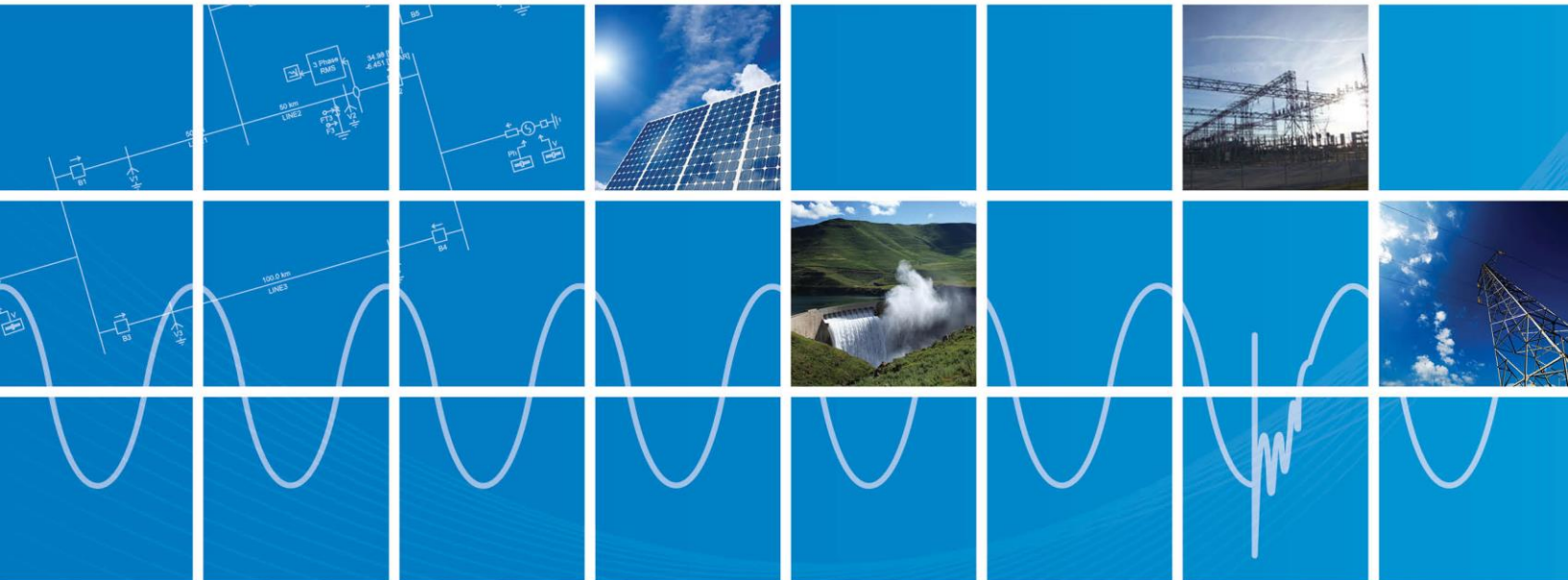




What's New in PSCAD v4.6.3

(since v4.6.2)

Date: February 8, 2019





PSCAD

Compatibility:

1. **Windows 10 Support:** Windows 10, along with Windows 7, is now officially supported in v4.6.3 specifically.

Deficiency Fixes:

1. **Component Licensing:** Component licensing allows users to restrict the use of their custom EMTDC component models, to selected clients, via certificate licensing. As such, a custom model can be freely distributed to clients, perhaps even made available for download, but the actual usage of that component in an EMTDC simulation is blocked, unless the client's certificate license enables its use.

The source code, corresponding to a specific custom component, must be modified to include a call to a special licensing function, which is available by request as part of a static library called *ComponentLicensing.lib*. Once the source code is modified, the source must be compiled and bound to the *ComponentLicensing.lib* file, producing a single static library (*.lib) file. This file is then distributed as a resource file, along with the custom component. As such, usage of the component will be restricted, unless the client's certificate license is set to enable usage of that component.



Modification of certificate licenses, as well as the necessary files required, are available only by request from the PSCAD Sales Desk (sales@pscad.com). More detailed documentation and instructions can be in the PSCAD online help (v4.6.3+), or online at our Knowledge Base (<https://hvdc.ca/knowledge-base/v/>) (#6692).



2. **#TOP and #BOTTOM Script Directives:** These new script directives were added specifically as a solution to initializing the Feedback Loop Selector (zminusone) Master Library component. Currently these directives are used solely within the Feedback Loop Selector script. Individual lines of script, preceded by one of these directives, is forced to either the top or the bottom of the system dynamics (Fortran) code. In the case of the Feedback Loop Selector, the set initial value is forced to the top of code to ensure it is properly initialized at TIMEZERO (#2876/6741).

