What's New in PSCAD v4.5.3

(since v4.5.2)

Written for PSCAD™ X4 version 4.5.3

November 7, 2013

PSCAD

Deficiency Fixes:

1. **Comment Directive (#!)**: A new directive, referred to as the comment directive or '#!' is now implemented. When the compiler encounters this type of comment line, the line is completely ignored (i.e. not privy to parsing, nor inclusion in the Fortran file). This provides a workaround for the problem regarding substitutions of unused variables in commented script lines (#4853).

```
1 #LOCAL REAL X
2 !
3        X = 10.0
4 !
5 #!    X = $Y2
```

2. **Definition Reference Checking**: A new check was added to warn the user of breaking definition references on unload of a library project. Previously no warning was given when a library project was unloaded, and all dependent components would simply change to placards (red boxes). Now, a popup message will ensue:
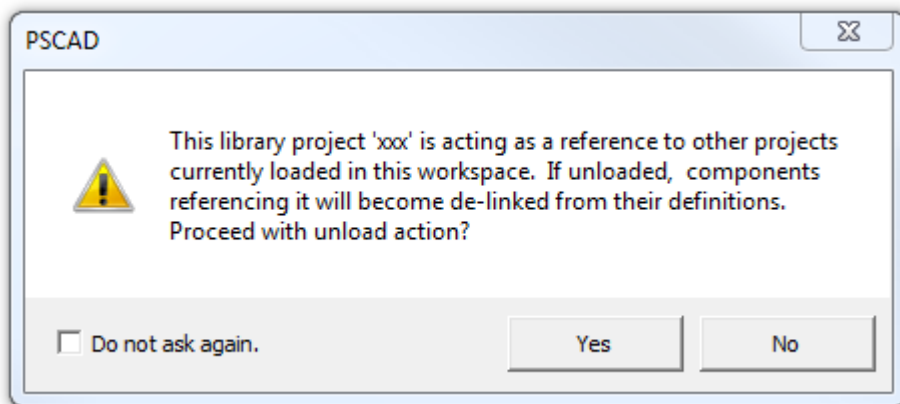

Note that if the 'Do not ask again' option is checked, this warning will not appear again, unless the user re-enables it in the workspace options (#4843):

3. **Real/Integer Parameters Now Support Array Signals**: Real and integer-type, component parameters now support arrays (i.e. dimension > 1) if passing a signal name into or out of the component. A new 'Dimension' attribute has been added to the parameters – if this dimension is greater than 1, then an array signal is assumed (#4487).
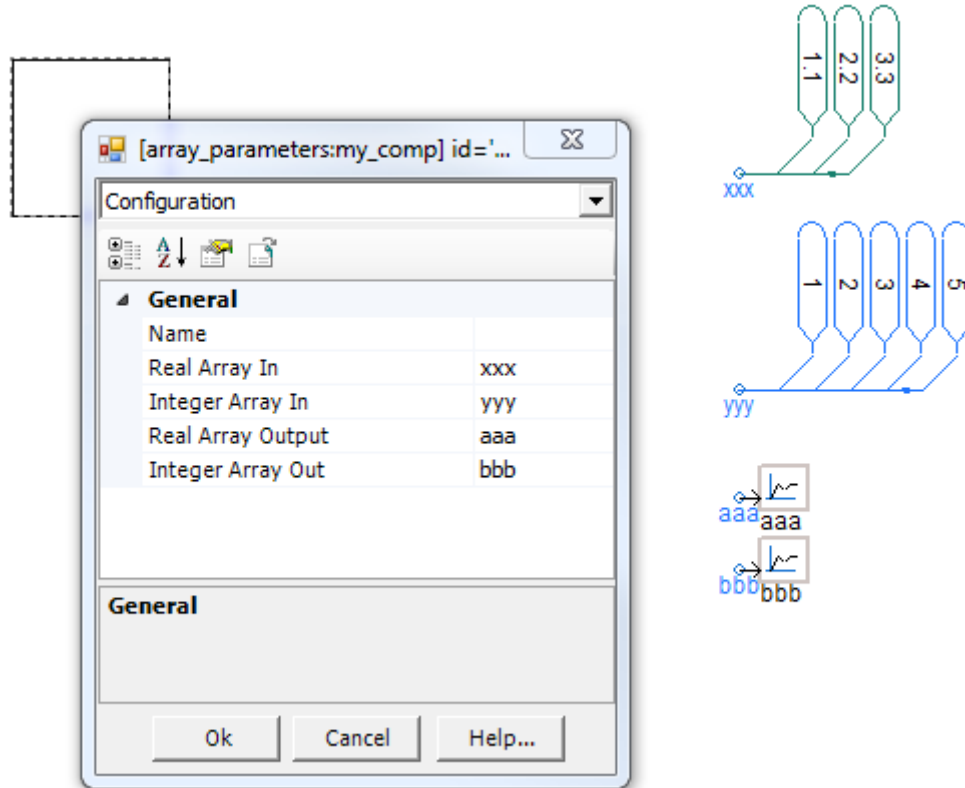
4. **Runtime Canvas Lock Option**: An option has been added to the Workspace Options | Runtime category to provide the ability to enable or disable the runtime schematic canvas lock (#4908).
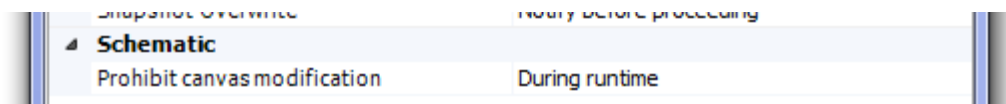
Bug Fixes:

