
Description	If TRUE, this component is considered a "guard component" (that is, not likely to be knocked off the board accidentally. To be used in future actions.)
See Also	

`.hatch`   **Not currently implemented**

Type	Boolean
Entity	FEATURE
Default	No
Description	A feature that is tagged with this attribute is part of a crosshatch feature.
See Also	

Not currently implemented
`.hatch_border`

Type	Boolean
Entity	FEATURE
Default	No
Description	A feature that is tagged with this attribute is part of the border of a crosshatch feature.
See Also	

Not currently implemented

`.hatch_serrated_border`

Type	Boolean
Entity	FEATURE
Default	No
Description	Assigned to features that are added for partial hatch. The difference between regular hatch and partial hatch is that in partial hatch the cells along the border that intersect the border line are filled; the feature(s) that fill these cells are assigned this attribute.
See Also	

Maintained for compatibility with Enterprise 3000

`.hp3070_common_pin`

Type	Text
Entity	COMPONENT
Description	For the device SWITCH this is used to designate the COMMON pin. Range of characters: 0-16
See Also	Output Formats (Doc.0702)

Maintained for compatibility with Enterprise 3000

`.hp3070_contact_pin`

Type	Text
Entity	COMPONENT
Description	For the device SWITCH this is used to designate the CONTACT pin. Range of characters: 0-16
See Also	Output Formats (Doc.0702)

Maintained for compatibility with Enterprise 3000

`.hp3070_device`

Type	Text
Entity	COMPONENT
Description	The device of the component, one of the following:

- CAPACITOR	- RESISTOR
- CONNECTOR	- SWITCH
- DIODE	- TRANSISTOR
- FET	- ZENER
- FUSE	
- INDUCTOR	
- JUMPER PIN	
- LIBRARY	
- POTENTIOMETER	

All other components will be categorized as Undefined.
Range of characters: 0 -16

See Also	Output Formats (Doc.0702)

Maintained for compatibility with Enterprise 3000

`.hp3070_fail_msg`

Type	Text
Entity	COMPONENT
Description	This is used to specify the failure message associated with the component. This applies to all device types. Range of characters: 0-64
See Also	Output Formats (Doc.0702)

Maintained for compatibility with Enterprise 3000

`.hp3070_hi_value`

Type	Float
Entity	COMPONENT
Description	Specifies the upper test limit of the device. Its specific meaning is dependent on the device type. For DIODE: - Upper test limit, in volts, for the diode's forward bias voltage For FET: - The high resistance limit in ohms For TRANSISTOR: - The high limit for the transistor beta Range of characters: 0-100000.0 Default: 0.0
See Also	Output Formats (Doc.0702)

Maintained for compatibility with Enterprise 3000

`.hp3070_lo_value`	
Type	Float
Entity	COMPONENT
Description	Specifies the lower test limit of the device. Its specific meaning is dependent on the device type. For DIODE: - Lower test limit, in volts, for the diode's forward bias voltage For FET: - The low resistance limit in ohms For TRANSISTOR: - The low limit for the transistor beta Range of characters: 0-100000.0 Default: 0.0
See Also	Output Formats (Doc.0702)

Maintained for compatibility with Enterprise 3000

`.hp3070_probe_access`	
Type	Text
Entity	COMPONENT
Description	Specifies the probe access for the component. This value will be applied to ALL the pins of the component. Possible values are: PREFERRED, NO_PROBE, or TOP. Range of characters: 0-16
See Also	Output Formats (Doc.0702)

Maintained for compatibility with Enterprise 3000

`.hp3070_seriesr`	
Type	Float
Entity	COMPONENT
Description	For INDUCTOR devices this is used to specify the series resistance (in Ohms). Range of characters: 0-100000.06 Default: 0.0
See Also	Output Formats (Doc.0702)

Maintained for compatibility with Enterprise 3000	**`.hp3070_test`**	
	Type	Text
	Entity	COMPONENT
	Description	If this attribute is set, the component is designated as one that should be tested. This attribute applies to all device types. Devices of type CONNECTOR must be specified as NT (Not Tested). Default: No
	See Also	Output Formats (Doc.0702)

Maintained for compatibility with Enterprise 3000	**`.hp3070_tol_neg`**	
	Type	Float
	Entity	COMPONENT
	Description	This is a real value expressing the percent of the value to use as a tolerance (negative tolerance). This is used for devices: - CAPACITOR - RESISTOR - INDUCTOR - ZENER - POTENTIOMETER Range of characters 0-100 Default: 0.0
	See Also	Output Formats (Doc.0702)

Maintained for compatibility with Enterprise 3000	**`.hp3070_tol_pos`**	
	Type	Float
	Entity	COMPONENT
	Description	This is a real value expressing the percent of the value to use as a tolerance (positive tolerance). This is used for the devices: - CAPACITOR - RESISTOR - INDUCTOR - ZENER - POTENTIOMETER Range of characters: 0-100 Default: 0.0
	See Also	Output Formats (Doc.0702)

Maintained for compatibility with Enterprise 3000

.hp3070_type

Type	Text
Entity	COMPONENT
Description	The type of device:.
	For CAPACITOR:
	- F = Capacitor Value is Fixed.
	- V = Capacitor Value is Variable.
	For FET:
	- N = N-Channel Field Effect Transistor
	- P = P-Channel Field Effect Transistor
	For INDUCTOR:
	- F = Inductor value is Fixed
	- V = Inductor value is Variable
	For JUMPER:
	- O or OPEN = Jumper is Open
	- C or CLOSED = Jumper is Closed
	For RESISTOR:
	- F = Resistor value is Fixed
	- V = Resistor value is Variable
	For TRANSISTOR:
	- N = Transistor is an NPN
	- P = Transistor is a PNP
	Range of characters: 0-8
See Also	Output Formats (Doc.0702)

Maintained for compatibility with Enterprise 3000

.hp3070_value

Type	TEXT
Entity	COMPONENT
Description	The value of the component. The meaning varies depending on the component device. For CAPACITOR it is used for capacitance (in Farads). For INDUCTOR it is the inductance (in Henries). For PIN LIBRARY it is used for the PN (Part Name). For the devices POTENTIOMETER and RESISTOR, it is used for the device's resistance. For the ZENER device it specifies the breakdown voltage (in Volts). Range of characters: 0-16
See Also	Output Formats (Doc.0702)

`.ignore_action`

Type	Boolean
Entity	FEATURE
Description	This attribute can be assigned to individual features. Any feature possessing this attribute is ignored by the action. This attribute is useful if a specific feature has none of the other attributes defined in the ERF variable **v_ignore_attrs**. The ignore_action attribute must be specified in the list of attributes defined in **v_ignore_attrs** in order to enable it.
See Also	DFM Actions (Doc. 0602)

`.ignore_net`

Type	Boolean
Entity	NET
Description	When this attribute is assigned to a net, it is ignored during Testpoint Allocation Analysis. No potential testpoints are assigned, they are not reported in the 'Nets without Potential TPs' category, the Testpoints Allocation Report, or in "Total Number of Nets.'
See Also	Analysis Actions (Doc. 0503)

`.image_dx`

Type	Float (-1.0 - 50.0)
Entities	SYMBOL
Default	-1.0
Description	These values are set when inputting Image files into the system. They contain the datum point of an Image special symbol entity. They are used to set the datum when performing output back into Image format. These values should not be changed by the user as this can cause data corruption.
See Also	Output Formats (Doc.0702)

.image_dy

Type	Float (-1.0 - 50.0)
Entities	SYMBOL
Default	-1.0
Description	These values are set when inputting Image files into the system. They contain the datum point of an Image special symbol entity. They are used to set the datum when performing output back into Image format. These values should not be changed by the user as this can cause data corruption.
See Also	Output Formats (Doc.0702)

.imp_info

Type	Boolean
Entities	FEATURE
Default	No
Description	Each test pad added to the test layer in the impedance coupon is assigned this system attribute. The attribute describes the impedance constraints for the source step.
See Also	DFM Actions (Doc.0602)

.imp_line

Type	Boolean
Entities	FEATURE
Default	No
Description	This attribute is be attached to lines which are impedance controlled. When set, it prevents the lines from being rerouted or thinned during signal layer optimization.
See Also	DFM Actions (Doc.0602)

Maintained for compatibility with Enterprise 3000

.ind_orient_req

Type	Boolean
Entity	COMPONENT
Description	This component requires silkscreen orientation indication. (To be used in future actions.)
See Also	

`.infeed_speed`

Type	Integer
Entities	FEATURE
Default	0
Description	Min: 0 max: 100000.
See Also	Auto Rout Manager (Doc. 0704)

`.inp_file`

Type	Text[0..480]
Entities	LAYER
Default	None
Description	This attribute contains the name of the file (Gerber, Drill) from which the data was input into the layer.
See Also	The Input Process (Doc.0401)

`.inp_net_name`

Type	Text[0..100]
Entities	FEATURE
Default	None
Description	This attribute contains netlist information sent by the DPF input translator.
See Also	Input Formats (Doc.0403)

`.inp_x_scale, inp_y_scale`

Type	Float [-9.99999..9.99999]
Entities	LAYER
Default	1.0
Description	This attribute is used in input and output for the NEC format. During NEC input, the values of the GSCL NEC command are stored in these attributes. The NEC output writes the GSCL command to the output file in case the value of these attributes differ than 1.
See Also	Input Formats (Doc.0403): Output Formats (Doc. 0702)

Maintained for compatibility with Enterprise 3000

.is_burried

Type	Boolean
Entity	FEATURE
Description	Assigned to buried components specifically input from CADIF files in order to mark them as buried. This attribute, although specifically designed for CADIF files, can be used in any other function or script. Note that the attribute name is misspelled, but that is its name.
See Also	

Maintained for compatibility with Enterprise 3000

.is_capped

Type	Boolean
Entity	FEATURE
Description	Used on via pads on top & bottom signal layers to indicate that the via is capped on this side.
See Also	

Maintained for compatibility with Enterprise 3000

.is_shadowed

Type	Boolean
Entity	FEATURE
Description	Components with this attribute are considered for the Shadowing categories, as the shadowed component.
See Also	

Maintained for compatibility with Enterprise 3000

.is_wirebonded

Type	Boolean (Default: No)
Entity	COMPONENT
Description	Defines a component to be wire-bonded. Currently, it is set in the CADIF input process.
See Also	

.jtag_component_id

Type	Integer
Entity	FEATURE
Default	1
Description	Component ID numbers are assigned to each jtag feature by assigning the jtag features the attribute **jtag_component_id**. All pads belonging to the same J-tag feature share the same ID number. **jtag_component_id** can range between 1 to 100.
See Also	

Maintained for compatibility with Enterprise 3000

.label_clearance

Type	Boolean
Entities	COMPONENT
Default	No
Description	This attribute should be attached to components which are not allowed to be too close to a glued label (e.g. fine pitch SOIC components). During the component analysis, these components are checked vs. the label components.
See Also	

Maintained for compatibility with Enterprise 3000

.layer_class

Type	Text
Entities	LAYER
Default	
Prompt	Layer class
Description	(0 to 1000 characters). Specifies the layer classification.
See Also	

Maintained for compatibility with Enterprise 3000

.layer_dielectric

Type	Float
Entities	COMPONENT
Default	0
Prompt	Width of dielectric below layer
Description	(0.0001 to 0.1 inch). Specifies the dielectric thickness below a layer.
See Also	

	.layer_hdi_type	
Maintained for compatibility with Enterprise 3000	Type	Option
	Entities	
	Default	
	Description	(Buildup; Core). Distinguishes buildup layers from core layers in HDI jobs. Some HDI categories are relevant to buildup or core layers but not to both. Therefore, it is important to set this value appropriately.
	See Also	

	.local_fiducial_dist	
Maintained for compatibility with Enterprise 3000	Type	Float (0.0 - 100.0)
	Entities	COMPONENT
	Default	None
	Description	This attribute defines the allowed distance (in inches) of fiducials from the outline of the components which require local fiducials (See .num_local_fiducial). If set to 0, the fiducials must be included INSIDE the outline.
	See Also	

	.lpol_done	
Maintained for compatibility with Enterprise 3000	Type	Boolean
	Entity	LAYER
	Description	Indicates to the output that polarity sort according to a format has already been done during film optimization.
	See Also	Films Optimization (Doc.0706)

	.lpol_surf	
Maintained for compatibility with Enterprise 3000	Type	Boolean
	Entity	LAYER
	Description	Indicates surface modified by layer polarity reduction algorithm.
	See Also	

Maintained for compatibility with Enterprise 3000

.merge_processes

Type	Text
Entity	STEP
Description	A list of the last three merge actions in the order in which they were run. The list is updated each time a merge (BOM, Library, Board) is run. It is for informational purposes and does not have to be changed by the user.
See Also	

Maintained for compatibility with Enterprise 3000

.mount_hole

Type	Boolean
Entity	FEATURE
Description	Used on drill features to indicate that they are mounting holes.
See Also	

.naming_convention

Type	Option (numeric; Layer name)
Entities	CAMTEK-AOISET
Default	numeric
Prompt	Naming convention
Deleted	No; No
Description	When set to 'Numeric' (default value), the output directory for each layer will be a number. When set to 'Layer name', output directory for each layer will be the layer's name.
See Also	The CAMTEK AOI Interface (Doc. 0705)

Maintained for compatibility with Enterprise 3000

.needs_guarding

Type	Boolean
Entity	COMPONENT
Description	If TRUE, this components needs to be protected by guard components else it is likely to be knocked off the board accidentally.
See Also	

`.n_electric`

Type	Boolean
Entities	FEATURE
Default	No
Description	This attribute, when attached to a feature, defines the feature as non-electric. As a non-electric feature, it is not taken into account when calculating the current netlist for the step.
See Also	The Netlist Analyzer (Doc.0506)

`.naming_convention`

Type	Option (numeric; Layer name)
Entities	CAMTEK-AOISET
Default	numeric
Prompt	Naming convention
Deleted	No; No
Description	When set to 'Numeric' (default value), the output directory for each layer will be a number. When set to 'Layer name', output directory for each layer will be the layer's name.
See Also	The CAMTEK AOI Interface (Doc. 0705)

`.nec_cbnk_blank_name`

Type	Text
Entities	LAYER
Default	
Prompt	Blank Name (NEC-CBNK record)
Description	Contains blank record information derived from CBNK records during NEC input translation.
See Also	Input Formats (Doc. 0403)

`.nec_n1_draw_num`

Type	Text (0..20)
Entities	LAYER
Default	
Prompt	Drawing Num.(NEC-N1 record)
Description	Contains drawing number and version number derived from N1 records during NEC input translation.
See Also	Input Formats (Doc. 0403)

`.nec_n1_rev`

Type	Text (0..2)
Entities	LAYER
Default	
Prompt	Drawing Revision (NEC-N1 record)
Description	Contains revision number derived from N1 records during NEC input translation.
See Also	Input Formats (Doc. 0403)

`.nec_n2_draw_num`

Type	Text (0..20)
Entities	LAYER
Default	
Prompt	Drawing Num.(NEC-N2 record)
Description	Contains drawing number and version number derived from N1 records during NEC input translation.
See Also	Input Formats (Doc. 0403)

`.nec_n2_rev`

Type	Text (0..2)
Entities	LAYER
Default	
Prompt	Drawing Revision (NEC-N2 record)
Description	Contains revision number derived from N2 records during NEC input translation.
See Also	Input Formats (Doc. 0403)

`.nec_n3_edit_level`

Type	Text (0..1) Min_length=0 Max_length=1
Entities	LAYER
Default	
Prompt	Editing Level (NEC-N3 record)
Description	Contains editing level information derived from N3 records during NEC input translation.
See Also	Input Formats (Doc. 0403)

`.nec_n3_lyr_type`

Type	Text (0..3) Min_length=0 Max_length=3
Entities	LAYER
Default	
Prompt	Layer Type (NEC-N3 record)
Description	Contains layer type information derived from N3 records during NEC input translation.
See Also	Input Formats (Doc. 0403)