Example:

<pre>! \$Name #TOP IF (TIMEZERO) \$INR = \$InitR \$INR = \$OUTR</pre>	<pre>! 140:[zminusone] Feedback Loop Selector 'FBLS' IF (TIMEZERO) RT_4 = 1.123 ! ... ! ! Other component code from the schematic. ! ! ... ! 140:[zminusone] Feedback Loop Selector 'FBLS' ! FBLS RT_4 = RT_1</pre>
Feedback Loop Selector Fortran Script (Type = Real, Init = Enabled)	Corresponding System Dynamics (Fortran) Code

Bug Fixes:

1. When the lock graph markers function is enabled, the time difference between locked markers is now properly reset when either the X and/or O markers are moved. Previously the markers would snap back to their previous locked difference, following a marker move (#6603).
2. A dimension mismatch false positive will no longer occur when a measured signal from a meter is sent directly to a module input parameter, without adding a data label to the page. The PSCAD compiler was setting the measured signal dimension to '1' (the default), regardless of what it was connected to in this situation (#6615).
3. Fixed inconsistencies in the context menu, associated with the schematic branch of the project definitions tree (#6636).
4. **Online control signals (ex. from sliders) are now passed properly to non-tracer volley runs. When the trace affinity is set greater than or equal to 1, modification of online control settings will affect all volley runs. When trace affinity is set to 0, changes to online control settings are ignored completely (#6264).**
5. The #VERBATIM directive is now supported when used within the #BEGIN/#ENDBEGIN directives (#6639).

6. PSCAD now recovers properly if a task crashes during an Intelligent Parallel Multiple Run (PMR-I) (formerly Root Control) simulation (#5848).
7. The order in which graphs appear in graph panels, and the order in which control interfaces appear in control panels, is now properly saved with the project (#6617).
8. Redundant search results no longer appear in the search results link list. Previously, a search result was displayed for both the definition and the instance view of a particular schematic. Now only the instance-based results are shown (unless the module has no instances) (#6166).
9. Simulation set task names no longer get corrupted in a project namespace name is modified (#6587).
10. Component definition graphics canvas objects that exist outside the viewable graphics canvas area are now moved into the viewable area on edit of the component definition (#6546).
11. Wire compose pathways feature no longer deletes polywire segments when composing more than one polywire simultaneously (#6580).
- 12. Initialization of the feedback loop selector (zminusone) Master Library component now functions properly (#2876).**
- 13. PSCAD no longer freezes upon invoking the Detailed Output Viewer for some transmission lines or cables (#6687).**
14. Import/export tags and xnodes are no longer processed when they are part of a disabled layer (#6678).
15. A substitution, based on an electrical port, is now supported when that substitution is requested inside the #BEGIN/#ENDBEGIN directive block (#6332).
16. Polygraph hotkeys (ex. 'y') now function properly (#6577).
17. Virtual wires will now properly identify and display feedback loop signals (#6370).
- 18. The XY Plot curve drawing has been optimized for speed. In previous versions, PSCAD could sometimes become overwhelmed when large amounts of plotted data appeared in the XY Plot, leading to poor graphical performance (#6697).**
19. The compose pathways feature for wires now works properly (#6729).
- 20. A specific crash point, which occurs when saving a case project with corrupt data, is fixed (#6728).**
21. Graph x-axis properties are now saved to the project properly when adjusted through the x-axis properties dialog (#6550/#6529).
22. Graph zoom levels are now cached properly, and no longer change when navigating about the project. Zoom levels are now also saved consistently with the project (#6725/6732/#6529).
23. Unit-less global substitutions are now handled properly when importing older v4.2.1 projects into v4.6 (#6719).
24. A canvas size setting issue when importing older case projects has been fixed. In some instances, canvas sizes would revert to the default A-size with portrait orientation (#6731).
- 25. The alien-end configuration for the Parallel Network Interface (PNI) is now working properly (#6492).**

26. **The PSCAD application title bar now displays properly when used within the Windows 10 operating system (#6677).**
27. Fixed a DPI scaling issue regarding incompatibility with Windows operating system font size setting (#6638).
28. Corrected a display glitch in overlay graphs that would sometimes display the grid incorrectly at certain zoom levels, due to a rounding error (#6799).
29. Fixed an issue with regards to corrupted canvas settings when loading older projects. Previously users could correct this manually. It is now done automatically at load time (#6560).
30. A minor sequence order issue involving not displaying the most recently updated numbers, has been fixed (#6574).
31. Specifying a snapshot file outside the temporary folder is once again possible, when doing so through the ribbon Project tab (#6660).
32. It is no longer possible to add the same project more than once, as a task in the same simulation set (#6742).
33. PSCAD will now release the temporary folder upon completion of a simulation. Previously, PSCAD needed to be closed or another case loaded before it relinquished its hold on the folder (#5274).
34. PSCAD will now terminate the simulation if the stop button is pressed while paused. Previously, pressing the stop button while paused did nothing (#6656).
35. Crash recovery project files are now flagged as modified when loaded (#6350).
36. Transmission line and cable label text is now positioned properly and more intelligently (#4634).
37. Ribbon unload button now appears disabled when in the context of the workspace file branch (#6291).
38. Shift + arrow key now works properly for selecting text in component definition script segments (#5201).
39. Command line output lines containing three asterisks in a row (***) are no longer flagged as an error by PSCAD, if other characters in the line are a combination of white space and/or other '*' characters (#6726).
40. Changes to simulation set and/or simulation task properties now properly flag the workspace as modified (#6770).
41. Enhanced and updated the concealed or off-canvas objects process. If off-canvas objects are detected, first the canvas size will be automatically increased to accommodate. If not possible, the components will be moved onto the visible canvas (#6867).
42. Fixed the mouse pointer coordinate display and a few other display issues when display settings are set as non-recommended in Windows 10 (#6691).
43. Graphics ports with missing conditional statement attributes, are now defaulted to true on load (#6869).
44. Previously plotted data is now cleared properly for output channels that belong to a layer that was changed to disabled status (#6874).