1. The simulation runtime will no longer proceed following the user selecting 'No' in the dialog warning of memory usage due to simulation length/time step size (#4811).
2. An inconsistency in the validation of project file names has been resolved (#4829).
3. **Table parameter values in the transmission line/cable configuration component are no longer lost on project load (#4834).**
4. The compiler will now check for symbol name duplication between component parameters and connection ports (#4854).
5. The map/make/log file view panes are now linked to the proper help topic (#4394).

6. **PSCAD no longer crashes on exit if the 'matlab_config' section of the 'user_profile.xml' contains invalid characters (#4823).**

7. All simulation error messages will now appear automatically in the message table. Previously, some messages would only appear following a manual refresh of the message table (#4828).

8. **The behaviour of the component parameters pane is now consistent with the component parameter dialogs in terms of copy and paste actions (#4885).**

9. On case project load, namespace verification is now case-insensitive. On modifications to library project namespace are now case-sensitive. These changes resolve a problem regarding a failure of definition namespaces to synchronize with a modified namespace (#4850).

10. A sanity check has been added to limit the maximum number of parameter categories a definition can possess (#4765).

11. PSCAD will now properly navigate to a component definition schematic via the message table, if the corresponding component id is zero (i.e. the message is sourced from a definition) (#4832).

12. Text entered into the snapshot filename field in the ribbon is now validated at the time of entry (#4824).

13. Unused hotkeys display has been removed from some context menus (ex. 'P' for edit parameters). Also, the menus were slightly modified for consistency throughout (#4731).

14. Minor issue with manual column resizing in the component table is resolved (#4891).

15. Cut/Copy/Paste actions using hotkeys now function properly in the parameter editor (#4468).

16. When pasting values into a parameter value field, the unit (if it exists) is no longer deleted on paste (#3522).

17. A confusing error message related to the top-level module not linked to its definition has been removed (#4901).

18. **All columns in the message table are now auto-sized, and cannot be manually adjusted. This effectively resolves the issue of PSCAD not remembering column widths between sessions (#4835).**

19. A hidden exception that was occurring constantly on load and switching views has been resolved (#4904).

20. The master library namespace may no longer be edited from the project settings dialog (#4845).

21. The new project dialog now auto-focuses on the project name field when invoked (#4756).

22. It is now possible to enter characters such as the apostrophe (') within descriptive fields in the parameter editor, such as 'Description' and 'Help Text' (#4099).

23. **The map file now properly reflects the tallied STFXRx EMTDC storage types, created for supporting blackbox. Previously these values were always 0, which caused EMTDC to crash if the memory allocation exceeded the padded value of 100 (#4919).**

24. The graphic layers functions have been be renamed to refer to transparencies, as opposed to layers (#4844).

25. The search table pane no longer assumes focus from the application when undocked. Previously if the table was undocked, the schematic canvas could not be interacted with following a navigation action (#4905).

26. The compiler will now detect duplicate sequence numbers on a particular schematic, if set to manual sequence ordering (#4909).

27. Focus is now given back to the proper tab following a close of text file viewer (normally invoked by opening a file using the 'Additional Options' component). Previously the right-most tab would always be given focus, causing navigation frustration (#3644).

