

What's New in ASPEN OneLiner/Power Flow V15.8

This maintenance release contains fixes for software bugs, plus some program improvements.

Please write to support@aspeninc.com in English (suporte@aspeninc.com in Spanish and Portuguese) or call us (650-347-3997) if you have questions.

Note: The data files generated by OneLiner V15.8 are compatible with earlier releases of OneLiner V15.3 through V15.7.

Program Improvements between Versions 15.7 and 15.8

1. New Fault Simulation options for iterative solution of nonlinear network elements (VCCS, CIR, Type-3 wind turbine, current-limited generators):

Preferences	2
Network Diagram Relay Fault Sim	ulation X/R User-defined Data Fields
Prefault Voltage	Ignore in Short Circuits
Assumed "Flat" with	✓ Loads
V (pu)= 1.	✓ Transmission line G+jB
C From a language and state	Chunta with a same unland
C Fr Iterative Solution Converg	ence Criteria
Gene	ximum number of iterations =
Sub Voltage/current magnitu	de mismatch tolerance (PU)= 0.003
Define Power factor angle	e deviation tolerance (deg.)= 0.5
Cum Relax PF angle devia target is not physica	ation tolerance when desired
	se angle reference when the device ces comes zero due to a fault
	OK Cancel Help (CIR)
Do hou change display quantity when browsing fault results	☐ Iterative Solution Convergence Tolerance Level →
Include outaged branches in solution summary in TTY Window	Custom
	OK Cancel

User-defined iterative solution convergence criteria: Users can specify the maximum number of iterations and desired tolerance levels for phasor magnitude and angle deviation between iterations.

Relax PF angle deviation tolerance when the desired target is not physically attainable: Users can select this option to allow the program to achieve convergence in the iterative solution for these non-linear device types. This option is enabled by default in OneLiner V15.8.

Use memorized phase angle reference when the device terminal voltage becomes zero due to a fault. To support requests from many users, this option is introduced to allow the simulation of bolted 3LG faults between a converter interfaced resource (CIR) model and its point of interconnection (POI) to the network. This option is not enabled by default. Users must turn it on when desired.

- Enhanced the iterative solution non-convergence report: When the iterative solution of nonlinear network elements, such as CIR, VCCS..., does not converge in a fault, the program always prints a report with details that users can use to analyze the results and take corrective modeling actions.
- 3. **Increased the stepped-event simulation's number of steps limit from 40 to 80:** This will allow users to use the stepped-event simulation to study uncommon but still possible failure modes of the relay protection system in a substation that trigger the operation of many relays in adjacent substations.
- 4. Enhanced support for 3-terminal lines outage in the logic of the Check relay settings and Check relay operation using stepped-event commands: The program now correctly opens, and optionally grounds, three ends of 3-terminal lines, which users model with the middle bus having the "Tap bus of 3-terminal line" attribute.
- 5. **New CSVTool.exe utility**: Users can use this program to aggregate multiple Check Relay Coordination reports using stepped-event CSV reports into a single file to facilitate filtering and querying of the data.
- Support for default value logic in the SetData() API: When using the API to update array type data fields, you can enter OneLiner's pre-defined values for the array elements that you wish to keep the original value unchanged. In Python OlxAPI applications, look for these constant variables in OlxAPIConst.py: OLXAPI_DFI, OLXAPI_DFF, and OLXAPI_DFS.
- 7. Scripting engine support for additional OneLiner object data fields: These include mutual lines, fault simulation convergence, Thevenin impedance in simultaneous faults, and some others.

8. **New data ASPEN Line Database data sync wizard**: The wizard allows users to map transmission line data records in the two programs and copy impedance data for the mapped pairs:

