



## What's New in PSCAD v4.3.1

(as of November 1, 2010)

Written for PSCAD™ X4 version 4.3.1



## PSCAD

1. **Internal Node Type:** A new attribute was added to electrical connection ports. When selected, PSCAD will differentiate a port internal to a component, from an isolated node on the canvas. If a port is designated 'Internal', the 'Suspicious isolated node...' warning will be bypassed.
2. **Panel Size:** Control panel resize on delete of control interfaces may now be controlled. See the workspace options dialog
3. **File Reference:** File references no longer fail when the name of the file pointed to exceeds 8 characters.
4. **Duplicate Messages:** The user may now control the output of duplicate messages in the output window. An option called *Maximum duplicate runtime messages* was added to the *Runtime* category of the *Workspace Options* dialog.
5. **Internal Node Voltage Measurement:** If a connection port is designated 'Internal', then the node voltage can be measured using the EMTDC function VDC.
6. **Unload All:** An option was added to the File menu to unload all project loaded in the workspace.
7. **Project Auto-Load with Comma:** PSCAD will now automatically reload project files where a comma exists in the path name.
8. **Sticky Default:** Default sticky note properties may be reverted to using a *Restore Defaults* button.
9. **Browse Buttons:** Added *Browse* buttons to select external library files (.lib, .obj) and external source files (.f, .for, f90, .c).
10. Unloading the active project will now result in the successor project being selected as active.
11. **Port Names:** The character length limit for port names has been increased from 12 to 32 characters.
12. **Sliders and the Mouse Wheel:** The user may now control whether or not slider control interfaces respond to the mouse wheel. An option was added to the *Workspace Options* under the *Environment* category called *Control interfaces respond to mouse wheel action*.
13. **Navigation:** The *Home* key now brings the view to the top-left corner of the current canvas.
14. Fixed memory leak when parameters are deleted.
15. **Help Segment:** The *Help* segment in the component Script section now functions properly.
16. **Macros:** Added new macros *:%:ProjectFileName* (substitutes project file name without extension) and *:%:ProjectNamespace* (substitutes project namespace name).
17. Delete function added to the canvas popup menu.
18. *Ctrl + c* now functions for component definition copy in the workspace window.
19. **Cable Depth:** Error is now issued when cable depth is entered as a negative number.
20. **Fortran Segment:** Green marker no longer obscures text in the Fortran segment.
21. **Branch Segment:** Warnings are now issued if blank lines are detected within the Branch segment on compile. Blank lines were causing problems during compile.
22. **Single-Line Diagrams:** Fixed problem with improper mapping of complex three-phase, single-line systems.

23. **Voltage Meter:** PSCAD now checks all 'voltmetergnd' meters to see if they are attempting to measure a ground signal voltage. If detected, PSCAD will force the measured value to 0.0 and issue a warning message.
24. **Pan:** Double-click on Circuit canvas with pan activated now functions according to the setting of the *Navigate into a module* workspace option.
25. Size limitation (64 kB) has been removed in the project file reader to accommodate growing project size.
26. **Custom Help:** Help now launches properly from custom components.
27. Delete key now works when mouse pointer is hovering over components (v4.2 style).
28. Component parameters dialog no longer appears off screen if invoked close to edge.
29. Project canvas now displayed automatically when PSCAD is launched by double-clicking a project file.
30. Reserved Xml characters are no longer allowed in new project filenames.
31. **Long Case Names:** The v4.2 style 30-character project filename length limit has been reinstated.
32. Fixed application crash caused by reserved Xml characters in definition names in imported project files.
33. **Fortran Segment:** Trailing white space is now removed from Fortran script before parsing. This was causing unwanted duplication of Fortran code in the project Fortran files.
34. **File Import:** Fixed problem regarding incorrectly drawn wires in imported projects.
35. **Licensing:** It is now possible to have a running instance of PSCAD X4 and a running instance of v4.2.1 simultaneously with self-licensing.
36. **Buses:** Buses are no longer created with the default name 'TLine'.
37. **Cut/Copy/Paste:** The Ctrl-c, v, x and delete hotkeys now act on the selected component(s) if any, or act on the component beneath the mouse if there is no selected component(s).
38. **Snapshots:** PSCAD now warns if start from snapshot is specified, but no snapshot file is specified.
39. **Snapshots:** When starting from a snapshot file, PSCAD will now detect if any module has a newer timestamp than the snapshot file. If so, the user will be warned to continue at their own risk.
40. **TLine/Cable Names:** PSCAD now checks for case sensitivity errors between cable/tline configuration and cable/tline interface components. If found, PSCAD will issue an error message.
41. PSCAD no longer deactivates the active case when a library project is loaded.
42. **MATLAB:** Fixed issue with PSCAD initialization of MATLAB installed versions.
43. Component out-of-bounds messages are now more explicit.
44. **Sticky Note:** Cancel button no longer applies changes.
45. **Parameter Editor:** Parameter fields will now appear, even if no data value has been specified.
46. **Disabled Parameters:** PSCAD now ignores disabled component parameters during compile.
47. **Trial Licenses:** Trial licensing now ignores MS Windows OS build number, resolving trial license rejection issue when Windows is updated.
48. **Installer:** PSCAD X4 installer no longer removes v4.2.1 evaluation installation if it exists.