`.nec_n3_pol`

Type	Text (0..1) Min_length=0 Max_length=1
Entities	LAYER
Default	
Prompt	Data Polarity (NEC-N3 record)
Description	Contains data polarity information derived from N3 records during NEC input translation.
See Also	Input Formats (Doc. 0403)

`.nec_n3_prod_rev`

Type	Text (0..2) Min_length=0 Max_length=2
Entities	LAYER
Default	
Prompt	Production Revision (NEC-N3 record)
Description	Contains data production revision information derived from N3 records during NEC input translation.
See Also	Input Formats (Doc. 0403)

.nec_n3_target_lyr

Type	Text (0..2) Min_length=0 Max_length=2
Entities	LAYER
Default	
Prompt	Target Layer (NEC-N3 record)
Description	Contains target layer information derived from N3 records during NEC input translation.
See Also	Input Formats (Doc. 0403)

Maintained for compatibility with Enterprise 3000

.needs_guarding

Type	Boolean
Entity	COMPONENT
Description	If TRUE, this components needs to be protected by guard components else it is likely to be knocked off the board accidentally.
See Also	

.net_name

Type	Text
Entities	FEATURE
Default	No
Description	This attribute is set by the netlist layer. Contains the net name. Values: 0 to 64.
See Also	The Netlist Analyzer (Doc.0506) and The Netlist Optimizer (Doc.0603)

.net_physical_type

Type	Text
Entities	FEATURE
Default	No
Description	Physical type of constraint area used for search in table that contains physical parameters of nets. Values: 0 to 64.
See Also	The Netlist Analyzer (Doc.0506) and The Netlist Optimizer (Doc.0603)

.net_point

Type	Boolean
Entities	FEATURE
Default	No
Description	This attribute, when attached to a pad in an inner layer, defines the pad as an internal test point.
See Also	The Netlist Analyzer (Doc.0506) and The Netlist Optimizer (Doc.0603)

.net_spacing_type

Type	Text
Entities	FEATURE
Description	(0 to 64).SQA area name of an SQA area map.
See Also	The Netlist Analyzer (Doc.0506) and The Netlist Optimizer (Doc.0603)

.net_type

Type	Text
Entities	
Default	
Description	(0 to 64). A name for the type of net. The .net_type attribute can reference the set of routing rules for a net.
See Also	The Netlist Analyzer (Doc.0506) and The Netlist Optimizer (Doc.0603)

.neutralization_angle

Type	Float
Entities	COMPONENT
Default	
Description	The angle of rotation counter-clockwise from Valor standard orientation. Range = 0º to 360º.
See Also	

`.neutralization_info`

Type	Text
Entities	STEP
Default	
Prompt	Neutralization Information
Description	This attribute contains the information <CPL|CAD>;<DataCenter>;Site. Site is read from configuration parameter organization of the computer where Rotation Neutralization was performed. Min_length = 0 Max_len = 200
See Also	

`.neutralization_reviewed`

Type	Boolean
Entities	
Default	
Description	The attribute attached to each component in a reviewed package, i.e. a package not accepted automatically as being Known or Safe
See Also	

`.neutralization_ss_layers`

Type	Text
Entities	STEP
Default	
Prompt	Neutralization Silkscreen
Description	An attribute indicating the layer to be considered a silkscreen layer in Rotation Neutralization.
See Also	

`.nfl`

Type	Boolean
Entities	FEATURE
Default	No
Description	Indicates that a line is not functional (applies to features).
See Also	

.nfp

Type	Boolean
Entities	FEATURE
Default	No
Description	Indicates that a pad is not functional (applies to features).
See Also	

Maintained for compatibility with Enterprise 3000

.no_fiducial_check

Type	Boolean
Entity	COMPONENT
Description	Components with this attribute are not checked for the "Component Covers Fiducial" category, or for any of the categories under the Coverage test.
See Also	

Maintained for compatibility with Enterprise 3000

.no_hole_under

Type	Boolean
Entity	COMPONENT
Description	If TRUE, no drill holes are allowed under this component
See Also	

Maintained for compatibility with Enterprise 3000

.no_text_under

Type	Boolean
Entities	COMPONENT
Default	No
Description	This attribute, when attached to a component, forbids silk screen text to be placed under the component outline. Printed components (e.g. edge connectors) may not have this attribute.
See Also	

Maintained for compatibility with Enterprise 3000

`.no_tp_under`

Type	Boolean
Entities	COMPONENT
Default	No
Description	This attribute, when attached to a component, forbids testpoints to be placed under the component outline. Printed components (e.g. edge connectors) may not have this attribute.
See Also	

Maintained for compatibility with Enterprise 3000

`.no_uncap_via_under`

Type	Boolean
Entity	COMPONENT
Description	If TRUE, no uncapped vias are allowed under this component.
See Also	

`.nomenclature`

Type	Boolean
Entities	FEATURE
Default	No
Description	This attribute defines a feature as a nomenclature (legend) feature. This attribute affects the fabrication analysis by directing spacing checks between such features into a new category (Text to text).
See Also	Fabrication Analysis (Doc.0503)

`.nomenclature_type`

Type	Text
Entities	SYMBOL
Default	
Description	This attribute describes the nomenclature string type. Can be between 0 and 100 characters. Values: Standard
See Also	Graphic Editor (0601): Add Rotated Text

`.non_tp`

Type	Boolean
Entities	FEATURE
Default	No
Description	A feature that is tagged with this attribute will not be taken as a net testpoint. It is used for connectivity calculation but will not be used as a test point (bare board testing).
See Also	The Netlist Optimizer (Doc.0603)

`.notest_req`

Type	Boolean
Entities	FEATURE
Default	No
Description	Any pad marked with this attribute will not be tested. If it is tested by other means, drop back will be performed.
See Also	The Netlist Optimizer (Doc.0603)

Maintained for compatibility with Enterprise 3000

`.num_local_fiducials`

Type	Integer (0 - 20)
Entities	COMPONENT
Default	0
Description	This attribute defines how many local fiducials are expected to be inside or near a component. This is checked during Fiducial Analysis.
See Also	

`.numbered_layer`

Type	Text (0...500)
Entities	LAYER
Default	
Description	This attribute marks a layer as a numbered layer inPCB Numbering.
See Also	The Graphic Editor (Doc. 0601)

.orbotech_barcode_string

Type	Option (none; top; bottom)
Entity	FEATURE
Default	None
Description	Indicates that a barcode plot stamp feature has/hasn't the text itself beside the bars, and the location of the text, above or bellow the bars.
See Also	Graphic Editor (Doc. 0601)

.orbotech_plot_stamp

Type	Boolean
Entities	FEATURE
Default	No
Description	The attribute is added to a pre-defined text feature to mark it as an Orbotech plot stamp. Plot stamp is a template text that convert to a real value during the plotter RIP process.
See Also	The Graphic Editor (Doc. 0601)

-

.orig_surf

Type	Integer
Entities	FEATURE
Default	
Description	Identifies original surface which will be rebuilt. Range: 0-1000000
See Also	The Graphic Editor (Doc.0601), Reshape>Replace Surface(s)

.osp_pad

Type	Boolean
Entities	FEATURE
Default	None
Description	Attribute assigned to a pad feature to mark it as an OSP Pad. Attribute assigned by the Galvanic Etch Compensation DFM action .
See Also	Graphic Editor (Doc. 0601)

Maintained for compatibility with Enterprise 3000

`.otherside_keepout`

Type	Option (full_area; pins_only)
Entities	COMPONENT
Default	None
Description	This attribute defines for components whether the other side of the board may also contain components in the same area.
See Also	

`.out_angle`

Type	Option (0.0; 90.0; 180.0; 270.0)
Entities	LAYER
Default	0.0
Description	Layer entity attributes with default values that are used by the output translator. These values populate the output screen when selecting the 'step' to be translated.
See Also	The Output Process (Doc.0701)

`.out_break`

Type	Boolean
Entities	SYMBOL; FEATURE
Default	No
Description	Feature and symbol attribute. If this Boolean attribute is set for a specific feature that uses a special symbol the feature will be broken into it's primitives in the output translation stage, regardless of any other output parameters that are set. If the attribute is set for a special symbol (entity attribute) then all features that use these symbols will always be broken into primitive features in the output translation stage, regardless of any other output parameters that are set.
See Also	The Output Process (Doc.0701)

.out_comp

Type	Float (-100.0 - 100.0)
Entities	LAYER
Default	0.0
Description	Layer entity attributes with default values that are used by the output translator. These values populate the output screen when selecting the 'step' to be translated.
See Also	The Output Process (Doc.0701)

.out_drill_full

Type	Boolean
Entities	STEP
Default	No
Description	The STEP entity attribute used by the Auto Drill Manager. This attribute can be used for drilling coupon STEPs that need to be fully drilled before continuing to the next step & repeat entity.
See Also	The Output Process (Doc.0701)

.out_drill_optional

Type	Boolean
Entities	FEATURE; STEP
Default	No
Description	Used by the 'Auto Drill Manager'. Both a STEP entity and feature attribute. If the drill feature is set with this attribute it will have the '/' command in front of it in the final output file. This means that the drill is optional. If a step entity attribute is set then all the commands that are part of that step will have the '/' command at the beginning. Thus, the whole step is optional.
See Also	The Auto Drill Manager (Doc. 0703)

`.out_drill_order`

Type	Integer (-10000 to 10000)
Entities	STEP
Default	0

Description	The STEP entity attribute used by the Auto Drill Manager. The attribute controls the order in which the steps will be drilled. Thus, who is first, second,,,etc.
	 The attribute has the following valid values :
	  0 - no special order for that step
	  1 - first
	  2 - second
	  3 - and above - order from the beginning
	 -1 - last
	 -2 - one before last
	 -3 - and on (drill order from the end)

See Also	The Auto Drill Manager (Doc. 0703)

`.out_flag`

Type	
Entities	
Default	
Description	Influences the translation of Excellon files.
See Also	

`.out_mirror`

Type	Boolean
Entities	LAYER
Default	No
Description	Layer entity attributes with default values that are used by the output translator. These values populate the output screen when selecting the 'step' to be translated.
See Also	The Output Process (Doc.0701)

`.out_name`

Type	Text[0..64]
Entities	STEP
Default	None
Description	Entity attribute that is used by the Image output translator. If this attribute is not an empty string it will serve as the entity name on the Image system. If it is an empty string the original Genesis entity name will be used. This attribute is important in cases where the Genesis name does not form a legal Image name. If this attribute is not set the Genesis output translator decides about the new name with its own internal algorithm. **Note:** Legal Image names can contain: all alphanumeric values (a-z, A-Z, 0-9), the minus sign (-), and the underscore (_). The period (.) is *not* allowed.
See Also	The Output Process (Doc.0701)

`.out_nc_ignore`

Type	Boolean
Entities	FEATURE
Default	None
Description	Indicates that a feature is not outputted during drill or rout process
See Also	

`.out_nc_verify`

Type	Boolean
Entities	FEATURE
Default	None
Description	This attribute prevents drill/rout coupons from being output. Features with this attribute are updated during drill/ rout output procedures.
See Also	Graphic Editor - Doc. 0601

.out_orig

Type	Boolean
Entities	FEATURE
Default	None
Description	Sets an origin point for the layer data that is transmitted to the NC routing machine.
See Also	The Output Process (Doc.0701)

.out_polarity

Type	Option (Positive; Negative)
Entities	LAYER
Default	Positive
Description	Layer entity attributes with default values that are used by the output translator. These values populate the output screen when selecting the step to be translated.
See Also	The Output Process (Doc.0701)

.out_rout_optional

Type	Boolean
Entities	FEATURE; STEP
Default	No
Description	Used by the Auto Drill Manager. Both a STEP entity and feature attribute. If drill feature is set with this attribute it will have the '/' command in front of it in the final output file. This means that the drill is optional. If a step entity attribute is set then all the commands that are part of that step will have the '/' command at the beginning. Thus, the whole step is optional.
See Also	The Auto Drill Manager (Doc. 0703)

`.out_rout_order`

Type	Integer (-10000 - 10000)
Entities	STEP
Default	0
Description	STEP entity attribute used by the Auto Drill Manager. The attribute controls the order in which the steps will be drilled. Thus, who is first, second,,,etc. The attribute has the following valid values: 0 - no special order for that step 1 - first 2 - second 3 and above - order from the beginning -1 - last -3 and on - drill order from the end
See Also	The Auto Drill Manager (Doc. 0703)

`.out_scale`

Type	Boolean
Entities	SYMBOL; FEATURE
Default	No
Description	Feature and symbol attribute. In the output translation package there is a special parameter that controls the way features will be scaled. In two of the options the user can specify whether certain features can be scaled or not. This is important in cases where special registration targets would not be scaled together with all the other features. This special output option applies only to features that have this attribute set. In case of a special symbol, the customer can set the attribute, and by this control the scaling of all features that use this symbol.
See Also	The Output Process (Doc.0701)

`.out_x_scale`

Type	Float (0.000001 - 5.0)
Entities	LAYER
Default	1.0
Description	Layer entity attributes with default values that are used by the output translator. These values populate the output screen when selecting the step to be translated.
See Also	The Output Process (Doc.0701)

`.out_y_scale`

Type	Float (0.000001 - 5.0)
Entities	LAYER
Default	1.0
Description	Layer entity attributes with default values that are used by the output translator. These values populate the output screen when selecting the step to be translated.
See Also	The Output Process (Doc.0701)

Maintained for compatibility with Enterprise 3000

`.pad_usage`

Type	Option (toeprint;via;g_fiducial;l_fiducial;tooling_hole)
Entities	FEATURE
Default	None
Description	This attribute defines the specific usage of a pad. It is loaded during the direct EDA translation and by the attribute derivation script.
See Also	

Maintained for compatibility with Enterprise 3000

`.patch`

Type	Boolean
Entities	FEATURE
Default	No
Description	The patches that the pinhole elimination DFM action adds are tagged with this attribute.
See Also	

`.pattern_fill`

Type	Boolean
Entities	FEATURE
Default	No
Description	This attribute is attached to features which are added during a pattern fill operation, either manually or through the Copper Balance DFM action.
See Also	The Graphic Editor (Doc.0601) DFM Actions (Doc.0602)

`.pilot_hole`

Type	Integer (0 - 100000)
Entities	FEATURE
Default	0
Description	Attribute given to pads that are pilot holes in a chain (holes that are drilled in each tool down in the chain rout path before routing the chain). Pilot holes are set from the chaining popup. The value of the attribute is the serial chain number that this pilot hole belongs to. When merging or inserting chains the pilot holes will be updated automatically.
See Also	The Auto Drill Manager (Doc.0703)

`.pitch` **Not currently implemented**

Type	Float
Entities	FEATURE
Default	
Description	NOT CURRENTLY USED
See Also	

`.plated_type`

Type	Option (standard; press_fit)
Entities	FEATURE
Default	None
Description	This attribute is attached to hole features in drill layers. It defines the type of plated holes. Set using Attributes Popup or DTM.
See Also	Drill Tool Manager (Doc.0404)

`.pnl_class`

Type	Text
Entity	STEP
Default	

.pnl_class

MIN_LEN	0
MAX_LEN	64
Prompt	Panel class
Description	The value of the attribute is the name of the panel class whose parameters were used by the Automatic Panelization algorithm. Used only when the step is created by the Automatic Panelization Package.
See Also	

.pnl_pcb

Type	Text
Entity	STEP
Default	
MIN_LEN	0
MAX_LEN	64
Prompt	Panelized step
Description	The value of the attribute is the name of the panelized PCB whose parameters were used by the Automatic Panelization algorithm. Used only when the step is created by the Automatic Panelization Package.
See Also	

.pnl_place

Type	Text
Entity	STEP;FEATURE
Default	
MIN_LEN	0
MAX_LEN	64
Prompt	Placement rule/directive
Description	Applies to STEP and FEATURE. The value of the attribute is the name of the placement rule used by which an element was added to the panel overlay. Used only when an element is added to the panel overlay by the Automatic Panelization Package.
See Also	