New Map Pair	Mapped: ·
One Liner	Line Database
3 'Palo Alto' 500 kV-1 'Charlotte' 500 kV 1	Palo Alto - Charlotte 500.00kV 'Palo Alto' to 'Charlotte'
5 'Knoxville' 500 kV-3 'Palo Alto' 500 kV 1	Unmapped
2 'Charlotte' 115 kV-6 'Knoxville' 115 kV 1	L_10 Clay-Teall 115.00kV 'CLAY' to 'Teall A'
6 'Knoxville' 115 kV-7 'Lenox' 115 kV 1	L_10 Clay-Teall 115.00kV 'CLAY' to 'Teall A'
2 'Charlotte' 115 kV-7 'Lenox' 115 kV 1	L_10 Clay-Teall 115.00kV 'CLAY' to Tap 'BARTELL 10' L_10 Clay-Teall 115.00kV Tap 'BARTELL 10' to Tap 'D-PINEL10'
'Knoxville' 230 kV-'Lenox' 230 kV 1	L_10 Clay-Teall 115.00kV Tap 'D-PINEL10' to Tap 'E MOLLOY 10' L_10 Clay-Teall 115.00kV Tap 'E MOLLOY 10' to 'Teall A'
'Charlotte' 230 kV-'Lenox' 230 kV 1	L 10 Edic-Porter 115.00kV 'EDIC 10' to 'PORTER'
Add new	L_10 Milan-Pleasant Valley 115.00kV 'MILAN' to 'PLEASANT VA L_10 Queensbury-Cedar 115.00kV 'Quensbry 77G' to 'CEDAR'
Add new	L_1 Rome-Oneida 115.00kV Tap 'T106 - Tie 3' to 'ONEIDA EAST'

9. New External Data Links tab in the Relay Group dialog box:

elay/Breaker Data Protection Logic and Communi	cation External Data Links	
inked Device(s) in ASPEN Relay DB Relay=PAL-CLT.411L;Location ID=PALO ALTO		Defect
		Refresh
		Add
		Remove
		Retrieve Setting
Use Ctrl or Shift key to select multiple rows)	(*) Device with no connected OneLiner relay in this group	
Connected OneLiner Relays		
[DSRLYG] SEL411L_21G (E21G) [DSRLYP] SEL411L_21P (E21P)		Get Info
[OCRLYG] SEL411L_51T01 (E51T01)		Show Curve
[OCRLYG] SEL411L_67G1 (E67G1) [OCRLYP] SEL411L_50P1 (E50P1)		

This tab allows users to track linked relay data records in the ASPEN relay DB and import the settings when desired.

- 10. Scripting engine support for adding/deleting network objects: These new APIs are available for PowerScript programs and OIxAPI programs. For example, in Python you can use the OIxObj.OLCase.addObj() function to add new network elements and relays and the delete() function to remove existing elements. See the SamplesOIxObj.py script for examples of how to use these functions.
- 11. Logic scheme support in GetRelayTime() API: The logic scheme response during a simulated fault can be accessed using the API.
- 12. Enhancements in the Find bus search logic: The Find Next button in this dialog box will first display Items with the search substring as the bus name prefix, followed by items with the search substring found anywhere else in the bus name. In the example below, clicking on Find Next will highlight the matching entries in the following order: Lenox 115kV, Lenox 230 kV, Knoxville 24kV, Knoxville 115kV, Knoxville 230kV, Knoxville 500kV,

Find Bus	
Search for e	Find <u>N</u> ext
Charlotte Charlotte Charlotte BK Charlotte G1 Knoxville Knoxville Knoxville <u>Lenox</u> Lenox	115.kV 2 230.kV 0 500.kV 1 24.kV 0 24.kV 0 24.kV 0 115.kV 6 230.kV 6 500.kV 5 115.kV 7 230.kV 0
OK	Cancel <u>H</u> elp

13. Embedded Python engine support and Integrated Development Environment: OneLiner V15.8 can invoke Python to execute user scripts, which can interact directly with the network currently open in the OneLiner GUI through the OlxAPI interface.

Python scripts can be developed, edited, and executed directly within OneLiner built-in integrated development environment, which is based on the standard Python IDLE package. User scripts used within Embedded mode can access the selected network element within the OneLiner GUI, as well as a dialog box for selecting buses within the active OneLiner network. 32-bit Python Version 3.11 must be installed to use this feature.