45. The manual launch command displayed in the status bar (i.e. -v4 localhost <port>) is now also displayed (and may be copied) as part of the associated manual launch popup dialog (#6852).
- 46. Fixed a crash point that occurred if multiple layers are referenced to the same component (illegal condition) within a project, and then the project is unloaded (#6888).**
47. If a radiolink receiver, is configured for inter-project transfer in a PMR-I master project, with its rank set to 0, the simulation no longer hangs after the first run of the slave project. A check for this situation has been added (#6903).
48. Fixed a minor issue with regards to component definition dependencies not updating properly if a project is renamed (#6908).
- 49. The select folder dialog now functions properly on Windows 10 operating systems. Previously, the select folder dialog would only allow folder selection on the desktop folder (#6907).**
- 50. Fixed an instability issue that occurred when empty graphics attributes in the project XML are missing (#6877).**
51. A problem involving the sporadic resetting of the manually set, graph frame x-axis bounds, when selecting the scroll bar, has been fixed (#6900).

EMTDC

Bug Fixes:

1. A function for real to complex conversion E_RtoC added.
2. Parallel Network Interface (PNI) timeout limit to establish connection has been increased. When simulating larger systems, it was found that the previous timeout limit may not be sufficient (#6680).
3. Harmonic impedance solution refined to accommodate branches with tiny numerical impedance. This came to light when scanning with a c-type filter component present (#6653).
4. The snapshot file has been corrected for instances where there are multiple transmission segments connecting two projects configured for PNI (Parallel Network Interface), where the number of conductors in each segment is different (#6716).

Master Library

Bug Fixes:

1. The 'x-y table' component no longer gives a compile error when the number of columns is set to 2 (#6715).
2. The 'divider' component zero threshold decreased from 1E-10 to 1E-100 (#6720).
3. The 'varrlc' component now properly issues a navigable link when warning or error messages are generated from it (#6759).
- 4. Initialization of the feedback loop selector ('zminusone') Master Library component now functions properly (#2876/6741).**

5. The PQ threshold for disabling branches in the fixed load component ('fixed_load' and 'fixed_load1') has been decreased from 1e-4 to 1e-10. This was done so as to correct inaccuracy when using the fixed load component under very lightly loaded conditions (#6630).
6. A typo has been fixed in the AC exciter that caused a problem with the initialization part of the component, corresponding to rectifier regulation characteristics (#6717).
7. The tap changer graphical display on the transformer components now reflects the actual winding, to which the tap is applied (#5473).
8. The surge generator component peak current output has been corrected, in situations when custom front/tail time is selected (#6622).
9. The C-type filter component now generates the correct result at the tuned frequency, when a frequency scan is performed (#6653).

LCP

Bug Fixes:

1. The curve fitted Y-matrix had been found to be unsymmetrical in certain instances, due to small errors introduced by curve fitting. This has been fixed using an average residue technique (#5623).
2. A new conductor library format has been added to provide support for stranded conductor information. This is in addition to the previous format, which supports solid or hollow conductors. You must choose to use one or the other. See the online help for formatting details (#5799).

Licensing and Utilities

Bug Fixes:

1. PSCAD certificate license settings now allows 4 server addresses to be entered. Previously, only 2 were allowed (#6896).
2. PSCAD logs who is acquiring or renewing a certificate (#6588).
3. Sentinel USB now works with Windows 10 when Credential Guard is enabled (#6586).

v4.6.3 (Hot Fix 1)

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Master Library:

1. *Real Pole: Limits Min/Max were used in the code even when the limits were disabled (#7143).*
2. *Photovoltaic Source: numerical overflow situation avoided by limiting the voltage when taking the exponential.*
3. *DC Machine: potential situation to modify input parameters was avoided by copying the parameters to a different variable.*

EMTDC:

1. *Saturable reactor was removing the wrong data point when the slopes are the same (#6885).*
2. *Negative gain with limits enabled give wrong results in real/lead-lag/diff poles (#7026).*
3. *In a volley launch situation make the seed for random number generation unique (#7029).*
4. *Transformer tap changer was not working correctly in some specific situations (#7092).*
5. *Output of yoke flux in single-phase 3/4 winding transformer is always zero (#7119).*
6. *Phase angle of FFT oscillates between -90 and 270 instead of -180 and 180 when configured for Sequence/Sine/Degrees (#7238).*
7. *Basic hysteresis model was not working correctly with some compilers when the transformer is energized later than time=0 (#7274).*