.pnl_scheme

Type	Text
Entity	STEP
Default	
MIN_LEN	0
MAX_LEN	64
Prompt	Panelization scheme
Description	The value of the attribute is the name of the panelization scheme whose rules were used when creating the panel overlay. Used only when the panel step was created by the Auto Panelization Package.
See Also	

Maintained for compatibility with Enterprise 3000

.polarity_marker

Type	Integer
Entity	COMPONENT
Default	1
Description	An attribute attached to a component indicting the pin number of the polarity marker (usually pin #1). Range = 1 to 10000.
See Also	

Maintained for compatibility with Enterprise 3000

.primary_side

Type	Option (Top; Bottom)
Entity	JOB
Default	Top
Description	Indicates the primary side for this job.
See Also	

.rotated_of

Type	Text
Entity	STEP
Default	

.rotated_of

MIN_LEN	0
MAX_LEN	64
Prompt	Source of rotated step
Description	Source step of a rotated step
See Also	

.rotation_angle

Type	Float
Entity	STEP
Default	0.0
MIN_VAL	-360.0
MAX_VAL	360.0
Prompt	Step rotation angle (deg.)
Description	Angle of rotation (in degrees) that this step was rotated. (applies to steps)
See Also	

.rout_chain

Type	Integer (0 - 100000)
Entities	FEATURE
Default	0
Description	For each feature that belongs to a rout chain this attribute represents the serial number of the chain. Features belonging to that chain are rearranged in the features database according to their order inside the chain. Additional attributes that are added to a chained feature: .feed, .speed, .rout_flag, .comp
See Also	The Auto Rout Manager (Doc. 0704)

.rout_cutoff_feed

Type	Integer (0 - 100000)
Entities	FEATURE
Default	0
Description	For a chained surface feature, this attribute defines the feed of the chain cutoff.
See Also	The Rout Editor (Doc.0606)

`.rout_flag`

Type	Integer (0 - 100000)
Entities	FEATURE
Default	0
Description	For each chained feature this attribute represents a numeric value supplied to a chain to provide data for the automatic process of the Auto Rout Manager.
See Also	The Auto Rout Manager (Doc. 0704)

`.rout_plated`

Type	Boolean
Entities	FEATURE
Default	None
Description	Indicates that a feature on a rout layer is plated. **Note:** The **`.drill`** attribute can still be used in rout layers, but the **`.rout_plated`** attribute takes precedence on rout layers, if both exist.
See Also	

`.rout_plunge_feed`

Type	Integer (0 - 100000)
Entities	FEATURE
Default	0
Description	For a chained surface feature, this attribute defines the feed of the chain plunge.
See Also	The Rout Editor (Doc.0606)

`.rout_plunge_mode`

Type	Option (none;straight;overlap;arc;diag;diag_ang)
Entities	FEATURE
Default	none
Description	For a chained surface feature, this attribute defines the mode of the chain plunge.
See Also	The Rout Editor (Doc.0606)

`.rout_plunge_val_a`

Type	Float (0.0 - 100.0) (inch/mm)
Entities	FEATURE
Default	0.0
Units	INCH_MM
Description	For a chained surface feature, this attribute defines one of the chain plunge parameter.
See Also	The Rout Editor (Doc.0606)

`.rout_plunge_val_b`

Type	Float (0.0 - 100.0) (inch/mm)
Entities	FEATURE
Default	0.0
Units	INCH_MM
Description	For a chained surface feature, this attribute defines one of the chain plunge parameter.
See Also	The Rout Editor (Doc.0606)

`.rout_plunge_val_c`

Type	Float (0.0 - 100.0) (inch/mm)
Entities	FEATURE
Default	0.0
Units	INCH_MM
Description	For a chained surface feature, this attribute defines one of the chain plunge parameter.
See Also	The Rout Editor (Doc.0606)

`.rout_plunge_val_d`

Type	Float (0.0 - 100.0) (inch/mm)
Entities	FEATURE
Default	0.0
Units	INCH_MM

Description	For a chained surface feature, this attribute defines one of the chain plunge parameter.
See Also	The Rout Editor (Doc.0606)

`.rout_plunge_val_e`

Type	Float (0.0 - 100.0) (inch/mm)
Entities	FEATURE
Default	0.0
Units	INCH_MM
Description	For a chained surface feature, this attribute defines one of the chain plunge parameter.
See Also	The Rout Editor (Doc.0606)

`.rout_plunge_val_f`

Type	Float (0.0 - 100.0) (inch/mm)
Entities	FEATURE
Default	0.0
Units	INCH_MM
Description	For a chained surface feature, this attribute defines one of the chain plunge parameter.
See Also	The Rout Editor (Doc.0606)

`.rout_plunge_val_v1`

Type	Integer (0 - 90) (grad)
Entities	FEATURE
Default	0
Description	For a chained surface feature, this attribute defines one of the chain plunge parameter.
See Also	The Rout Editor (Doc.0606)

`.rout_plunge_val_v2`

Type	Integer (0 - 90) (grad)
Entities	FEATURE
Default	0
Description	For a chained surface feature, this attribute defines one of the chain plunge parameter.
See Also	The Rout Editor (Doc.0606)

`.rout_pocket_direction`

Type	Option (standard; opposite)
Entities	FEATURE
Default	Standard
Description	For a chained surface feature, this attribute defines the rout direction of the chain pocket.
See Also	The Rout Editor (Doc.0606)

`.rout_pocket_feed`

Type	Integer (0 - 100000)
Entities	FEATURE
Default	0
Description	For a chained surface feature, this attribute defines the feed of the chain pocketing.
See Also	The Rout Editor (Doc.0606)

`.rout_ pocket_mode`

Type	Option (none; concentric)
Entities	FEATURE
Default	none
Description	For a chained surface feature, this attribute defines the mode of the chain pocket.
See Also	The Rout Editor (Doc.0606)

`.rout_pocket_overlap`

Type	Float (-100.0 …+100.0) (inch/mm)
Entities	FEATURE
Default	0.0
Units	INCH_MM
Description	For a chained surface feature, this attribute defines one of the chain plunge parameter.
See Also	The Rout Editor (Doc.0606)

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`.rout_tool`

Type	Float (0.0 - 100.0) (inch/mm)
Entities	FEATURE
Default	0.0
Units	INCH_MM
Description	For a chained surface feature, this attribute defines the tool size for the outline and plunge rout path.
See Also	The Rout Editor (Doc.0606)

`.rout_tool2`

Type	Float (0.0 - 100.0) (inch/mm)
Entities	FEATURE
Default	None
Units	INCH_MM
Description	For a chained surface feature, this attribute defines the tool size for the pocket (rout to dust) rout path.
See Also	The Rout Editor (Doc.0606)

.rout_type

Type	Option (regular; pocket)
Entities	FEATURE
Default	regular
Description	For a chained feature, this attribute defines the type of the chain.
See Also	The Rout Editor (Doc.0606)

.se_coupon

Type	Option (None; Drill; Rout)
Entities	STEP
Default	None
Description	Defines a step as a start/end coupon of the certain type.
See Also	The Graphic Editor. Drill/Rout verification (Doc.0601)

.se_coupon_direct

Type	Option (0;90;180;270)
Entities	LAYER
Default	0
Description	Define the direction from the start point to the next point of start/end coupon.
See Also	The Graphic Editor. Drill/Rout verification (Doc.0601)

.se_coupon_dist

Type	Float (0.0 - 10000.0)
Entities	LAYER
Default	0.0
Units	MIL_MICRON
Description	Minimal distance (mil/micron) between drills/slots in start/ end coupon.
See Also	The Graphic Editor. Drill/Rout verification (Doc.0601)

`.se_coupon_dist_type`

Type	Option (Spacing; Center)
Entities	LAYER
Default	Spacing
Description	Distance is measured between drill/slot edges or centers in start/end coupon.
See Also	The Graphic Editor. Drill/Rout verification (Doc.0601)

`.se_coupon_max_size`

Type	Float (0.0 - 10000.0)
Entities	LAYER
Default	0.0
Units	MIL_MICRON
Description	No verification holes/slots will be created for all tool sizes greater than this parameter (mil/micron).
See Also	The Graphic Editor, Drill/Rout verification (Doc.0601)

`.se_coupon_method`

Type	Option (None; Auto; From Point)
Entities	LAYER
Default	None
Description	Drill/slot location calculation method in start/end coupon
See Also	The Graphic Editor. Drill/Rout verification (Doc.0601)

`.se_coupon_min_hits`

Type	Integer (0 - 10000)
Entities	LAYER
Default	0
Description	Start/end drill coupon. If number of drills of a certain tool is less than required quantity, the verification holes of this size will not be created.
See Also	The Graphic Editor. Drill/Rout verification (Doc.0601)

`.se_coupon_min_size`

Type	Float (0.0 - 10000.0)
Entities	LAYER
Default	0.0
Units	MIL_MICRON
Description	No verification holes/slots will be created for all tool sizes less than this parameter (mil/micron).
See Also	The Graphic Editor. Drill/Rout verification (Doc.0601)

`.se_coupon_mode`

Type	Option (Start_End; Start; End)
Entities	STEP
Default	Start_End
Description	Defines the start/end coupon mode.
See Also	The Graphic Editor. Drill/Rout verification (Doc.0601)

`.se_coupon_order`

Type	Integer (0 - 100)
Entities	STEP
Default	1
Description	Sequential order of the start/end coupon steps of the same type and mode.
See Also	The Graphic Editor. Drill/Rout verification (Doc.0601)

`.se_coupon_slot_angle`

Type	Float (0.0 - 360.0)
Entities	LAYER
Default	0.0
Description	Slot angle in start/end rout coupon (deg)
See Also	The Graphic Editor. Drill/Rout verification (Doc.0601)

`.se_coupon_slot_length`

Type	Float (0.0 - 10000.0)
Entities	LAYER
Default	0.0
Units	MIL_MICRON
Description	Slot length for start/end rout coupon (mil/micron).
See Also	The Graphic Editor. Drill/Rout verification (Doc.0601)

`.se_coupon_split_num`

Type	Option (1;2)
Entities	STEP
Default	1
Description	A split number, the start/end drill coupon belongs to.
See Also	The Graphic Editor. Drill/Rout verification (Doc.0601)

`.sequential_lamination`

Type	Boolean
Entities	LAYER
Default	No
Description	
See Also	

`.shave`

Type	Boolean
Entities	FEATURE
Default	No
Description	All the shaves (negative merges) that the silk screen optimization adds in merge mode are tagged with this attribute.
See Also	DFM Actions (Doc. 0602)

`.sip`

Type	Option
Entities	FEATURE
Default	None
Description	Indicates whether the SIP (self-intersecting polygon) has been detected or repaired.
See Also	DFM Actions (Doc. 0602)

`.sliver_fill`	Boolean
Entities	FEATURE
Default	No
Description	All the fills which are added by the sliver fill DFM actions are tagged with this attributes.
See Also	DFM Actions (Doc.0602)

`.smd`

Type	Boolean
Entities	FEATURE
Default	No
Description	This attribute should be attached to outer layer pads which are lands for SMD components. It is set by the 'Set SMD Attribute' Cleanup Action.
See Also	Cleanup Actions (Doc.0502)

Maintained for compatibility with Enterprise 3000

`.smt_direction_bottom`

Type	Option (Left2Right; Top2Bottom; Right2Left; Bottom2Top)
Entity	STEP
Default	Right2Left
Description	Defines the direction of the SMT process flow on the bottom side.
See Also	

Maintained for compatibility with Enterprise 3000

`.smt_direction_top`

Type	Option (Left2Right;Top2Bottom;Right2Left;Bottom2Top)
Entity	STEP
Default	Right2Left
Description	Defines the direction of the SMT process flow on the top side.
See Also	

Maintained for compatibility with Enterprise 3000

`.source_llayer`

Type	Text
Entity	FEATURE
Default	
Description	(0-64). This attribute is used by the Enterprise Mentor EDA translator to identify the "Source Logical Layer" of features (traces) appearing on signal or mixed layers. The translator uses this attribute in a filtering stage that addresses pad/signal mapping.
See Also	

`.source_name`

Type	Text
Entities	STEP;SYMBOL
MIN_LEN	0
MAX_LEN	64
Prompt	Original entity name
Description	The name of the source step (or symbol) of a flipped step (or symbol).
See Also	

`.spacing_req`

Type	Float (0.0 > 100.0)
Entities	FEATURE
Default	0
Description	Specifies required spacing from a feature
See Also	Analysis Actions (Doc. 0503)

.speed	
Type	Integer (0 - 100000)
Entities	FEATURE
Default	0
Description	For a chained feature this attribute sets the spindle speed (in revolutions per minute) when routing.
See Also	The Auto Rout Manager (Doc.0704)

`.spo_h_fact`	
Type	Integer (0.3 <-> 2.0)
Entities	FEATURE
Default	
Description	(0.3 <-> 2.0). When **`.spo_h_mode = Factor`**, this attribute specifies the factor by which paste pad heights are sized relative to their SMD pads. For example, 0.9 means height is 90% of SMD pad.
See Also	DFM Actions (Doc. 0602)

`.spo_h_mode`	
Type	Integer (values = Distance, Factor, Value).
Entities	FEATURE
Default	
Description	Defines how heights of paste pads are sized: by distance, factor or value. OR, COULD BE THIS: Defines how heights of paste pads are to be sized proportionately (by values other than those specified in the parameters): by distance, factor or value.
See Also	DFM Actions (Doc. 0602)

`.spo_h_val`	**OLD**
Type	Integer (-500 to +500).
Entities	FEATURE
Default	
Description	When .spo_h_mode = Distance, **.spo_h_val** is the reduction/ expansion of the paste pad width relative to the SMD pad width. For example, .spo_h_val = 5.0 mils shrinks paste pad by 5.0 mils (2.5 mils on each side) relative to SMD pad width. Positive number results in smaller paste pad, negative number in larger paste pad. When .spo_h_mode = Value, **.spo_h_val** becomes the absolute width of the paste pad (for example, 5.0 mils becomes the actual width of the paste pad).
See Also	DFM Actions (Doc. 0602)

`.spo_h_val`	**Revised**
Type	Integer (-500 to +500).
Entities	FEATURE
Default	
Description	When `.spo_h_mode = Distance`, this attribute is the reduction/expansion of the paste pad height relative to the SMD pad width. For example, `.spo_h_val = 5.0 mils` shrinks paste pad by 5.0 mils (2.5 mils on each side) relative to SMD pad width. Positive number results in smaller paste pad, negative number in larger paste pad. When `.spo_h_mode = Value`, this parameter becomes the absolute height of the paste pad (for example, 5.0 mils becomes the actual height of the paste pad).
See Also	DFM Actions (Doc. 0602)

`.spo_move_center`	
Type	Integer (-100 to + 100).
Entities	FEATURE
Default	
Description	To move the paste pad from the SMD pad center. A positive value will move the paste from the component center out. A negative value will move the paste towards the component center.
See Also	DFM Actions (Doc. 0602)

`.spo_p_mode`	
Type	Option
Entities	FEATURE, COMPONENT
Default	
Description	Defines how paste pads for non-standard symbol SMD pads are sized: by distance, or area.
See Also	

`.spo_s_mode`	**OLD**
Type	Integer (values = Distance, Factor, Value).
Entities	FEATURE
Default	
Description	Defines how heights of paste pads are sized: by distance, factor or value.
See Also	DFM Actions (Doc. 0602)

`.spo_s_mode`	**Revised**
Type	Integer (values = Distance, Factor, Value).
Entities	FEATURE
Default	
Description	Defines how paste pads are to be shrunk proportionately (by values other than those specified in the parameters): by distance, factor or value.
See Also	DFM Actions (Doc. 0602)