- 14. **Python macro recording:** Users can record network editing and fault simulation commands they execute in the GUI to a Python OlxAPI script. This is particularly useful for developing Python scripts because it provides the Python syntax required to duplicate OneLiner actions. To use this feature, 32-bit Python Version 3.11 must be installed. To start/stop the recording, use the command under the Tool section of the main menu or click on the corresponding toolbar button.
- 15. **New Default value logic in the SetData() API:** When using the API to update array type data fields, you can enter OneLiner's pre-defined values for array elements that you wish to

keep the original value unchanged. In Python OlxAPI application look for these defined constant variables in OlxAPIConst.py: OLXAPI_DFI, OLXAPI_DFF, and OLXAPI_DFS.

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Channel Selection		
Voltages		
Va = Va	•	•
Vb = Vb	•	
Vc = Vc	•	L
Currents		•
Ia = Ia	+ None	•
Ib = Ib	+ None	•
Ic = Ic	+ None	•
	ОК	Cancel

19. Support for COMTRADE's 2nd CT input in fault location calculations

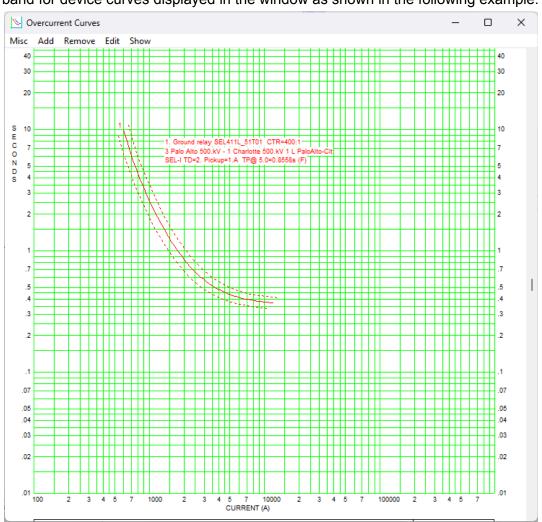
The 2nd CT input is enabled if the Fault Locator function is initialized from the single relay group and the imported event file is a Comtrade, CEV, or EVE file. The program will use the sum of the 1st and 2nd CT inputs in computing fault location.

20. New ADX viewer/editor in the Compare Files and Case Builder commands: The new tool supports data filtering, searching, and data field value editing.

Compare File A to File B			
File A: C:\000tmp\fileA.olr File B: H:\ToBeCopiedAway\20240330_FileCompareIssue\fi	leAx.olr	+ -	Change count: 1
ID/Parameter - MODIFIED LINE: 'Charlotte' 500 k.V-Palo Alto' 500 k.V 1 L Length	200.	In B 150.	Find in ID/Parameter: (Ctrl +Enter to specify up to 3 search strings) Previous Next Filter records: ▼ ♥ Type ♥ Change ♥ Device ID ♥ Nominal kV ♥ Area ♥ Jone ♥ Bus No.
Records count: 1 of total 1	Save To Disk		Done Help

21. Shortcuts to open networks in multiple instances of OneLiner: The File | Save As and File | Reload file from disk commands in this version include shortcuts to launch a new instance of OneLiner and have the new and existing networks opened side-by-side to facilitate visual comparison.

🚼 Save As				×		
← → ~ ↑ <mark> </mark> « 00	0tmp → workshop →	✓ Č Searc	:h workshop	Q,		
Organize 🔻 New folde	er		BEE -	?		
OneDrive	^ Name	^	Date m	odified		
💻 This PC	demo	o	1/29/20	24 4:10 PM		
3D Objects					OneLiner	
Desktop					UneLiner	
Documents Downloads						Deles de abue de fer
Music					?	Reload network fro C:\000tmp\SAMPLE
Pictures	v <			>		Click YES to open t
File name: SAME	PLE30.OLR			~		OneLiner. Click NO to open t
Save as type: OneLi	ner Binary File (*.olr)			\sim		OneLiner.
		he original file				
∧ Hide Folders	opener of One		Save Ca	ncel		Ye



22. Accuracy band in Overcurrent Curves window: Users can elect to show an accuracy band for device curves displayed in the window as shown in the following example:

Bug fixes between Versions 15.7 and 15.8

The full list of all bug fixes between versions v15.7 and v15.8 is available on the ASPEN website at this link:

https://webapps.aspeninc.com/aspen-dist/software-update?u=1lpfv15.txt&e=28511