49. Component coordinate data is no longer reset when the instance is re-linked to another definition.
50. **Global Substitutions:** Modifications to global substitutions are now updated before compile of the project.
51. **SVG File Import:** PSCAD no longer crashes when importing an invalid SVG graphics file.
52. **Bus:** Bus component can now be added from the canvas popup menu.
53. **Zero-Length Wires:** PSCAD X4 now removes wires of no length on project import.
54. When starting a PSCAD simulation for use with an external debugger, the Socket ID of the executable process is now displayed properly.
55. **Installer:** The installers.ini file is now only updated if the installer is on the user's local machine.
56. **External Source Files:** Fixed problem when applying quoted paths containing white space.
57. **MATLAB:** PSCAD X4 now shows correct Matlab library path for MATLAB 2010
58. **MATLAB:** Matlab\_versions.xml file has been updated to support MATLAB 2010a and 2010b.
59. PSCAD no longer crashes when encountering read-only project files. The read/write attribute is tested before loading and if it is set, then user is informed the project is read-only.
60. PSCAD no longer terminates when a blank line is detected between branch definitions in the branch segment of component definitions.
61. PSCAD now totals special harmonic devices in the project using a #HARMONIC directive.
62. Cut operation using hotkeys now cuts the component under mouse focus.
63. **Performance:** A critical problem was resolved involving numerous runtime messages overloading the output window, resulting in very slow GUI performance.
64. Wires and buses can no longer be moved or extended beyond the canvas boundaries.
65. Components/wires/buses situated at the canvas extents can now be selected.
66. Fixed PSCAD crash on compile when one end of a transmission line is connected directly to ground.
67. PSCAD now properly renames project files containing illegal characters.
68. **Component Drag:** Components such as resistors, capacitors, and signal connections no longer disappear when dragged.
69. PSCAD no longer crashes when attempting to modify certain x-axis properties on graphs.
70. **Dial Control:** Dial control position will now stick if clicked. Previously, the dial position would only stick if actually moved by the mouse.
71. **Snapshots:** PSCAD now warns warn if snapshot file is not specified when starting from a snapshot.
72. Title bar caption now properly displays the currently licensed edition.
73. **Performance:** Miscellaneous code enhancements have led to increased GUI operation speed.
74. **Example Cases:** General clean-up to remove build warnings/errors.
75. Component script is no longer deleted after switching component definition views.
76. Ideal branch resistance and chatter threshold fields in project settings no longer permanently disabled.
77. **Additional Source by Library:** You may now append your additional source files for custom components from within the Fortran section of the library project settings. These files will

automatically be appended when any case (in which the corresponding components are used) is compiled.

78. **Windows Regional Settings:** The local regional settings for windows are no longer an issue when compiling PSCAD cases. A new workspace settings option has been added to the Runtime tab, called 'Local for reading and writing files'.
79. **Global Substitutions:** Global substitution values now update as they should when modified.

## EMTDC

1. Added new HARM\_N dimension to count number of special harmonic components.
2. A warning is now issued if the winding count is less than 2 when transformers are present.
3. Repetitive runtime warnings, sourced from saturable reactor are now disabled. These messages caused output window overloading.
4. COMTRADE recorder time step comparisons are now performed using integers. This removes a redundant warning message generated by the GFortran compiler.

## Master Library

1. **Multi-mass:** Multi-mass master library component internal variables IVD1\_5 and IVD1\_6 are now defined.
2. **3-Phase, 4-Winding Transformer:** Ideal transformer option added.
3. **Manual entry of Y,Z component:** Parameter value error checking has been refined.
4. **Interpolated Firing Pulses:** An error in the band limit proximity detection was fixed.
5. **3-Phase, 2-Winding Autotransformer:** Undeclared variables are now declared.
6. **3-Phase, 3-Winding Transformer:** Undeclared variables are now declared.
7. General transformer models now accept a 0.0 value for the inrush decay constant.
8. **Single/Three Phase Source Model 2:** The 'IA' connection port in the 'source\_1/source\_3' component is now flagged as 'internal', ensuring the 'Suspicious isolated node...' warning is bypassed.
9. **Impulse Generator:** The period between impulses was sometimes different from that specified. This has been dealt with by comparing time with  $1e-4 \cdot \text{delt}$ , which is the minimum interpolation time used in the interpolation algorithm.
10. **Time Delay Function:** Fixed problem with storage allocation, which was causing an EMTDC crash when using the Compaq 6.6 compiler.
11. **Mono-stable:** The mono-stable specified pulse width fell short by one time step. This has been dealt with by comparing time with  $1e-4 \cdot \text{delt}$ , which is the minimum interpolation time used in the interpolation algorithm.
12. **3-Phase, 3-Winding Transformer:** Component no longer produces a build error if saturation is placed on a winding other than 1.
13. **Current Source:** No longer gives wrong output when  $t = 0.0$ .
14. **Coax Cable:** Radii values entered in the coax cable is now sanity checked to ensure it is successively increasing.
15. **Synchronous Machine:** Fixed bad line of DSDYN segment script (inserted a required comma).

16. **Arrestor:** Fixed problem when using more than one arrestor, set to use an external file.
17. **Optimal Run:** Simplex optimization no longer gives a NaN output when using the GFortran compiler.
18. **Comparator:** Component no longer produces an unexpected output signal spike when used in a very specific configuration.

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