`.spo_s_fact`	
Type	Integer (0.3 <-> 2.0)
Entities	FEATURE
Default	
Description	(0.3 <-> 2.0). When `.spo_s_mode = Factor`, this attribute specifies the factor by which paste pads are shrunk proportionately relative to their SMD pads. For example, 0.9 means the paste pad is shrunk to a size that is 90% of the size of its related SMD pad.
See Also	DFM Actions (Doc. 0602)

`.spo_s_val`	**Revised**
Type	Integer (-500 to +500).
Entities	FEATURE
Default	
Description	When **`.spo_s_mode = Distance`**, this attribute is the value by which paste pads are shrunk proportionately relative to their SMD pads. For example, **`.spo_s_val = 5.0 mils`** shrinks a paste pad proportionately by 5.0 mils (2.5 mils on each side) relative to the related SMD pad. Positive number results in smaller paste pad, negative number in larger paste pad. When **`.spo_s_mode = Value`**, this parameter becomes the absolute value by which a paste pad is shrunk proportionately. For example, **`.spo_s_val = 5.0 mils`** shrinks the paste pad 5.0 mils on both sides relative to its related SMD pad.
See Also	DFM Actions (Doc. 0602)

`.spo_w_mode`	**Revised**
Type	Integer (values = Distance, Factor, Value).
Entities	FEATURE
Default	
Description	Defines how paste pad widths are to be shrunk by values other than those specified in the parameters: by distance, factor or value.
See Also	DFM Actions (Doc. 0602)

`.spo_w_fact`	
Type	Integer (0.3 <-> 2.0)
Entities	FEATURE
Default	
Description	(0.3 <-> 2.0). When **`.spo_w_mode = Factor`**, this attribute specifies the factor by which paste pad widths are shrunk relative to their SMD pads. For example, 0.9 means the paste pad width is shrunk to 90% of the width of its related SMD pad.
See Also	DFM Actions (Doc. 0602)

.spo_w_val	**Revised**
Type	Integer (-500 to +500).
Entities	FEATURE
Default	
Description	When **.spo_w_mode = Distance**, this attribute is the value by which paste pad widths are shrunk relative to their SMD pads. For example, **.spo_w_val = 5.0 mils** shrinks a paste pad width by 5.0 mils (2.5 mils on each side) relative to the related SMD pad. Positive number results in smaller paste pad, negative number in larger paste pad. When **.spo_w_mode = Value**, this parameter becomes the absolute value by which paste pad width is shrunk. For example, **.spo_w_val = 5.0 mils** shrinks the paste pad width 5.0 mils on both sides relative to its related SMD pad.
See Also	DFM Actions (Doc. 0602)

`.sr_pcb`

Type	Boolean
Entities	STEP
Prompt	s&r pcb
Default	No
Description	This step attribute indicates the name of the pcb step placed in the panel by automatic panelization.
See Also	

Maintained for compatibility with Enterprise 3000

`.src_orientation`

Type	Integer[-1..3]
Entity	COMPONENT
Default	-1
Description	Defines the zero orientation of this component relative to its orientation in the packages database. That is, the orientation of the component on the automated assembly tape, or (for manually inserted components) the orientation in which pin #1 is "in the same position" for all similar components
See Also	

`.step_numbering`

Type	Text[0..500]
Entity	FEATURE
Description	Text features used for PCB numbering are assigned this attribute.
See Also	

Maintained for compatibility with Enterprise 3000

`.string`

Type	Text[0..1000]
Entity	FEATURE
Description	For nomenclature features, the value of this attribute is the original text string which the feature is part of.
See Also	

Maintained for compatibility with Enterprise 3000

.string_angle

Type	Float [0..360]
Entity	FEATURE
Description	For nomenclature features, the value of this attribute is the original (in the input file) text rotation angle which the feature is part of. This attribute is assigned to translated jobs of formats: Cadence Allegro BRD/APD, Mentor BoardStation, PADS PowerPCB.
See Also	

Maintained for compatibility with Enterprise 3000

.string_mirrored

Type	Boolean
Entity	FEATURE
Default	No
Description	Assigned to mirrored strings.
See Also	

.surface_outline_widths

Type	Float (000.1 > 100.0)
Entities	FEATURE
Default	0.001
Description	Assigned to area shapes created from closed polylines. Value = the width of the source polyline.
See Also	The Graphic Editor (Doc.0601)

.tapering_feature

Type	Boolean
Entities	FEATURE
Default	No
Description	If set, indicates a tapered feature.
See Also	The Graphic Editor (Doc.0601)

.tear_drop

Type	Boolean
Entities	FEATURE
Default	No
Description	This attribute is attached to features which are added during a tear drop operation, either manually or through the Copper Balance DFM action.
See Also	The Graphic Editor (Doc.0601) DFM Actions (Doc.0602)

Maintained for compatibility with Enterprise 3000

.technology

Type	Text
Entities	JOB
Default	None
Description	(0-100) Defines the technology used in creating the job. Currently it is set automatically in the CADIF process.
See Also	

Maintained for compatibility with Enterprise 3000

.test_point

Type	Boolean
Entities	FEATURE
Default	No
Description	This attribute is attached to features which are used for In-Circuit Testing operations. It is loaded during the direct EDA translation and is used during the Testpoint Analysis action.
See Also	

Maintained for compatibility with Enterprise 3000

`.test_potential`

Type	Option
Entities	FEATURE
Default	No
Description	An attribute attached to features being considered as testpoints (potential testpoints) for In-Circuit Testing operations. It is assigned either by the Testpoint Allocation Action or manually by the user. **potential_tp_by_analysis** - a feature meeting all criteria of the Testpoint Allocation Action. **potential_tp_manually** - a feature to be used as a testpoint though it does not meet all criteria. **not_potential_tp_manually** - a feature not to be used as a testpoint even though it meets all criteria.
See Also	

`.test_req`

Type	Boolean
Entities	FEATURE
Default	No
Description	Must test any pad marked with this attribute. If the test fails, drop back will be performed.
See Also	Netlist Optimizer (0603)

`.text`

Type	Text
Entities	SYMBOL
Default	
Prompt	Text
Description	Size of Text content: 0 to 1000
See Also	Graphic Editor (0601): From Add Text LMC

`.text_line_width`

Type	Float
Entities	SYMBOL
Default	0.0
Prompt	Text line width
Description	Text line width: 0.0 to 100.0
See Also	Graphic Editor (0601): From Add Text LMC

`.text_rotation`

Type	Float
Entities	SYMBOL
Default	0.0
Prompt	Text x size
Description	Angle of text rotation: 0.0° to 360.0°
See Also	Graphic Editor (0601): From Add Text LMC

`.text_version`

Type	Float
Entities	SYMBOL
Default	0.0
Prompt	
Description	Used to define a text version of the text represented as a special symbol.
See Also	Graphic Editor (0601): From Add Text LMC

`.text_x_size`

Type	Float
Entities	SYMBOL
Default	0.0
Prompt	Text x size
Description	0 < size < 0.2 inches - text character size in x dimension. Relevant if text type = 'string'
See Also	Graphic Editor (0601): From Add Text LMC

.text_y_size

Type	Float
Entities	SYMBOL
Default	0.0
Prompt	Text y size
Description	0 < size < 0.2 inches - text character size in y dimension. Relevant if text type = 'string'
See Also	Graphic Editor (0601) From Add Text LMC

Maintained for compatibility with Enterprise 3000

.thvpad_required

Type	Boolean
Entities	COMPONENT
Default	No
Description	This attribute is attached to components which require a thieving pad check during the Padstack Analysis action (e.g. fine pitch SOIC).
See Also	

.tie

Type	Boolean
Entities	FEATURE
Default	No
Description	
See Also	

.tiedown

Type	Boolean
Entities	FEATURE
Default	No
Description	
See Also	

.toep_spacing_req

Type	Float
Entities	COMPONENT
Default	5
Description	Used specifically to attach to components for reporting in the Toeprint to Toeprint category in the Signal Layers Check in Analysis. It defines the maximum spacing within which to report pad to pad spacing measurements Range: 1-500 Units: inch/mm
See Also	Fabrication Analysis (Doc.0503)

Maintained for compatibility with Enterprise 3000

.tooling_hole

Type	Boolean
Entity	FEATURE
Description	Used on drill features to indicate that they are tooling holes.
See Also	

.transform_data

Type	Text (0..64)
Entities	STEP
Default	
Prompt	Transformation data
Description	This attribute is necessary for rebuilding dependent steps. If the attribute exists in the step, Genesis saves the data necessary for rebuilding dependent steps, and enables the automatic update of dependent steps. If the attribute does not exist in the step (old jobs), automatic update will be canceled. Genesis will not save the data necessary for rebuilding dependent steps.
See Also	Engineering Toolkit (Doc. 0102)

`.via_type`

Type	Option (drilled; laser; photo)
Entity	FEATURE
Options	standard;micro
Description	This attribute is attached to hole features in drill layers. Indicates how a via hole is drilled. Set using Attributes Popup or DTM.
See Also	Drill Tool Manager (Doc.0404)

Maintained for compatibility with Enterprise 3000

`.viacap_layer`

Type	Option (Top; Bottom; Both; None)
Entity	STEP
Default	None
Description	Defines on which layer via capping can occur, if any.
See Also	

`.wheel_type`

Type	Option (Gerber; Tools)
Entities	WHEEL
Default	Gerber
Description	This attribute specifies for a wheel whether it is used for Gerber files translation or for drill file translation.
See Also	The Wheel Template Editor (Doc.0402)

Chapter 4   *Dbutil - Off-line Database Operations*

dbutil

Path	**$GENESIS_DIR/e$GENESIS_VER/misc/dbutil**
Syntax	**dbutil <func> [function params]**
Description	This program enables you to perform various operations on Genesis databases. dbutil needs to run in the Genesis 2000 environment as it communicates with the gnd server.

The following functions are supported:

dbutil import <db_name> [job1 ...]

Where:

    db_name = name of database

    jobn = dir(s) of job(s) to import

The import function imports external ODB format job directories into the chosen database by moving the job directories into the database directory and updating the 'joblist' with the new entries. If the job directory is already in the destination database location, only the joblist is updated.

Example   The following command imports the three job directories job1, job2, job3 (in the current directory) into the database 'db1' by moving the directories.

dbutil import db1 job1 job2 job3
dbutil import_copy <db_name> [job1 ...]

    db_name = name of database

    jobn = dir of job to import

The 'import_copy' function imports external ODB format job directories into the chosen database by copying the job directories into the database directory and updating the 'joblist' with the new entries. If the job directory is already in the destination database location, only the joblist is updated.

Example   The following command imports the three job directories job1, job2, job3 (in the current directory) into the database **db1,** by copying the directories.

dbutil import_copy db1 job1 job2 job3
dbutil move <job_name> <db_name>

    job_name = source job name

    db_name = destination db

The 'move' function moves a job from its current database to the database specified by <db_name>. This function will physically move the job directory and update the job's entry in the 'joblist'

Example   The following command moves job1 from it's current database to database 'db2'.

dbutil move job1 db2
dbutil rename <job_name> <new_name>

> **job_name** = source job name

> **new_name** = new job name (same db)

The 'rename' function renames a job in its current database This function will rename the job directory to the name specified in <new_name> and update the job's entry in the 'joblist'.

This function is equivalent to performing a rename from the Engineering Toolkit.

Example   The following command renames job1 to job1.org

dbutil rename job1 job1.org
dbutil copy <src_job> <dst_job>

> **src_job** = source job name

> **dst_job** = destination job name

- 'copy' function copies a job in its current database
- function will copy job **<src_job>** to **<dst_job>**
- function is equivalent to performing a copy from the Engineering Toolkit.

Example   The following command copies job1 to job1.new

dbutil copy job1 job1.org
dbutil delete <job_name>

job_name = job to delete

- 'delete' function deletes a job from its current database
- function will delete job **<job_name>**.
- function is equivalent to performing a delete from the Engineering Toolkit.

Example   The following command deletes job1

dbutil delete job1

The list function - The 'list' function prints the desired list of jobs or databases to stdout. If you choose 'jobs', a list of the jobs from the 'joblist' is printed, if you choose 'dbs' a list of the databases from the 'dblist' is printed out. You can use a wildcard notation to filter the list. Make sure that the wildcard parameter 'wild' is in single quotes in order for the shell not to evaluate it.

Example   The following command lists jobs or databases

dbutil list <jobs|dbs> [wild]

> **wild** = used to filter lists

Example   The following command prints out a list of all the databases and their paths:

dbutil list dbs

Example   The following command prints out a list of all jobs with the suffix .old and their databases:

dbutil list jobs '*.old'
dbutil lock <mode> <job_name>

> **mode** = 'in' to CHECK IN; 'out' to CHECK OUT; 'test' to get state
>
> **job_name** = name of job

The lock function - The 'lock' function enables you to perform 'Job Access Control' operations that check in/out jobs per user. The process uses the environment variable **$USER** as the user name to perform the functions under. This function is equivalent to performing lock operations from the Engineering Toolkit.

Example   The following command checks Out job job1

dbutil lock out job1

Example   The following command checks In job job1

dbutil lock in job1

Example   The following command prints out the lock status of job1

dbutil lock test job1
dbutil check [y]

> **Note**   Run a check on all databases
>
>   y = answer yes to all queries

Examples   **dbutil lock list by_job '*.old**' - Prints out a list of all the checked out jobs with the suffix **.old** and their user name.

dbutil lock list by_user 'mi*'- Prints out a list of all the checked out jobs of the user name with the prefix **mi**.

In the 'lock' function, "list' mode is permitted. In this case, the command appears like this: **lock list <by_job | by_user> [wild]**

This function prints out a list of checked-out jobs and their user names to **stdout**. You can use a wildcard notation to filter the list. Make sure that the wildcard parameter 'wild' is in single quotes in order for the shell not to evaluate it.

If you choose **by_job**, **[wild]** will give the appropriate results according to job name. If you choose **by_user**, **[wild]** will give the appropriate results according to user name.

Check function - The 'check' function performs a check and repair on all the databases defined in the 'dblist'. The function performs the following operations:

1. Check dblist entries

    - Prints out a warning for every entry which has a path that does not exist.

2. Check joblist entries

    - Deletes entries that point to nonexistent database.

- Deletes entries that point to nonexistent job directories.

- Deletes duplicate job entries (same job name).

- Print a warning if the genesislib job entry does not exist.

3. Check database directories

   - Adds entries to the joblist for each job directory in a database that is not in the joblist

   - Prints out a Warning if a job directory exists in another database.

4. Check RCS entries

   - Checks In any jobs that do not exist.

5. Without the 'y' parameter, all repair operations are preceded with an operator confirmation.

Example   The following command performs a non-confirmation check of all the database elements.

dbutil check y
dbutil path <jobs|dbs> <name>

  get path of job or database

  name = name of job or database

 The 'path' function prints out the full path of the specified element.

Example   The following command prints out the full path of database db1

dbutil path dbs db1

Example   The following command prints out the full path of job job1

dbutil path jobs job1

Chapter 5   *Interactive Graphic User Interface Utility*

GUI

Path	$GENESIS_DIR/e$GENESIS_VER/all/gui
Syntax	gui [-r | -n | -q] [file] -r Disable close on \<enter\> (Enabled by default) -n Disable automatic raise (Enabled by default) -q Redefines quote character (Defaults to ")
Description	Gui is a very useful utility for adding graphical user interface elements to scripts. By incorporating gui inside scripts, they provide a much easier and error free input mechanism for the casual user.

- GUI receives as its main argument a directives file. This file contains simple directives which are translated into graphical user interface widgets. If no input file is given, input is read from standard input.

- When the last command (or the terminating END command) is read from the file, the program will pop up the resulting window, with all the widgets displayed.

- At this point the program waits for the operator to complete the input and press the close button, which is always at the bottom of the window.

- Once this is done, the program reads the widgets and writes their contents to standard output. The information is written in a format which is according to csh syntax. This makes it quite easy to redirect the results into a file, source it, and immediately have access to all the user input.

- If you need services that GUI does not provide, there are several cost-free cross-platform tools available (e.g. Tcl/Tk).