28. **A serious bug, which caused the application to crash when navigating search results, has been resolved (#4749).**

29. Output channel limit now counts the actual number of output channel components, not the sum total number of traces. This will relax restrictions on the number of output channels allowed in a project (#4819).

30. The map/make/log file panes now automatically update properly when switching context between loaded projects (#4170).

31. Focus is now automatically given to the name field when the new project dialog is invoked (#4755).

32. **The subsystem splitting algorithm has been revamped and now functions much more robustly for all mapping scenarios (#4741).**

33. Schematic canvas artifacts (i.e. bits and pieces of graphics) no longer remain on the canvas when a project is first loaded. Previously, these artifacts could be erased by simply refreshing the view (#4932).

34. Projects residing on an externally mapped drive can now be launched properly. Previously such projects would fail to launch on the initial attempt, but would launch fine on subsequent attempts (#4382).

35. Flyby help on connection ports is now displayed if the port dimension is specified as a variable (as opposed to an integer value) (#4931).

36. **The unit converter now functions properly when a module instance is based on an external (i.e. inter-project) definition (#4659).**

37. Un-editable cells in the scenario manager are now greyed-out for clarity. Previously, one could not differentiate an un-editable cell from an editable one (#4842).

38. **Deleted global substitutions (or those whose symbol name has been changed) are now cleaned up properly in the project file. Previously, global substitutions that were deleted or modified remained stored in the project file (#4914).**

39. Blackbox will now increment the name of the definition with an '_<index>', even when the last character of the definition name is a digit (#4942).

40. The reference manager will now include all child modules in the hierarchy upon remapping of the parent module definition (#4950).

41. An application option has been added to provide the ability to keep the additional source and external link fields clean during multiple blackbox sessions (#4944).

42. **Many hours of work was put into optimizing and improving project load speed. Projects now load significantly faster – this is especially noticeable when loading very large projects (#4945).**

43. The PSCAD compiler now checks for the existence of radio link transmitter components inside of multiple instance modules. This situation is considered a source contention and will result in a build failure with a message (#4955).

44. Acceptance of modifications to component parameters no longer takes a long time when working in very large projects (#4946).
45. Messaging improvements have been made with regards to parsing script containing #BEGIN directives (#4947).
46. PSCAD now forces a recompile when the Fortran compiler is changed. This is to ensure that changes made to the project, while using one compiler, are incorporated into the build after switching to another compiler (#4959).
47. **The search engine has been optimized for speed, resulting in huge differences in time taking to return search results. For example, the search speed on a 40 MB project went from 6 minutes to 18 seconds (#4968).**
48. PSCAD no longer churns for a period of time following a click on an output channel from within the definition tree (#4967).
49. Projects no longer fail to run, following the invocation of the application options dialog. Previously, executing this dialog would clear cached information, resulting in a corrupt map file (#4970).
50. Tool tips no longer 'flicker' when monitoring electrical and data wire quantities during runtime. The 'flicker' was caused by the animate tool tips option, which is now forced off during runtime (#4743).
51. A whole word search no longer fails to return sticky notes as part of the search results (#4903).
52. **A serious issue with the reference manager has been fixed: The project module instance call stack would sometimes become corrupt when switching references back and forth between projects (#4950).**

Master Library

Bug Fixes:

1. **An EMTDC crash problem, caused by improper storage allocation when acquiring data from an external file, has been resolved. A new parameter has been added to master library components that ask for the number of lines in the external data file (ex. the arrestor component). The corresponding #STORAGE directive is now based on the value entered in this parameter (#4851).**
2. All instances of the squirrel cage induction machine have been removed from the master library. The reason being that the wound rotor machine is mathematically equivalent, yet less confusing to use as a 'single cage unit' (#3441).
3. Cartesian and polar impedance inputs in the 'source model 3' have been changed to real-imaginary and magnitude-angle to avoid misinterpretation. In the 'source model 1', new parameters have been added so that zero sequence impedance can be entered as a series combination. However, it will still be modeled as an equivalent parallel combination (#3733).
4. Another choice has been added to the existing 'Initial State' parameter called 'Same as initial' in the 'Binary Delay' component. If selected, the initial state will be the same as the input at time zero (#4739).

5. The arrester component no longer outputs a zero storage warning when internal table is selected for data input (#4929).

6. The binary delay component no longer causes a Fortran compiler warning when configured for non-interpolated use (#4934).

7. Corrected the initial voltage at time zero when the variable r, l or component is configured to use the built in voltage source (#4948).