- Frontline does not plan to extend GUI's functionality.

Example

```
# Open a window
WIN 200 200
# Define font (Times/Bold/Italic 18 points )
FONT tbi18
# Define Background Color
BG  aquamarine
# Define Foreground Color
FG  black
# Label definition
LABEL QUESTIONAIRE
FONT cbr14
```

```
# Text Fields
TEXT first_name First Name :
TEXT fam_name  Family Name :
# Radio Box Field
RADIO sex        'Sex          :' H 1 red
    Male
    Female
END
BW 1
BG Goldenrod
LABEL Hobbies
BW 0
# Start horizontal form
FORM
# Left element - a list
LIST hobbies 5 M 1
    Fishing
    Cycling
    Stamp Collection
    Hiking
    Swimming
END
BG 997070
FONT tbi14
# Right Element - a label
 LABEL <--- Confidential Information
ENDFORM
BG  aquamarine
END
```
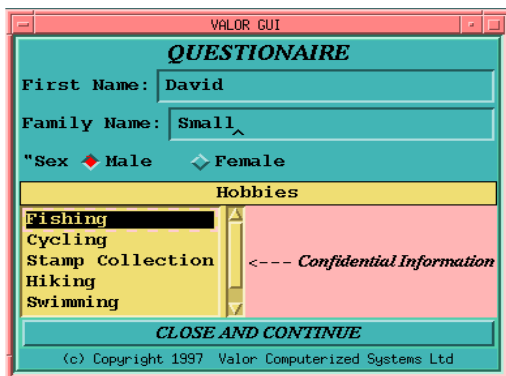
GUI example and standard output results

List of Directives

BG color

Description	Sets the current background color for all the following widgets.
Parameters	color a number representing a color in rrggbb (e.g. 990000 for red) or a name of a color, as exists in the X11 rgb.txt file
Note	This directive may not work for some Linux OS.

BW width

Description	Sets the current border width for all the following widgets.
Parameters	width a number between 1 and 10

CLABEL text

Description	Sets the label which appears on the 'Close' button. The default is CLOSE AND CONTINUE.
Parameters	text any string

DTEXT name text

Description	Sets the text field <name> (as defined with the TEXT directive) with the given default text string.
Parameters	name - not displayed. The name of the text field to set. text - the text to be displayed

END

Description	Terminates a list, radio, option or the whole directive file
Parameters	none

ENDFORM

Description	Terminates a form defined with the FORM command.
Parameters	none

FG

Description	Sets the current foreground color for all the following widgets.
Parameters	color a number representing a color in rrggbb (e.g. 990000 for red) or a name of a color, as exists in the X11 rgb.txt file
Note	This directive may not work for some Linux OS.

FONT spec

Description	Sets the current font for all the following widgets. The default is tbr14.
Parameters	spec a string of the form xyznn where x = c(ourier), h(elvetica) or t(imes) y = b(old) , m(edium) z = r(egular) i(talic) nn = 8,10,12,14,18,24

FORM radio button

Description	Start a horizontal form and put widgets inside until ENDFORM. Radio and button are optional name of a radio-box and number of a button (starting with 1) which control the sensitivity of the form.
Parameters	radio - a name of a radio element which control the form button - the serial number of the button which enables the form

LABEL text

Description	Create a centered label with the given text. Font and colors are defined by previous directives. If the label contains a legal path to a X11 bitmap, preceded by the character '@', the bitmap will be displayed instead.
Parameters	text the (multi word) text to display or a bitmap path (@path)

LIST name visnum S/M start

Description	Create a scrolled list of elements, from which the user can select multiple items. The LIST command is followed by a list of items for the list, ended by the END command. See example above.
Parameters	name - not displayed. Used to identify the field during output. visnum - the number of visible items (limited by 1-20) S/M - Single/Multiple selection policy start - which line to start showing the list at

OPTION name title

Description	Create an option menu (A button with a popup list of options). The OPTION command is followed by a list of items in the option popup list, ended by the END command.
Parameters	name - not displayed. Used to identify the field during output. title name - to appear to the left of the option menu. This name can be a string or a bitmap (preceded with the @ character). Specify '.' for an empty title. You can also specify a multi word title by putting it between single quotes.

RADIO name title V/H nc sc

Description	command is followed by a list of items in radio box, ended by the END command. Each item can be a string or a bitmap path (preceded with the @ character).
Parameters	name - not displayed. Used to identify the field during output. title - name to appear to the left of the radio box. This name can be a string or a bitmap (preceded with the @ character). Specify '.' for an empty title. You can also specify a multi word title by putting it between single quotes. V/H - Vertical or Horizontal nc - number of columns sc - select color

TEXT name [len] title

Description	Create an input text field. The field has a label on the left and a place to enter text on the right. If the 2nd parameter is numeric it will be taken as len. Else it will be assumed to be 'title'.
Parameters	name - not displayed. Used to identify the field during output len - the minimum number of characters to be displayed in the text field (default=20) title - text to be displayed to the left of the input field

WIN x y

Description	Must be the first command in each directive file and appear only once. Defines the window and its default upper left position. **Note** Some window managers ignore the coordinates given
Parameters	x,y - default coordinate

Output Definitions

The following widgets generate output when the GUI window is closed:

TEXT - Generate a command in the form: set name = "value"

LIST - Generate a command in the form: set name = ("item1" "item2")

RADIO, OPTION -Generate a command in the form: set name = number (number is the option number, starting with 1)

Chapter 6   *KIT (Keep In Touch)*

The KIT (Keep In Touch) program was designed to improve the knowledge base of everybody who is involved with designing, supporting and implementing Frontline systems.

With this tool we achieve:

- Continuous bidirectional flow of information between the field and the lab

- User friendly accessibility to all information

- A uniform numbering system around the world

- Classification of reports to subjects, priority and many more

The following sections describe the tool and its capabilities.

Operation Modes

The KIT program works in two modes:

Central Mode (CM) - This is the mode which works in the R&D center. In this mode, the master KIT file (`kit_master`) is updated directly.

Field Mode (FM) - This is the mode which works in the subsidiaries and at customers. In this mode, the master file can be viewed and new entries can be created and exported into separate files which will be emailed to R&D for merging into the master file.

In the next sections, whenever a function is pertinent only to one of the modes, it will be specified as (CM only) or (FM only).

Main Screen

The KIT main screen contains the following sections:

Filter Area
Items List
Status Line
Description Area
Actions Buttons

Upon startup, the system reads the master KIT file and displays all the items as single lines in the items list area. The filter can be changed in order to leave only some of the items (e.g. according to priority, customer, office, etc.).

The status line shows how many items are actually shown and the total number of items in the KIT file.

When an item in the list is selected, its description will automatically be shown in the description area.

The action buttons are used for adding a new item or editing an existing one. Importing, rereading and saving are supported in CM only.

KIT Item Parameters

Every KIT item has, in addition to its textual description, several attributes:

ID

Each new item is assigned a unique ID which will escort it from inception to grave. We will not reuse obsolete IDs so the number will remain unique around the globe. Anybody who has the KIT program and master file will immediately be able to understand statements like "ID 243 is very critical for us" or "V1.4F will solve KIT items 183, 189, 203 and 213".

Creation date

Date on which the KIT was created.

Update date

To avoid ambiguity between European and American methods, dates are always entered into the system as yymmdd which is also a logical way for chronological sorting.

Version

The version of the product to which the item is related.

Priority

Four priority levels: Low, Medium, High and Critical

Difficulty

Four levels of difficulties:

Hours - change of a title, message etc.

Days - minor change (1-4 days)

Weeks - more involved change (1-3 weeks)

Months - project

Type

Bug - System does not work as designed

Request - system works as designed but the design needs to be changed

Question - no action to do - only explain existing behavior

Status

Opened - needs to be resolved

Wait - needs to be resolved but is missing information

Closed - no further action is planned (resolved or no action)

Subject

A three letter code describing the area of the system the item belongs to.

Office	A three letter code specifying the originating office of Frontline which sent the item.
Customer	A three letter code specifying the customer which sent the item or was the reason for the item to be created.
Handler	A code specifying the person within Frontlne who is currently responsible for the resolution of the item.
Title	A short description of the item (less than 80 characters)
Author	The person who wrote this item (less than 10 characters)

Display Format

An item in the list is displayed in a concise one line format.

As an example, a line will say:

241 C B D C 950809 - Outputting special moire's to IMAGE (bg)

```
                  O W C - status

                  M W D H  - Difficulty

                  B R Q - Type

                  C H M L - Priority
```

It should be read (with a little practice) as:

ID 241 is a Critical Bug which takes Days and is Closed.

It was updated on 9 Aug, 1995 and was reported by Ben G.

Of course, once selected on the list, the full information is available for those of us who hate shortcuts.

Filter

The fields in the filter closely match the attributes of an item. The filter consists of a 'logical AND' of all its fields. Several important points are worth mentioning:

- Priority, difficulty, creation date and update date have a range of values (e.g. all items between HIGH and CRITICAL).

- Dates should be specified as yymmdd or as the expression $-n where $ is today's date and n is the number of days. This allows the viewer to see only items which were created/updated within the last 7 days ($-7).

- Subject, Office, Customer and Handler can be selected from a choice list. The choice list is built based on the file supplied with the program (e.g. `kit_customers`). The files should not be changed in the field and will be updated from time to time by R&D. Multiple (up to 10) items can be chosen from the list.

- The four fields above and the author field can be set with a separated list of wild card expressions (up to 10 items in the list).

- The ID field overrides any other filter field and will always show one line item (if this ID exists).

- The pattern field is extremely useful for locating items. The field can be set to an extended regular expressions. The search is conducted on the full description of the items, not just the titles, and is extremely fast. The search is case insensitive.

Adding/Editing a KIT item

The addition or editing of items are done within one screen - The KIT Editor. The screen is popped-up with the 'New Item...' or 'Edit Item...' button.

When popped up, the creation and update dates will be set to today's date (this can be avoided if opened with <shift>). The user should fill in the rest. Be sure not to forget any of the items on the page. The system validates that the Subject, Office, Customer and Handler are legal entries in the external files supplied with the program (if customer is not evident, use VLR as a default).

If the input of the description is more involved and the basic text editing window is not satisfactory, you can press the Open Editor button which will start an external editor window according to the definition of the environment variable KIT_EDITOR. If no such variable exists, a window with a vi will be started.

CM only - Pressing OK will close the KIT editor window and update the memory image of the master file (locking will be done automatically at this point).

FM only - Pressing Export File will pop up a confirmation message with the name of the file chosen for output. The item will be written to this file in the same format it is used in the master file. If it is a new item, it will be given ID 0. When the file is mailed to R&D, it will be merged with the Import... option (CM only) into the master file and an ID will be assigned to it. If the exported file is not a new item but an addition to an existing one, PLEASE specify clearly what was added so the manual pasting into the item will be as easy as possible. When a kit item is created in FM, a script, */genesis/sys/hooks/kit_export*, is invoked. This script can be programmed to email the export file to a specific address.

Preparing and Sending a KIT Item to Frontline

This section explains the procedure of sending a bug report or a request for information to Frontline using KIT.

Checking the KIT Item

After creating a KIT item, check that it contains the following:

- A clear description of the problem/request.

- If you are reporting a problem, specify the conditions under which the problem occurred. If possible, also supply information on how to recreate the problem (layer names, coordinates, etc.).

- If you wish to send a data file, specify its location (such as: `/pub/upload/ ZYC/job02.tar.Z`). Provide also its size & its checksum (sum `<FILENAME>`).

- Supply the name and version of the operating system under which Genesis 2000 is running.

- If the KIT item is a complex one, please include in the kit the relevant part of the log file.

Note   After a kit item is created do not add text before the status line (`/ \000000|C|B|H|O|980113|980113|ANL|USW|4.1|VLR|BE`), since this interferes with the import mechanism.

Sending a Job

When the problem you wish to have investigated requires sending Genesis 2000 job/s and other files (such as ERF files), following the rules below will facilitate the process:

- Try to keep the size of the files you send Frontline as small as possible by removing irrelevant steps, symbols, checklists, input & output files, layers etc.

- Try to localize the problem and delete irrelevant features from the layers. The job should cover, as much as possible, the condition you wish to demonstrate and nothing else.

- If the problem is associated with DFM actions, supply the relevant ERF files and parameter values.

Note   As of Version 4.1, you can use the File> Export Job option to display the Export Job Popup in order to compress the data file.

Sending the KIT Item

Email the kit item to:

gen_kit@frontline-pcb.com.

Do **not** attach any data files to your Email; send data files by FTP.

- Use FTP to send data files to **ftp@frontline-pcb.com** and place them in your own customer subdirectory under **/pub/upload/** (such as: **/pub/upload/ZYC/**).

If you do not have a customer subdirectory, place data files in the Frontline subdirectory: **/pub/upload/FLS/** and ask Frontline to create your own customer subdirectory. Any file placed in this directory is read-protected: it can be viewed only by Frontline staff. For added security, every six hours an automatic routine moves these files off the ftp server.

Printing Items

The print button opens the KIT PRINT window. The possibilities of printing include:

Which:

- Selected - one item (selected in the list) will be printed (same format as in the description area).

- List - the current list will be printed.

- Filter File - a special printing based on an external file. This can be used for 'to do' lists of a specific user, etc. (see Filter File structure below).

How (list mode only):

- Title only - prints one line for each item (as in the displayed list) prefixed by a running serial number.

- Full Body - prints the full item (same format as in the description area)

- Format File - allows customization of the printed output based on a specification found in a file (see Format File structure below)

Destination:

- Printed data can be sent to a file or a printer

Each printing request will be preceded by a header describing the date and time of printing.

Format File structure

The format file specifies how an item will be printed. A format file contains only one line. The line can contain free text and **%** expressions. The following **%** expressions are supported:

%l - line as in list	**%C** - created
%t - title	**%U** - updated
%h - Description header part	**%J** - Subject
%d - Description part	**%O** - Office
%n - new line	**%M** - Customer
%s - serial number	**%H** - Handler
%% - % character	**%A** - Author
%P - priority	**%I** - ID
%D - difficulty	
%T - type	
%S - status	

Example

In order to print each item as in the following example:

1. 79 C R D C 950711 - Zero length vectors during output

Customer: ATT Author: tl Handler: OS

The format file should contain:

%s.%l%n   Customer: %M Author :%A Handler: %H%n

Filter File structure

The filter file is used to define BOTH which items to print and how to print them. The file contains three types of lines:

@F - format lines which define the format in which the following items will be printed. The format of this line is the same as described above.

@nnn - a KIT Id line which specify an ID to be printed

<other> - any line not starting with @ will be printed as is (titles, comments, etc.)

Example

In order to print the following list:

Please make sure the following items are included in the next release:

    (ATT) - 5 C B H C 950626 - Cannot save a checklist on SUN(AB)

    (ATT) - 237 H B H C 950722 - Large symbols on input from Image(OS)

The following filter file should be created:

Please make sure the following items are included in the next release:

@F(%M) - %l(%H)%n

@5

@237

Importing files (CM only)

This action will prompt for a file created by the Export file option of Field Mode. The file specified will be scanned, producing a popup list of all the items. From this popup, items can be merged (new items) or pasted manually (additions to existing items).

Saving the master file (CM only)

The **Save** button saves the master file, but not before a copy is saved with the ~ extension. Note that locking occurs automatically when the memory image is changed. Unlocking occurs when the file is saved or upon **Quit**. The possibility exists to override locking (in case of unexpected termination by a previous locker), but it should be used with extreme caution to avoid master file corruption. An additional safety mechanism verifies, before locking, that the file was not changed between the last time it was read and now. In such a case, a reread will be done before continuing.

Chapter 7   *Application Programs*

cns

Path	`cns/cns`
Syntax	`cns`
Description	This command has no parameters and starts up a daemon process that is in charge of communication with Java Applets in the Cyberlink environment. You should put the command to start up this process in the system files of the appropriate host. To run this process you must have the environment variable `GENESIS_VER` set to the correct value.
See Also	The Cyberlink Environment (Doc. 0804)

ems

Path	`ems/ems`
Syntax	`ems`
Description	This command has no parameters and starts up a daemon process that is in charge of the framework environment. You should put the command to start up this process in the system files of the appropriate host. To run this process you must have the environment variable `GENESIS_VER` set to the correct value.
See Also	The Framework (Doc. 0803)

get

Path	`get/get`
Syntax	`get [-help │ -x │ -dDISPLAY │ -jJOB_NAME │ -tTYPE │ -eNAME -lLAYER -sSCRIPT <script params> ]`
Description	This program is the main Engineering Toolkit for Genesis 2000. It has several optional parameters: -help: Print help message -x: Run in background, no windows (for use with -s) -dDISPLAY: Run on display "DISPLAY" -jJOB_NAME: Open job JOB_NAME on startup -tTYPE: Type of element in -e (step,symbol,...) -eNAME: Name of element to open on startup -lLAYER: Name of layer to display on startup -ws=WS:Name of workspace to use (HPUX only) -sSCRIPT:Name of script to run on startup The SCRIPT is run from /genesis/sys/scripts unless a full path is given. All parameters following SCRIPT will be taken as script parameters. This option must be the last one in the command.
See Also	The Engineering Toolkit (Doc. 0102)

Notes	When running `get` in no windows (batch) mode, you need to create the file `$HOME/.genesis/login` and include in it the login and password to be used in this session, in the format:
	`<login>`
	`<password>`

gfb

Path	`gfb/gfb`
Syntax	`gfb [-fFORM]`
Description	This program is the Genesis Form Builder. It can be activated from the shell or from the Engineering Toolkit (by double clicking on a form icon in the library job). -fFORM: name of the form to open
See Also	Work Forms (Doc. 0801)

gfl

Path	`gfl/gfl`
Syntax	`gfl [-help	-x	-dDISPLAY	-fFLOW |-sSCRIPT <script params>]`
Description	This program is the Genesis Flow Builder. It can be activated from the shell or from the Engineering Toolkit (By double clicking on a flow icon in the library job). -help: Print help message -x: Run in background, no windows (for use with -s) -dDISPLAY: Run on display "DISPLAY" -fFLOW:Open flow FLOW on startup -sSCRIPT:Name of script to run on startup The SCRIPT is run from /genesis/sys/scripts unless a full path is given. All parameters following SCRIPT will be taken as script parameters. This option must be the last one in the command.
See Also	Work Flows (Doc. 0802)

gnd

Path	`gnd/gnd`
Syntax	`gnd`
Description	This program is the main Genesis daemon. It is required for the operation of the application. You should put the command to start up this process in the system files of the appropriate host. To run this process you must have the environment variable `GENESIS_DIR, GENESIS_EDIR,` or `GENESIS_VER` set to the correct value.
See Also	Software Installation (Doc. 0201)

rpd

Path	`rpd/rpd`
Syntax	`rpd`
Description	This program is used during RPD (Raster Plot Data) for Gerber Scientific laser plotters. It is activated automatically by the Engineering Toolkit when needed.
See Also	Output Formats (Doc. 0702)

Chapter 8   *Additional Off-line Utilities*

Note   All paths are relative to **$GENESIS_DIR/e$GENESIS_VER**

bcmp

Path	`misc/bcmp`
Syntax	`bcmp <file1> <file2> <start>`
Description	bcmp compares two binary files and displays a list of all byte positions that are different. <start> is an offset into the files that determines where to start the compare.
Example	The following command compares the files /tmp/f1 and /tmp/f2 starting at byte position 50: `bcmp /tmp/f1 /tmp/f2 50`

bcut

Path	`misc/bcut`
Syntax	`bcut <file1> <file2> [<pos>|<-pos>] [count]`
Description	bcut extracts sections of a binary file into another file. <file1> is the source file. <file2> is the destination file where the extracted data will be moved to. <pos|-pos> is the byte position to start the extraction form <file1> if the - character appears before it, this position is calculating by subtracting it from the end of the file. If this parameter is omitted position 0 is assumed. <count> is the number of bytes to extract. If this parameter is omitted the rest of <file1> is extracted.
Examples	The following command extracts the first 50 bytes of f1 into f2 :`bcut f1 f2 0 50` The following command extracts the last 50 bytes of f1 into f2:`bcut f1 f2 -50` The following command extracts bytes 50 to 100 of f1 into f2: `bcut f1 f2 50 50`

cns_user

Path	`cns/cns_user`
Syntax	`cns_user`
Description	This command has no parameters and starts up an interactive shell process that is used to manage the Cyberlink user database. You can perform the following functions: - Add a user to the database - Change a user's definition - Change a user's password - Delete a user from the database - List all the users in the database - Show a help for this process - Quit the process
See Also	The Cyberlink Environment (Doc. 0804)

color_diag

Path	`misc/color_diag`
Syntax	`color_diag`
Description	`color_diag` can be used to determine the usage of the default colormap. It displays a window with a color cell for each colormap entry. You can type a ^C in the shell that activated the process and the following list of options will appear: S(tatus) <show the status of the colormap> A(lloc) rrggbb <allocate an entry with this color> F(ree) pixel <free a previously allocated entry> C(olor) pixel <show color of pixel> Q(uit) <quit the process> Enter command: When you choose 'S' (status of colormap) all the colormap entry values will be printed to stdout, free entries will have an asterisk next to the color value.

Note   `color_diag` is not supported on all platforms

dfm_brand

Path	`misc/dfm_brand`
Syntax	`dfm_brand [-i│-u] <shared executable>`
Description	dfm_brand is used in the DFM development environment to brand the shared library modules with a license so that they can be run by the users. dfm_brand needs to run in the Genesis environment as it communicates with the **gnd** server. -u option performs unbranding of a branded executable. -i option prints out information of a branded executable.

Example	The following command brands the shared executable file test.so
	`dfm_brand test.so`
	The following command unbrands the shared executable file test.so
	`dfm_brand -u test.so`
	The following command prints out branding information of the branded shared executable file test.so
	`dfm_brand -i test.so`

dongle_info

Path	`misc/dongle_info`
Syntax	
Description	Run on a computer which has a dongle inserted to check that the dongle is working correctly, has the expected id, etc.

glock

Path	`misc/glock`
Syntax	`glock -o <func> -t <type> -e <element>`
Description	glock enables you to lock/unlock system resources and print out the current status of all system resources. Locking a resource by glock locks it for 'write' (see chapter 2). Using glock You can only 'unlock' resources that were previously locked by a 'glock' process. glock was designed to be used in automation scripts & programs that needed to control concurrent access to system resources when not using the regular system commands (i.e. accessing the job directory from a script). You can also use the 'path' element type to perform locking of any logical resource you wish (the path does not have to exist). The following functions are supported: lock - lock an element unlock - unlock an element test - check if element is locked status - list all locks (doesn't need -t and -e) cleanup - poll for defunct gnd processes The following types are supported: job, step, layer, symbol, stack wheel, matrix, form, flow, font template, path element is the compound name of element.

Example	The following command locks the layer l1 of step pcb in job job1 for write.
	`glock -o lock -t layer -e job1/pcb/l1`
	The following command unlocks the job job1. (This only works if job1 was locked previously by glock)
	`glock -o unlock -t job -e job1`
	The following command locks the logical resource named
	`my_resource`
	`glock -o lock -t path -e my_resource`
	The following command prints out a list of all locked resources in the system.

hd

Path	`misc/hd`
Syntax	`hd <file> [<start>] [<end>] [<lwidth>]`
Description	This program displays the contents of a binary file in an hexadecimal ASCII format. <start> and <end> define the first and last byte to display. <lwidth> is the number of bytes in a line (1-16)

nec_sym_in

Path	`misc/nec_sym_in`
Syntax	`nec_sym_in [-u] -iFILE_PATH`
Description	`nec_sym_in` translates NEC symbols file to ODB++ symbols in genesislib. **-u:** update the genesislib. Only NEC symbols which do not appear in genesislib will be created. If the parameter is omitted, the NEC symbols in genesislib will be overwritten. **-i:** input file. **FILE_PATH**: a full path name to NEC symbol file description. The symbol names created in genesislib will use a naming convention so that the Genesis NEC job data translator will be able to pick the correct symbol. NEC symbol name 'yyy' will generate the 'nec.x.yyy' Genesis symbol name where 'x' is one of: p - for positive symbol, n - for negative symbol. Examples: NEC symbol OTB060 will generate Genesis nec.p.otb060 symbol, NEC symbol OTW060 will generate Genesis nec.n.otw060 symbol.
Note	NEC simple symbols - ALC, AWC, SQR, SQW, OB, OW, CR, CW, RB, RW, IND, ILD, INR, and ILR - are not translated by the `nec_sym_in` utility. The NEC job data translator generates Genesis standard symbols from them.
Example	The following command translates the '/nec/apt' file to Genesis symbols and overwrites existing symbols: `nec_sym_in -i/nec/apt`
See Also	Input Formats (Doc. 0403)

rhd

Path	`misc/rhd`
Syntax	`rhd <infile> <outfile>`
Description	This program converts the output of the hd program back to a binary file. Using hd and rhd together provides a convenient way to edit a binary file.

untgz

Path	`misc/untgz`
Syntax	`untgz [-l]`
Description	This program is used to import jobs into Windows that were produced on Unix machines and have long filepath names (more than 100 characters). Previously such jobs could not be imported into Windows because of differences in `tar` formatting.

upper

Path	`misc/upper`
Syntax	`upper [-l]`
Description	This program converts text in stdin to text in stdout. Each character is converted to upper case (or to lower case if -l is specified). It can be useful in scripts.

valor_decode

Path	`misc/valor_decode`
Syntax	`valor_decode [-h] [files...]`
Description	This program decodes files provided by Valor in encoded format into readable files. Decoded files are specified by the suffix '.V'. This program requires the 'gnd' program to run.

Chapter 9   *Hooks*

Hooks are small files or scripts which are used by the application during certain specific operation. By changing the hooks, the user can customize the system to a certain degree.

All hooks are located in the directory:

$GENESIS_DIR/sys/hooks

In this section, all the hooks will be listed with a brief description and a reference to the appropriate manual.

acquire

Description	This hook is activated when the File > Acquire command is activated at the Engineering Toolkit window. It is used to import jobs from the STAR 1000 system.
See Also	The Engineering Toolkit (Doc.0102)

area_pixmaps

Description	This hook is a directory which contains bitmap files. When a user attaches the attribute .area_name=<name> to a surface feature, the surface will be displayed stippled according to the bitmap file by that name.
See Also	

camtek.ini

Description	Configuration file for the CAMTEK interface package. This is the same configuration file that is used by the CAMTEK AOI machines.
See Also	CAMTEK AOI Interface (Doc.0705)

camtek_zip

Description	The hook is used by the CAMTEK interface package. If it exists, it is called after the system completes the creation of the output files for a single CAMTEK-set entity. The hook should be used in order to compress the directory with all the contained files into a single 'zip' file. Afterwards, this single file is transferred to the CAMTEK machine.

cdr14_ini

Description	Used within the Orbotech AOI interface to provide pre-defined system settings and parameters.
See Also	Orbotech AOI Interface (Doc. 0711)

cprsheet

Description	This hook is activated when viewing the result of copper measurement in the Graphic Editor. When selecting the spreadsheet option in the Report Options Popup, the hook will be invoked as a csh script.
See Also	The Graphic Editor (Doc.0601)

create_nibble

Description	Called by the A.D.M. function during output file creation. This is only used when the nibble type is set to software (sw) and when the machine file has custom nibble set to yes. This file is called during the ADM process when a hole needs to be nibble drilled in a customized way. It is a c-shell script which is used to calculate a sequence of X/Y co-ordinates which will drill out the hole.
See Also	The Auto Drill Manager (Doc.0703)

create_slot

Description	Called by the A.D.M. function during output file creation. This is only used when the nibble type is set to software (sw) and when the machine file has custom slot set to yes. This file is called during the ADM process when a slot needs to be peck drilled in a customized way. It is a c-shell script which is used to calculate a sequence of X/Y co-ordinates which will drill out the slot.
See Also	The Auto Drill Manager (Doc.0703)

drill_size

Description	This hook is activated when entering finished drill sizes in the Drill Tools Manager. It is also activated for each tool when clicking 'Calc Drills' in this window. It is used to convert a finished hole size into a drilled hole size.
See Also	The Drill Tools manager (Doc.0404)

drill_size.awk

Description	Called by the drill_size program. This file is an example of how it can be possible to use an external drill table to select the nearest actual drill bit (without just using the nominal drill size). This program is written using awk (see the awk man pages for more details) and it is called along with the drill bit table (see drill_size.tab below). It first reads the drill bit sizes into memory and then checks through each one until it finds either an exact size match, or the drill bits that are just above and just below the nominal drill size. It then selects either the higher or the lower dependant on which is closer. The drill bits sizes are then passed back to the drill_size program and thus on into the D.T.M. window. See notes in drill_size and drill_size.awk headers.
See Also	The Drill Tools manager (Doc.0404)

drill_size.prm

Description	This file contains a list of text strings that are shown when pressing the User params button in the screen. Each string should have a separate line in the file. A legal string is composed of the following characters: **abcdefghijklmnopqrstuvwxyz0123456789+-_.** **Note**: A space cannot appear in a string.
See Also	The Drill Tools Manager (Doc.0404)

drill_size.tab

Description	Passed to the drill_size.awk program by the drill_size program. This file is an example of a drill bit definition table. It is used by the drill_size.awk program to find the nearest drill bit to the nominal drill size calculated by the drill_size script. Only the first two columns are used by the drill_size.awk program, the other columns (spindle speed, feed rate and maximum hits) are just examples of possible extensions to this file. By modifying this file to contain the mils and mm drill sizes that are available, the D.T.M. function can be made site specific very quickly. See notes in drill_size.tab and drill_size.awk headers.
See Also	The Drill Tools Manager (Doc.0404)

ffilters

Description	This hook is actually a directory which contains a script and an ASCII file which define the User Filter in the Graphic Editor. This allows the user to define useful filters for quick selection. A full description is provided in the appropriate manual.
See Also	The Graphic Editor (Doc.0601)

film_sizes

Description	Read by the film optimization package (creates film size menu). This file is a simple parameter file which holds the film sizes available for plotting. The file is a fixed column format with the film name and the X and Y sizes. **Note**: in order to make changes to this file, Genesis must be restarted.
See Also	Films Optimization (Doc. 0706)

imp

Description	May contain a hook written in C for calculating characteristic impedance imp/imp_lib.sl (HP) & imp/imp_lib.so (Sun)
See Also	The Impedance Simulator (Doc.0605)

inc_274x

Description	This hook contains predefined aperture definitions for the RS-274X input translator.
See Also	Input Formats (Doc.0403)

inp_user

Description	This hook is activated in the Input Package. It is activated when selecting the 'User action...' option in the M3 popup menu on one of the file. It can be used to preprocess a file before running the standard input. The hook is activated with 3 parameters: Job name, file name and format.
See Also	The Input Process (Doc.0401)

job_macros

Description	Defines job name selection macros within the panel wizard. This is a configuration file which is created by the panelization set-up function. This file is used to create the job macros menu and also to store the job macros. A job macro is a statement or regular expression which defines an enhanced job selection which can be used when running the panelization wizard. It is not advisable to manually edit this file.
See Also	

kit_export

Description	This hook is invoked by the KIT program whenever a new item is created in the field. It can be used for emailing the item.
See Also	

line_hooks

Description	This is a directory that contains hooks to be used by any line mode command to other hooks. Each line mode command ('com'), can contain two hooks: **'com'.pre** - to be performed before the command is executed. **'com'.post** - to be performed after the command is executed. Each hook is activated with one parameter which is a path to a temporary file which should be sourced. After sourcing it, two variables are set: **lnPARAM** contains a list (array) of all the parameters of the command. **lnVAL** contains a list (array) of all the values of the parameters. By referencing **lnPARAM**[n] and **lnVAL**[n], the hook can act according to the parameters supplied for the command.
See Also	Line Mode Commands (Doc.0206)
Note	If the pre **line_hooks** fail, the system will not run the actual command. You must return a non-zero value from the script so that the **delete_entity** command fails: Example: **delete_entity.pre:** **#** **if** **exit 1** **endif** **exit 0**

loc_macros

Description	Defines object location macros within the panel wizard. This is a configuration file which is created by the panelization set-up function. This file is used to create the object location macros menu and also to store the location macros. A location macro is a statement or regular expression which defines an enhanced object location routine which can be used when running the panelization wizard. It is not advisable to manually edit this file.
See Also	

lp_prog

Description	This hook is activated whenever the system prints any data. The script can be set to the appropriate print command for the network on which the system is running.
See Also	The Engineering Toolkit (Doc.0102)

lp_prog.config

Description	Called by the lp_prog hook. This file stores printer information which has been set-up the first time the lp_prog hook is run. This file is created when the lp_prog file is run for the first time and provides the lp_prog file with a list of all printers and the default printer name.
See Also	The Engineering Toolkit (Doc.0102)

lyr_macros

Description	Defines layer selection macros within the panel wizard. This is a configuration file which is created by the panelization set-up function. This file is used to create the layer selection macros menu and also to store the layer macros. A layer macro is a statement or regular expression which defines an enhanced layer selection routine which can be used when running the panelization wizard. It is not advisable to manually edit this file.
See Also	

lyr_rule

Description	This hook is used by the application for assigning the layer names during the input identification process. At the beginning of the file there is a header section that contains the following parameters: .atr name - job attribute names that are used as additional filters to the format and customer name Each entry in the file contains the following fields: format - format name or '*' for all formats up to 5 attribute values (according to the .atr declarations) regexp - regular expression for matching the input file names name - layer name that is based on the regular expression matching context - layer context (board, misc) type - layer type (signal, drill, rout,,,,,etc) polarity - layer polarity (positive, negative) side - top, bottom or none serial - layer's serial number (0 - don't care)
See Also	The Input Process (0401)

names

Description	Creates the user defined filter menu in the features filter pop-up. This file is a simple parameter file which contains a series of lines. Each line provides a menu option and a parameter to pass to the file script. The first field (word) in the line is the parameter name that gets passed to script, the rest of the line is the text string(s) that make up the menu option.
See Also	

ncd

Description	This hook is a directory containing scripts which are activated by the Auto Drill Manager. Due to the large scope of this issue, please refer to the appropriate manual.
See Also	The Auto Drill Manager (Doc.0703)

ncr

Description	This hook is a directory containing scripts which are activated by the Auto Rout Manager. Due to the large scope of this issue, please refer to the appropriate manual.
See Also	The Auto Rout Manager (Doc.0704)

nibble_hits

Description	Called by the Auto Drill Manager function during output file creation. This is only used when the nibble type is set to machine. This file can be used to calculate the number of drill hits which occur when a machine canned cycle is used (and thus the hit count as shown in the file, where a nibble drilled hole is a single hit) is incorrect.
See Also	The Auto Drill Manager (Doc.0703)

note_options

Description	Read by the electronic notes function, this file is used to create the user note menu in the electronic notes pop-up. This file is a basic parameter file which defines the user note menu in the electronic notes window, when the user selects the add new note option. The file consists of a series of lines (one line for each menu option) where the first section of each line is the menu option, and the second section of each line is the title that will be used when adding the note.
See Also	The Graphic Editor (Doc. 0601)

opfx_params

Description	Read by the output package when working on OPF, OPFX, LP7008, and DP100 formats. This file is a parameter file which provides predefined settings for units and film sizes. It is used to create a selection menu in the output parameters pop-up. There are two types of entry that can be added to this file, units and film size. If the selected format is OPF or OPFX then only the unit definitions are used. If the format is LP7008 or DP100, then both definitions can be used.
See Also	Output Process (Doc. 0702)

orbotech_plot_spool.config

Description	Read by the output package when working on LP5008, Xpress, LP7008, and DP100 formats. This file is a parameter file which provides predefined settings for virtual plotter groups, output paths and locations of set-up files (for DP100X output). It is used to create a selection menu in the output parameters pop-up.
See Also	Output Process (Doc. 0702)

out_const

Description	This hook is used to define constrains regarding different output formats. Currently only the "polarity_level" constrain is supported for 'gerber274x', 'autoplot(*), Gerber, Par. Any layer polarity level below 2 and above 31 is ignored. In order to define constrain for "polarity_level", write the constrain type after the output format followed by three numbers. The 1st number represents the layer polarity level allowed. The 2nd number represents the special symbols's polarity level. The 3rd is used in order to define the number of polarity changes allowed for a layer before starting any sorting.
See Also	Output Formats (Doc.0702)

out_file

Description	Called by the Auto Rout Manager function after the first phase (tools table and machine settings) is completed. Activated by the action button in the middle of the A.R.M. flow. This file is called during the ARM process. It is a c-shell script which can be configured to provide user and site specific modifications to the rout output files dependant on the different parameters allocated to each tool (size, hole/chain etc.) and also the machine file being used. This file can control the following parts of the output files, although it should be noted that this is controlled by the machine file selected (see section below): 1. The header. 2. The end of file. 3. The tool changes. 4. The step and repeat start. 5. The step and repeat finish.
See Also	Output Formats (Doc.0702)

outhdr

Description	This hook is used to assign a file path name which its content will be appended at the beginning of each output file. In order to assign a header file, add the absolute file path name after the format name with at least one blank character as separator.
Example	`gerber /tmp/gerber_hdr_file`
See Also	Output Formats (Doc.0702)

panel

Description	This is a directory which contains three files and one directory (as well as a back up of each of these objects). These items are read by the panelization wizard, and are created on-line using the panelization set-up function.
See Also	Automatic Panelization Package (Doc. 0608)

post_cdr14

Description	Called by the system after every output using the Orbotech AOI interface is finished. This file is a c-shell script and is designed to be used to work on any data that has been created by the CDR (AOI) interface output. It is very similar to the post_output hook except that it deals specifically with CDR output files.
See Also	Orbotech AOI Interface (Doc. 0711)

post_output

Description	The 'post_output' hook is activated at the end of the output translation. It receives one parameter - a pathname of a csh script that should be sourced. The sourced csh script contains the following information: set outDIR = (/tmp/xxx) set outFORMAT = (gerber) In addition there are 2 environment variables: JOB - job name STEP - step name
See Also	Output Formats (Doc.0702)

Before you can use the preview and PDF output options, you must have a PostScript to PDF converter available and the relevant hook files described below must be set.

The *ps2pdf* and *ps_preview* hook files are located in the Hooks Library. Copy the files into **$GENESISDIR/syshooks**, and set the hooks as described.

ps2pdf

Description	Converts a PostScript file to a PDF file. **Parameters**:Path to a Postscript file; Path to a PDF file. This hook must be configured on most systems to locate the PostScript to PDF converter. This hook assumes that a PostScript to PDF converter is installed.
See Also	Output Formats (Doc.0702)
Comments	Before you can use the preview and PDF output options you must have a PostScript to PDF converter available and the relevant hook files must be set. The *ps2pdf* and *ps_preview* hook files are located in the new Hooks Library. Copy the files into $GENESISDIR/syshooks, and set the hooks as described below.

ps_preview

Description	Previews the PostScript file. **Parameters**:Path to a Postscript file;. This hook must be configured on most systems to locate the PostScript viewer. The hook deletes the PostScript file after viewing. This hook assumes that a PostScript viewer is installed.
See Also	Output Formats (Doc.0702)
Comments	Before you can use the preview and PDF output options you must have a PostScript to PDF converter available and the relevant hook files must be set. The *ps2pdf* and *ps_preview* hook files are located in the new Hooks Library. Copy the files into $GENESISDIR/syshooks, and set the hooks as described below.

ps_merge

Description	This hook merges Postscript files generated by Genesis into a single multipage file. **Note:** This script will not work on arbitrary Postscript files, only on Postscript files generated by Genesis. **Parameters** output file - name of output file input file 1....input file n - name(s) of input file(s)
See Also	The Graphic Editor (0601)

ps_tile

Description	This hook converts a multipage file with one image on each page into a multipage file with one or more images on each page. **Parameters** top_margin y - Top margin of page in inches bottom_margin y - Bottom margin of page in inches left_margin x - Left Margin of page in inches right_margin x - Right margin of page in inches x_spacing x - horizontal spacing between images in inches y_spacing y - vertical spacing between images in inches nx x - Number of images in horizontal axis ny y - number of images in vertical axis page_size p - one of a0,a1,a2,a3,a4,a5,b4,b5,letter x_page_size x - page width in inches y_page_size y - page height in inches col_major - flag to number by columns infile $path$ - path of input file outfile $path$ - path of output file
See Also	The Graphic Editor (0601)

rout_verif

Description	This hook is used for updating preview verification coupons
See Also	

rpd.params

Description	Contains sets of values for the 'More...' screen for the RPD output. This screen contains several 'list-boxes' and rpd.params contains values for each one of them. Each list contains a default value and 'options' for the list. The syntax is: <field name> <'default' | 'option' > < value >
Example	intensity default 187 intensity option 177 intensity option 187 intensity option 197 Victor
See Also	Output Formats (Doc.0702)

scheme

Description	This is a directory which holds all the panelization scheme files. There is one file for each panelization scheme (routine) and the file will have the scheme name.
See Also	Automatic Panelization Package (Doc. 0608)

script_start.csh

Description	This script is activated before any script is activated by the system.
See Also	Scripts (Doc.0204)

secure

Description	This hook is activated when the File > Secure command is activated at the Engineering Toolkit window. It is used to transfer jobs to the STAR 1000 system.
See Also	The Engineering Toolkit (Doc.0102)

set_machine

Description	Called by the A.R.M. function after the machine file is selected. This file is called during the ARM process. It is a c-shell script which can be configured to provide angle and offset parameters to the ARM using machine file names and panel size etc.
See Also	The Auto Rout Manager (Doc.0704)

set_table

Description	Called by the A.R.M. function after the machine file is selected. Also called during the final output file creation and can be run by the user from the tools table pop-up. This file is called during the ARM process. It is a c-shell script which can be configured to perform changes to the ARM tools table (and thus the rout output files) dependant on the different tool parameters which are allocated to each tool (size, hole/chain etc.). The example program has been written to provide control over most of the functionality through the use of variables at the start of the program. Most site specific configurations should be achievable by setting these variables.
See Also	The Auto Rout Manager (Doc.0704)

slot_hits

Description	Called by the A.D.M. function during output file creation. This is only used when the nibble type is set to machine. This file can be used to calculate the number of drill hits which occur when a machine canned cycle is used (and thus the hit count as shown in the file, where a drilled slot is a single hit) is incorrect.
See Also	Auto Drill Manager (Doc. 0703)

stagger

Description	Read by the netlist optimizer stagger function, this file is used to create the stagger model selection menu in the stagger mode pop-up. This file is called by the stagger pop-up within the netlist optimizer. It provides a series of models (in a similar way to the ERF files) which can be used to define different staggering rules. The user selects the required staggering model which is then applied to the data.
See Also	Output Process (Doc. 0702)

Chapter 10 *Inter-process Communication*

The gnd Process

The **gnd** process is the main Genesis 2000 daemon. It is required for the operation of the application. The **gnd** process should be set to run when the system starts up. This is set during the installation.

Upon startup, the gnd process locates the directory **$GENESIS_DIR/share/ .comms** (it creates one if it does not exist). Then, it writes a file called **gend_global**, writing to it the host name and the port number for clients to connect. This file is read by clients before establishing communication with **gnd**.

Genesis V9.2 requires a new **gnd** process: it is provided with the new version. Version 9.2 will not work with an older **gnd**. The **gnd** for version 9.2 is backwards-compatible: it can work with earlier Genesis versions from Version 8.1 onwards.

Resource Locking

This is the mechanism the system uses to control the access to a resource by more than one process at the same time. The mechanism is implemented using semaphores in the IPC modules of the UNIX system. Semaphores are not network entities, therefore all locks take place on the **gnd** server host, and all semaphores exist only on that host.

Semaphores are used to control access to common resources in the database, such as locking a job so that nobody can access the job while the 'locker' is writing. This is done using the 'write-once-read-many' scheme, which means many users' '**get**' processes can lock a resource for read at the same time, but if one user wants to write, he/she must have an exclusive lock. In using semaphores to implement this, the operating system uses the **SEMUNDO** feature of semaphores to backtrack when cleaning up activated semaphores. Each Genesis 2000 client (**get**) has a dedicated **gnd** process on the server that performs all locking requests, resulting in running multiple **gnd** processes. All the spawned **gnd** processes have only one client and serve as 'lock servers' for that client.

Example

A **get** process is about to open a job, the following locking operations occur:

- – lock the joblist file for read (resource xjoblist)
- – read joblist
- – unlock joblist
- – lock job for read (resource j<jobname>)
- – read job
- – unlock job

Each lock/unlock request is sent to the **gnd** process to be performed.

The system implements a WORM (write once, read many) locking mechanism. This means that when there are many processes locking a resource for read, they

can all access it at the same time. When a process wants to lock for write, it needs to wait until all the 'read' locks are relinquished. As long it locks the resource in write mode no other processes can access the resource.

Resource Names

Anything can be defined as a resource, whether it is a file or a logical entity. Resource names are strings that are made up of the entity names and special characters. Shown is a list of some example resources:

resource name	description
`jjob`	The job 'job'
`xjoblist`	The joblist file /genesis/share/joblist
`xusers`	The users file /genesis/share/users
`xgroups`	The groups file /genesis/share/groups
`rcs_file_lock`	The rcs file /genesis/share/rcs
`x@users@max`	The path /users/max
`jjob~fform1`	The form 'form1' in 'job'

The resource names are translated to semaphore keys by the lock servers that run on the server host. This translation is done using the UNIX system call `ftok`. The `/genesis/share/.locks` directory is used, where the system creates empty files with the resource name as the file name. These files are then passed to `ftok` which returns a KEY. Any process running on the host at that time will call `ftok` with the same path and receive the same KEY. That KEY determines which semaphore is used and that's how all the `gnd` lock servers access the same semaphore.

RCS on Jobs

When a user performs a 'Check In/Out', this is not a lock as described above. The file `/genesis/share/rcs` holds a list of the jobs that are currently checked out. The rcs file, like any other resource in the Genesis system, is accessed via the above locking mechanism (the resource is `rcs_file_lock`).

Troubleshooting

An important benefit of using semaphores is that when a process dies, any locks held by that process are automatically relinquished by the operating system.

The tool `glock` can be used to check which resources are locked and by who. See KIT ID 1063 for more info on `glock.`

Note   *THE .locks DIRECTORY SHOULD NOT BE TOUCHED. REMOVING FILES FROM THERE ONLY CONFUSES THE SYSTEM AND DOES NOT UNLOCK THE RESOURCE.*

The following problem scenarios occur:

1. After a process (e.g., get, gfb, gfl) crashes or the whole station crashes, the locks that the process was holding are still alive.

This is not because the operating system did not do its job, but because the gnd lock server that lost its client is still running. The reason for this is that sometimes

(usually when a system crashes) the socket connection from the lost client to the gnd is not broken so the gnd lock server still thinks that the client is alive and the locks remain in the system.

The only thing that can be done in this situation is to determine which **gnd** lock process is responsible and kill it. Presently there is no tool to determine which **gnd** process is locking or who was the originator. The solution is to kill all the spawned **gnd** processes. There is no need to kill the main **gnd** (the one with 1 as the parent pid). In the future, means of cleaning the defunct **gnd** processes will be provided.

2. After restarting the gnd server. Some client processes that reconnect to the server are also taking up locks that they should not be.

   Typically, these are the **rcs_file_lock** and **xjoblist** resources. You can see who (user@host.disp) by running **glock -o status**. The solution to this is simple:
   - for xjoblist locks: go to the get process that is responsible and perform a refresh of the job list in the top level toolkit screen.
   - for rcs_file_lock: perform a check in/out operation in the process that is responsible.

   If this does not solve the problem - exit cleanly from the locking process.

3. The **get** client seems to have crashed but is still alive

   Check with **ps** on the relevant host to make sure it is no longer alive. If it is, then kill it (this has been observed on X terminals that crash).

4. No **get** can establish communication with the **gnd** process after login

   Check that **gnd** is running. If it is not, check the file at **/genesis/logs/gnd.log** for the error.

Gateway command line utility

Gateway is a command line utility for sending messages to Genesis processes. Gateway was released with Genesis version 6.0c and is compatible only with "get" version 6.0c and up. "get" versions up to v6.0c will not execute line mode commands as the result of a "COM" message, or may freeze the gateway. As of Genesis v6.0c, "get" may be run with the "-x" option and without a script. This puts Genesis into a mode where it will respond to gateway COM messages but will operate without a user interface.

Running gateway does not require any additional license.

Note   A prototype version was released with Genesis v6.0, and is not compatible with later releases.

Gateway may be called in one of the following modes:

gateway <address> <message>	# Sends a message to an address
gateway 'WHO <address>'	# Returns matching addresses
gateway 'PID <address>'	# Returns Process ids of matching addresses
gateway <address>	# Opens an interactive session

<address> is formed as **<user>@<computer>.<display name>**, where...
   - **<user>** is the Genesis login name,

- **<computer>** is the name of the computer,
- **<display>** is the name of the X Display that is displaying the "get" process.

A star symbol ("*") may be used for globbing any part of an address.

<message> may be any of the following:

WHO <address>

This message returns a space separated list of all addresses matching the <address>

PID <address>

This message returns a space separated list of the Process IDs of all addresses matching the <address>.

COM <genesis line mode command>

This message send a Genesis line mode command to all Genesis processes matching the specified address, unless the operator has specified, "DONT accept messages" in the clipboard.

This message returns zero if the command completed properly, and a status code otherwise.

MSG <message text>

This will cause all Genesis processes matching the specified address to receive a message and display it to the operator, unless the operator has specified, "DONT accept messages" in the clipboard.

ERR <error code>

This returns the display string of the error code. (not yet implemented)

.

A period on a line by itself causes the gateway to exit.

When working in an interactive session, any of the above messages may be sent. When you wish to close the session, the **"."** command must be used; since even if Gateway has finished reading its standard input, it continues polling for more messages.

Examples

Print a list of all Genesis users

% gateway 'WHO *'

Print a list of all the instances that "ben" is logged in on Genesis

% gateway 'WHO ben@*'

Print the process ids of all the instances of "ben" logged in on Jupiter.

% gateway 'PID ben@jupiter.jupiter'

Open a job on a specific Genesis process.

% gateway ben@jupiter.jupiter 'COM open_job,job=1745'

An interactive session

% gateway ben@jupiter.jupiter
COM open_job,job=1745

```
COM run_script,name=/my_scripts/run_analysis,params=pcb
.
```

New features
in version 7.1

In Genesis v7.1, Gateway recognizes addresses of the following form:

`%<pid>@host.display`

To open a session with a **get** process with pid 17777 use:

`% gateway %17777@pluto.pluto`

(The `%` notation was chosen since a username could also be numeric.)

Also, in Genesis v7.1, the new command **COMANS** has been added. This command returns the **COMANS** of the last **COM** command.

Here is a sample session:

```
% gateway ben@pluto.pluto
COM open_job,job=0.01745
0
COM open_entity,job=0.01745,type=step,name=pcb
0
COM filter_area_start
0
COM filter_area_xy,x=1,y=1
0
COM filter_area_xy,x=0,y=0
0
COM filter_area_end
0
COMANS
7
```

Appendix A   *Common Examples*

To be completed.

Appendix B   *Frequently Asked Questions*

B.1.   *Visual Distortion of Icons and Radio Buttons*

A) Inside the graphic editor, the icons on the right hand side are skewed and distorted.
B) The radio buttons when viewed through a form or a GUI are round.The round buttons take up more space than the diamond radio buttons (about 50% more space). This is causing problems with pre-existing forms and GUI's.Because now some of the fields are falling off of the form or GUI because of the buttons being larger.

C) In the results viewer of any action, the degree of severity button does not display a color (i.e. red, yellow, or green)

In CDE, a few resources were added, which do not exist in VUE.
The offending resource is **enableToggleVisual**, and **enableEtchedInMenu**.

In order to get around this problem type the following:

```
% /bin/X11/xrdb -merge
*enableToggleVisual: False
*enableEtchedInMenu: False
^D
```

From now on, Genesis 2000 will display the radio buttons as diamonds, and the toggle buttons as squares (rather than checked squares.)
This treatment also solves problem A, described above.

If you are not running Genesis on the default display, the command must specify the name of the display.
For "sun12" you would type **% /bin/x11/xrdb -display sun12:0 -merge**

If all your users are running Genesis locally, you could add the following to their **.cshrc** or their **run_genesis** script:

```
% /bin/X11/xrdb -merge << END
*enableToggleVisual: False
*enableEtchedInMenu: False
END
```

For more information, see the manual page for XmDisplay.

B.2.   *I tried to run Genesis 2000 with a script in background mode by using the command:* `get -x -s~/my_script`*, but Genesis 2000 could not start the script. Do you know why?*

The '~' character in a c-shell command line will be replaced by the value of the **$HOME** environment variable, but only if there is a space before the character. To avoid this problem, use the full path name of the script, such as:

```
get -x -s/users/name/my_script
```

B.3.   *Can I contourize cross-hatched data?*

On no account should cross-hatch data be contourized. Contourized cross hatch takes up a quadratic amount of data relative to the original lines. The contourized cross-hatch contains many pinholes that may prevent its filling and even if it does fill it takes up exponentially more lines than the original data. For example, take a 1" X 1" square cross hatch composed of 100 horizontal and 100 vertical 5 mil lines spaced 5 mils apart. If you contourize this the total of 200 lines becomes 10,000 small 5x5 mil square cutouts - 50 time more data. Filling of such data may take 100,000 lines instead of the original 200.

B.4.   *On HP-UX 10.20 the width of the checklist and netlist analyzer windows are elongated and unusable. Example - when checklist is first opened it appears OK, but after being run a scrollbar appears on the bottom, causing the user to have to scroll far to the right to view results. Problem exists with both 4.1 and 4.2 on HP-UX, it appears worse in 4.2 At times graphic section of netlist analyzer window is only 10% of the view and cannot be resized... We also run 4.1 on 9.07 and are not seeing this issue.*

There is a bug in the X/Motif software of HPUX 10. A patch to the OS should be installed. Not only the specific patch for X/Motif must be installed, but all the patches are required to be installed. See:

`ftp://ftp.valor.com/pub/dnload/general/VLR/hp_patches.html`

B.5.   *We changed our component/technology types in our user attribute file (usrattr) to something like smtshort_100 (meaning smtshort<100). Since the '<' character was causing redirection when scripting we started using underscore "_". However, a '-' minus sign. Why?*

The underscore character *' causes conflicts in the parsing of category names and it is automatically replaced with a hyphen '-'.

Appendix C   *Error Messages*

To be completed.

Appendix D *System Administrator Notes*

How to install KIT on your system

The KIT program executable is included in the installation set under the directory:

`$GENESIS_DIR/e$GENESIS_VER/misc/kit`

In order to use it the following conditions should be met:

1. A `gnd` process must be running.

2. A license line for kit should exist in the system license file.

    Example: `kitpack-9-255-255-255 GRCYQCMD`

3. A directory with KIT data files should exist. This directory should be specified to the KIT program with the environment variable `KIT_DIR`.

    Example : `setenv KIT_DIR $GENESIS_DIR/kit.dir`

To get the most recent data files do the following:

- Connect to Frontline's ftp server (ftp.frontline-pcb.com).

- Retrieve the latest KIT files (in binary mode):

    `/pub/dnload/<system>/kit/kit.dir.tar.Z`

Where:

`<system> = genesis`

- Decompress the file

`uncompress kit.dir.tar`

- Untar the contents of the file into the

`cd $KIT_DIR/..`

`tar xvf kit.dir.tar`

After performing these steps, you should be able to run KIT, view its data and submit KIT items.

Using KIT internally for your own information

You can configure internal databases using KIT as well. All you need to do is create another data directory with the following files:

`kit_master` - initially empty

`kit_customers` - a list of internal customers

`kit_offices` - a list of 'offices'

`kit_subjects` - a list of subjects

`kit_handlers` - a list of handlers

kit_sys_name - a system name to be used while printing

kit_lp_prog - a script used when printing (just copy the one supplied by Valor)

kit_nls - a directory required for SunOS (just copy the one supplied by Valor)

kit_help - standard help file

Note   You can copy the files supplied by Valor and edit them according to need. The kit_master file should be initially empty.

Define the following alias:

```
alias my_kit \
'(setenv KIT_DIR /home/kit; \
$GENESIS_DIR/e$GENESIS_VER/misc/kit&)'
```

Year 2000 (Y2K) Compliance

Genesis 2000 software version 4.3x is now Year 2000 compliant. Changes were made to ensure that the transition to year 2000 will proceed smoothly.

User-written programs and scripts must also be Year 2000 compliant, and each individual writer must test and verify these files. The following guidelines will help:

- Change all references to years in user-written programs and scripts to 4 digit years, and test the result in Genesis 2000 Version 4.3 and higher.

- Do not change the system clock on individual workstations to 4-digit year display when the Genesis 2000 system is older than V4.3.

Work Forms

Work Forms, old and new, under Genesis 2000 V4.3 and higher will display their text fields with dates in 4 digit year format when the configuration parameter **y2k_forms** is set to Yes (see below).

In the Forms Builder, entry of years in the **min_date** and **max_date** text fields is always in 4-digit year format, regardless of any parameter setting. Once the form is run in a job, date fields will accept entries only according to the **y2k_forms** configuration parameter setting. Validation by the system will generate an error message if entries are not in the correct format (such as: "*Enter date in mm/dd/yyyy format*").

Compatibilty with Forms and Flows of prior versions is maintained in Versions 4.3. However, prior versions of Genesis 2000 will not be able to read Forms and Flows from Version 4.3 or higher.

Scripts

System line mode commands that output 2-digit years have been changed to output 4 digit years. Scripts that use these commands should be modified to accept 4-digit years. If you wish to retain 2-digit years for a certain period, you can set configuration parameters to No, until the affected scripts have been rewritten.

Configuration Parameters

The following table lists the configuration parameters that control 2- or 4-digit output:

Line Mode Command	Cconfiguration Parameter	Remarks
info	**y2k_info_4**	For options **-t notes** and **-t check** Yes - uses 4-digit year
save_job	**y2k_last_save d**	Adjust the **last_saved** stamp Yes - uses 4-digit year

Log/Report System Files

System files which have years in 2-digit format, are converted to 4-digit format by the new software version. If there are any programs or scripts that parse these files, they should be converted before the new version 4.3 and higher (that are Year 2000 compliant) is deployed.

The following table lists these files:

File	Type of data
Genesis Log	Date string on header line. For example: ***********COMMAND 19May98.133738.659 GET*)
Input Report	The 'start' and 'end' fields
Camtek Log	4th column - Date
last_saved	Date stamp is dependent on the y2k_last_saved config param.

Output

Some output formats use date strings in their headers. The following list shows all formats that have changed the date string to 4-digit year.

Format	Section Changed
Postscript	Title
Integritest	File header
HPGL	Title
Mania JBD	File header

Appendix E *Version Release Policies*

This Appendix describes naming conventions and release policies for Genesis versions.

Version Types

Major licensed version

Naming	vX.Y (for example: v6.0, v7.0, v7.2). All vX.0 versions are licensed
Intended for	All customers
Frequency	Frontline plans to release one such version each year
OS Platforms	Solaris, HPUX, AIX, Windows NT
Licensing	Requires a new license - available to customers under service
Installation	Using Proinstaller

Naming   : vX.Y (for example: v6.0, v7.0, v7.2). All vX.0 versions are licensed

Intended for: All customers

Frequency   : Frontline plans to release one such version each year.

OS Platforms: Solaris, HPUX, AIX, Windows NT

Licensing   : Requires a new license - available to customers under service

Installation: Using Proinstaller

Major unlicensed version

Naming   : vX.Y (for example: v7.1, v7.2)

Intended for: All customers

Frequency   : Frontline plans to release one such version each year.

OS Platforms: Solaris, HPUX, AIX, Windows NT

Licensing   : Does not require an extra Genesis license

Installation: Using Proinstaller

Minor version

Naming   : vX.YA (for example: v7.1a, v7.1b)

Intended for: All customers

Frequency   : Frontline plans to release 4 such versions each year.

OS Platforms: Solaris, HPUX, AIX, Windows NT

Licensing   : Does not require an extra Genesis license

Installation: Using Proinstaller

Public fix version

Naming   : vX.YAZ (for example: v7.1a1, v7.1a2)

Intended for: All customers

Frequency   : Frontline plans to release as few of these as possible.

OS Platforms: Solaris, HPUX, AIX, Windows NT

Licensing   : Does not require an extra Genesis license

Installation: Using Proinstaller

Private fix version

Naming   : vX.YAZ (for example: v7.1a1, v7.1a2) -- same as public fixes

Intended for: Specific customers

Frequency   : As needed

OS Platforms: As needed

Licensing   : Does not require an extra Genesis license

Installation: ftp, gunzip, and copying files.

Note   In addition to these releases, Frontline also makes pre releases before releasing Major licensed versions and Major unlicensed versions.

Prerelease versions

Naming   : vX.Ypr, vX.YprZ (for example: v7.1pr, v7.1pr1, v7.1pr2)

Intended for: Prerelease testing partners (including subsidiaries)

Frequency   : Before major releases -- as needed

OS Platforms: As needed

Licensing   : Pre releases for Major licensed versions require a new license

Installation: Proinstaller or ftp, gunzip, and copying files -- as appropriate

FAQ

E.1.   What is the difference between a "minor version" and a "fix version"?

The main differences between minor versions and fixes are:

  1. Minor versions are planned

  2. Minor versions have new functionality

E.2. *Why are some fixes released as private fixes and some as public fixes?*

When we receive a report from a customer of a critical problem, we try to provide him with a solution as soon as possible. "Private fixes" are used for this purpose. Private fixes do not undergo our full battery of regression testing. Private fixes are also released to solve the problem of a specific customer, where we believe that the issue is not immediately relevant to other customers. Another big difference is that Frontline may release more than one private fix in a single day, and perhaps several within a single week. Notifying customers of versions several times a week would not help the customers; it would only confuse them.

E.3. *Where are the public releases and private releases found? How can I find out about them?*

Public releases are always released in Proinstaller format on **ftp.frontline-pcb.com** and **ftp-us.frontline-pcb.com**. An announcement describing their contents is sent to the **genesis-xperts** mailing list, Genesis OEM's and marketing managers.

Private releases are always released in **ftp://ftp.frontline-pcb.com/pub/private/fixes** Their contents is described in **ftp://ftp.frontline-pcb.com/pub/private/fixes/FIXES_FOR_GENESIS**

A general announcement of private releases is not made; only the customer and his support engineer are notified.

E.4. *How do I upgrade from Genesis version X to Genesis version Y?*

The rules are a little difficult to explain. A web page to calculate the upgrade path may be found at: **http://www.frontline-pcb.com/cgi-bin/get_versions.cgi**

Here are some examples.

1. If 7.2c7 is a public fix:

    7.1 => 7.1c

    or

    7.2 => 7.2c7

    or

    6.0 => 7.2 => 7.2c7

2. If 7.2c8 is a private fix:

    7.1 => 7.1c => 7.1c8

    or

    6.0 => 7.1 => 7.1c => 7.1c8

    unless 7.1c is a full version [not *.fix] and then the path is:

    6.0 => 7.1c => 7.1c8